6. Analyzing Our Choices

This section explains what we did to better understand the choices facing our region, develop population and employment growth forecasts that reflect market trends and community plans, create and test alternative transportation scenarios, and compare these alternatives to one another and to performance measures that reflect the MPO's adopted goals and objectives.

6.1 Land Use Plans and Policies

Each community in the Triangle develops a comprehensive plan to outline its vision for the future and set policies for how it will guide future development to support that vision. So an important starting point for transportation plans is to understand these plans and reflect them in the future growth forecasts used to analyze transportation choices.

Local planners from communities throughout the region, along with experts in fields such as real estate development and utility provision, were brought together to translate community plans and market trends into the parameters used by the region's transportation model to generate travel forecasts: population and jobs by industry (see Section 5.3 for a more detailed explanation of the transportation model). To make sure the forecasts were consistent, transparent and based on the best available evidence, the region for the first time used sophisticated growth allocation software, called CommunityViz, to guide the forecasting effort.

The land use plans revealed that five regional activity centers, depicted in Figure 6.1.1 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:

- Central Raleigh, including NC State University;
- Central Durham, including Duke University, North Carolina Central University and the Duke and Veterans Administration medical complexes;
- Central Chapel Hill & Carrboro, including UNC-Chapel Hill and UNC Hospitals;
- The Research Triangle Park and RDU Airport; and
- Central Cary.

Linking these activity centers to one another, and connecting them with communities throughout the region by a variety of travel modes can afford expanded opportunities for people to have choices about where they live, work, learn and play.

In some cases, such as in central Cary, Durham and Chapel Hill & Carrboro, existing plans and the ordinances that implement the plans promote increased development of the activity centers. For example, in Raleigh, a new comprehensive plan and Unified Development Ordinance targets development in the downtown and in other in-town areas that can serve as mixed use nodes. Durham has been engaged in detailed planning for the downtown and neighborhoods around planned rail stations. Cary has launched an update of its comprehensive plan. And the Research Triangle Park recently adopted a new master plan that is designed to lead to more compact, mixed use development in selected locations.

In addition to these activity centers, the review of community plans identified areas of the region that are most environmentally sensitive, including water supply watersheds, and places where existing neighborhoods warrant protection. Understanding the unique roles that different areas and different communities will play in the region as it grows established the framework for forecasting growth and designing transportation choices to serve this growth.

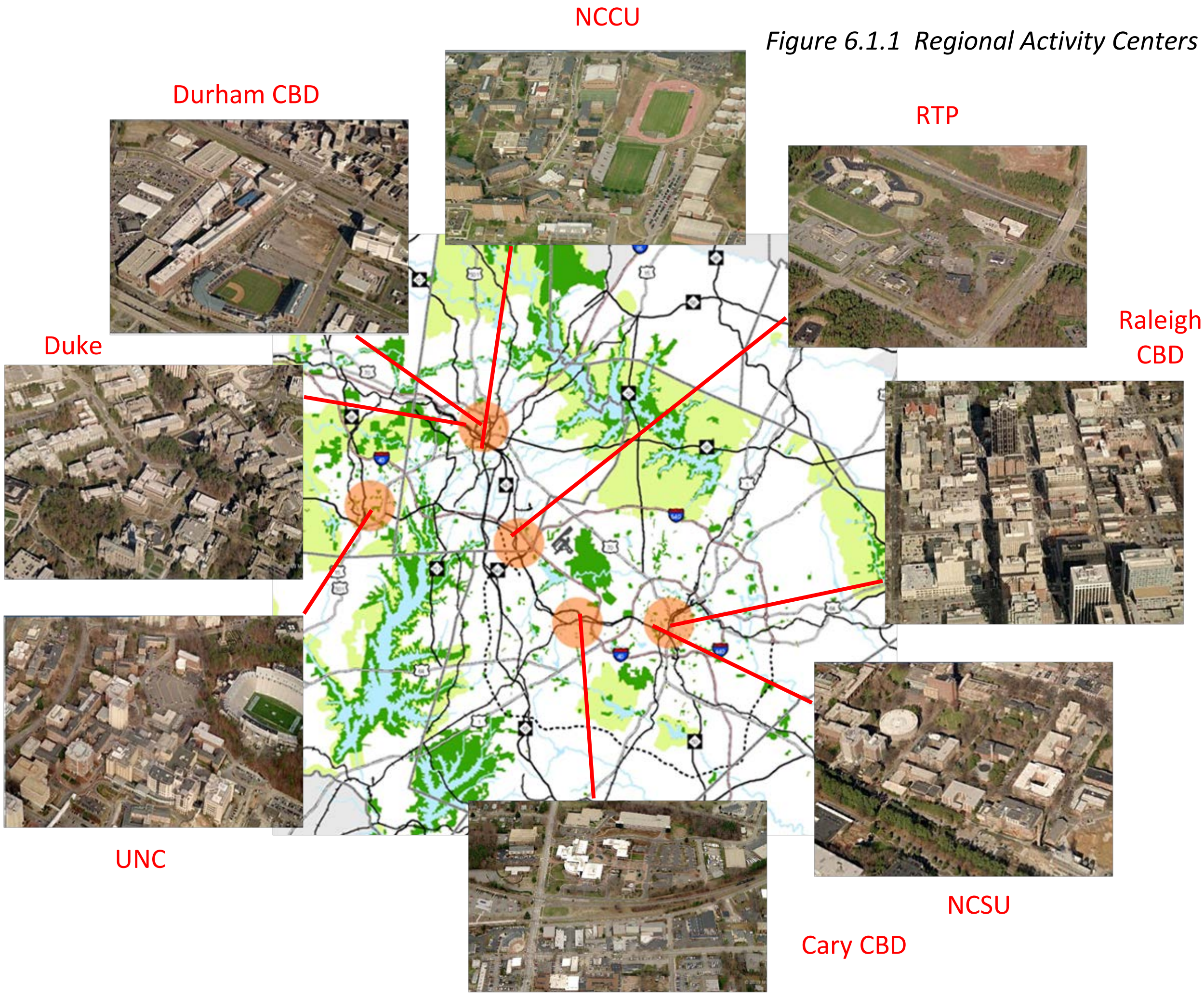


Figure 6.1.1 Regional Activity Centers

6.2 Socio-economic Forecasts

One of the initial critical steps in developing a Metropolitan Transportation Plan is to forecast the amount, type and location of population and jobs for the time frame of the plan. Based on community plans and data from local planning departments, the Office of State Budget and Management, the US Census Bureau and independent forecasters, estimates of “base year” (2010) and “plan year” (2040) population and jobs were developed by local planners for each of the 2,600 small zones (called Traffic Analysis Zones or TAZs) that make up the area covered by the region’s transportation model, called the Forecast Area.

Both to track and document the socioeconomic forecasts, and to permit analysis of different development scenarios, a robust land use mapping and analysis tool was built from the ground up for the more than 700,000 individual parcels of land in the region. Using software called “CommunityViz,” each parcel was assigned one of 33 “place types” by local planners reflecting the kind of development anticipated by community plans, such as office building, retail store, mixed use development, single family home or apartment building. In addition, each parcel was assigned a development status to indicate whether it was vacant, already fully developed, or partially developed or redevelopable. Depending on both the place type and the specific jurisdiction in which a parcel is located, average residential and employment densities were applied to determine the supply available to accept additional residential or commercial development.

Any constraints to development, such as water bodies, floodplains, stream buffers, or conservation easements were assigned to applicable parcels. The combination of place type, development status and development constraints established the “supply” side of the CommunityViz growth allocation model.

Special attention was given to anchor institutions, such as the major universities and the RDU Airport. Future growth in these areas was based on meetings with and data from the people at these institutions involved in facility planning and construction.

Panels of experts were convened to help determine the principal influences on where future development would occur, and to develop quantitative measures, called "suitability factors," that could be applied to the parcels based on these influences. Examples of factors that influence development include availability of water and sewer service, proximity to highway interchanges or rail stations, and distances to major economic centers like the region's universities.

Finally, a set of population and job control totals were developed from state and national demographic sources to establish the "demand side" of the model. The CommunityViz tool then allocated single family housing units, multi-family housing units and jobs based on the available supply and the attractiveness of each parcel based on the suitability factors.

Figure 6.2.1 summarizes the major elements of the socioeconomic forecasts for different portions of the Forecast Area covered by the region's transportation model, both the areas within the MPO boundaries and areas beyond the MPO boundaries (refer to Figure 2.2.3 for a map of the MPOs and the modeled area). More detailed information on a range of socioeconomic data for each TAZ is available from the Capital Area MPO and the Durham-Chapel Hill-Carrboro MPO and in documents available from the Triangle J Council of Governments describing the application of the CommunityViz model and its 2040 MTP results.

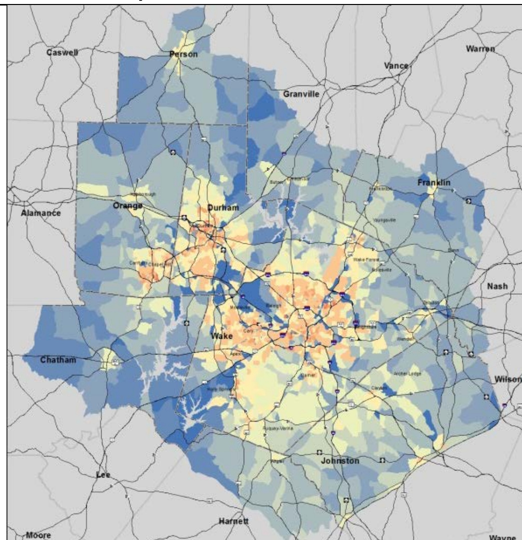
Figure 6.2.1 Estimated 2010 and Forecast 2040 Jobs, Population and Households (1)	2010			2040		
	Population	Households	Jobs	Population	Households	Jobs
Capital Area MPO	**1,060,846**	**408,404**	**532,438**	**1,990,377**	**760,472**	**841,240**
Franklin County (part)	38,889	14,793	7,771	71,859	26,226	11,789
Granville County (part)	19,236	7,298	3,338	37,124	13,688	9,572
Harnett County (part)	18,818	7,091	3,044	43,283	15,916	6,765
Johnston County (part)	92,469	33,417	20,651	168,875	60,381	34,939
Wake County	891,434	345,805	497,634	1,669,236	644,261	778,175
Durham-Chapel Hill-Carrboro MPO	**401,441**	**162,020**	**261,324**	**632,735**	**255,745**	**427,648**
Chatham County (part)	17,043	7,785	2,966	23,682	10,226	4,551
Durham County	265,590	109,392	190,134	431,652	178,060	306,524
Orange County (part)	118,808	44,843	68,224	177,401	67,459	116,573
Areas outside MPO boundaries	**157,748**	**62,655**	**58,340**	**306,864**	**115,191**	**97,174**
Chatham County (part)	21,406	8,910	5,809	47,184	18,283	14,982
Franklin County (part)	11,696	4,844	5,393	19,107	7,466	6,079
Granville County (part)	10,158	3,950	7,532	18,475	6,855	12,382
Harnett County (part)	15,796	6,083	4,095	33,720	12,293	7,885
Johnston County (part)	46,853	17,867	21,694	113,848	41,280	35,791
Nash County (part)	4,103	1,543	705	6,659	2,464	3,261
Orange County (part)	16,289	6,643	2,760	23,380	9,182	3,701
Person County (part)	31,447	12,815	10,352	44,491	17,368	13,093
Total for forecast area	**1,620,035**	**633,079**	**852,102**	**2,929,976**	**1,131,408**	**1,366,062**

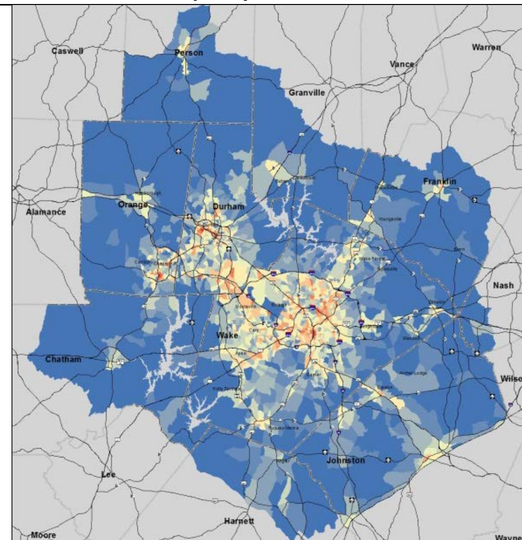
(1) These totals represent the values within the regional travel model's traffic analysis zones, and may differ from values derived using other sources and methods; note that population includes people who are not in households, such as university dormitory residents.

The maps below show the distribution of population and jobs within the Forecast Area for the 2010 "base year," the 2040 "horizon year" and for the growth from 2010 to 2040. Larger versions are available from the MPOs.

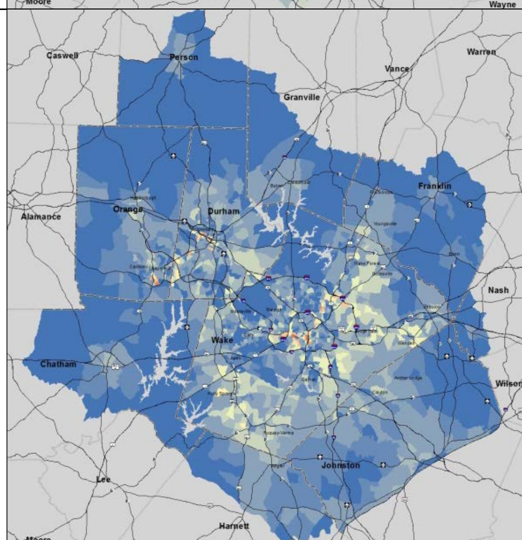
Population | **Employment**

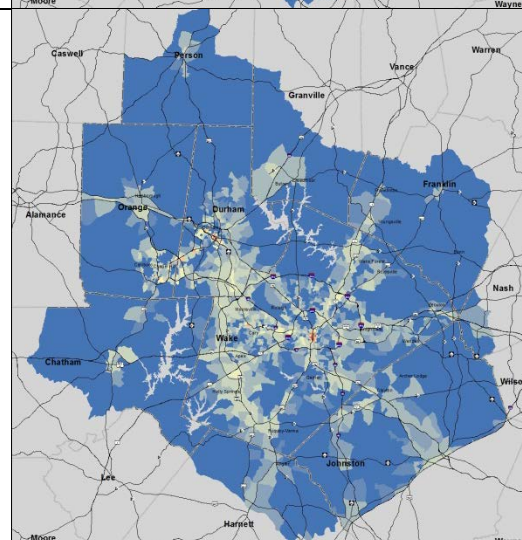
2010



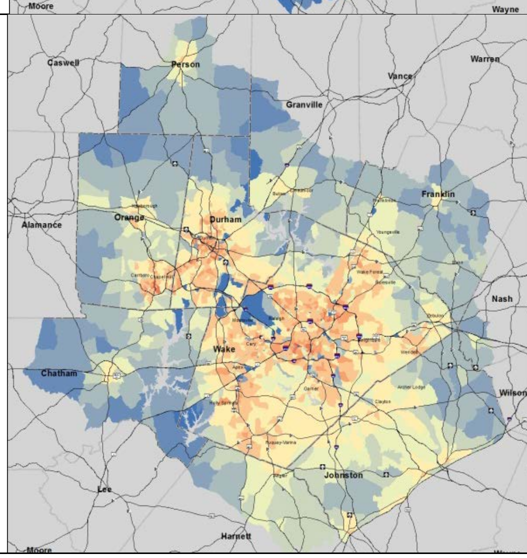


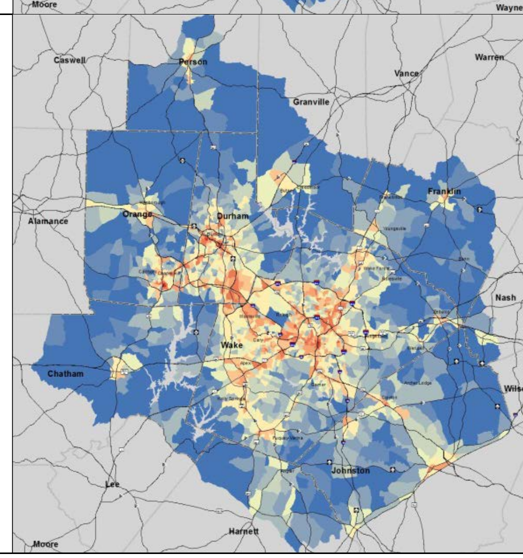
2010 to 2040 growth





2040





Population or Employment per square mile: 0 100 500 1,000 10,000 100,000

6.3 Trends, Deficiencies, and Needs

With the large increases in people and jobs expected in the region over the 30-year period between 2010 and 2040, the amount of travel -- often measured in Vehicle Miles Traveled (VMT) -- in the Triangle is expected to similarly grow by well over 100%. Future stress on the regional transportation network is exemplified by the high levels of congestion predicted in 2040.

Figure 6.3.1: I-40 near US 1 Interchange

The congestion maps on the next page show the average volumes during the afternoon peak hour as predicted by the Triangle Regional Model. The 2010 "base year" Congestion Levels map indicates travel conditions in the year 2010, whereas the 2040 Deficiencies Map, or "Existing plus Committed" (E+C), forecasts travel conditions in the year 2040 using the current highway, transit and other transportation facilities and any facilities that are well on their way to being completed. This deficiencies network is often called the "no build" scenario, since it typically is the result of past decisions, not ones that still need to be made. This worst case scenario is not intended to represent an actual possible outcome. Rather, comparing E+C to the 2040 MTP network illustrates the failure of our committed transportation improvements to meet the growth in anticipated travel demand that is forecasted to occur during the useful life of these investments. In reality, as congestion and travel delay began to reach the unacceptable levels, other contributing factors would begin to shift. Additionally, commute patterns would change as people began changing travel decisions.

The third map is the 2040 MTP congestion map, showing levels of congestion if we provide all the transportation facilities and services included in the Metropolitan Transportation Plans.

The maps presented on the following pages provide a picture of the challenge we face in developing realistic transportation investments that meet the diverse needs of our communities. Larger versions of these maps are available on the MPOs' web sites. In addition, the MPO web sites have many other maps and tables that present the results of the Deficiency Analysis.

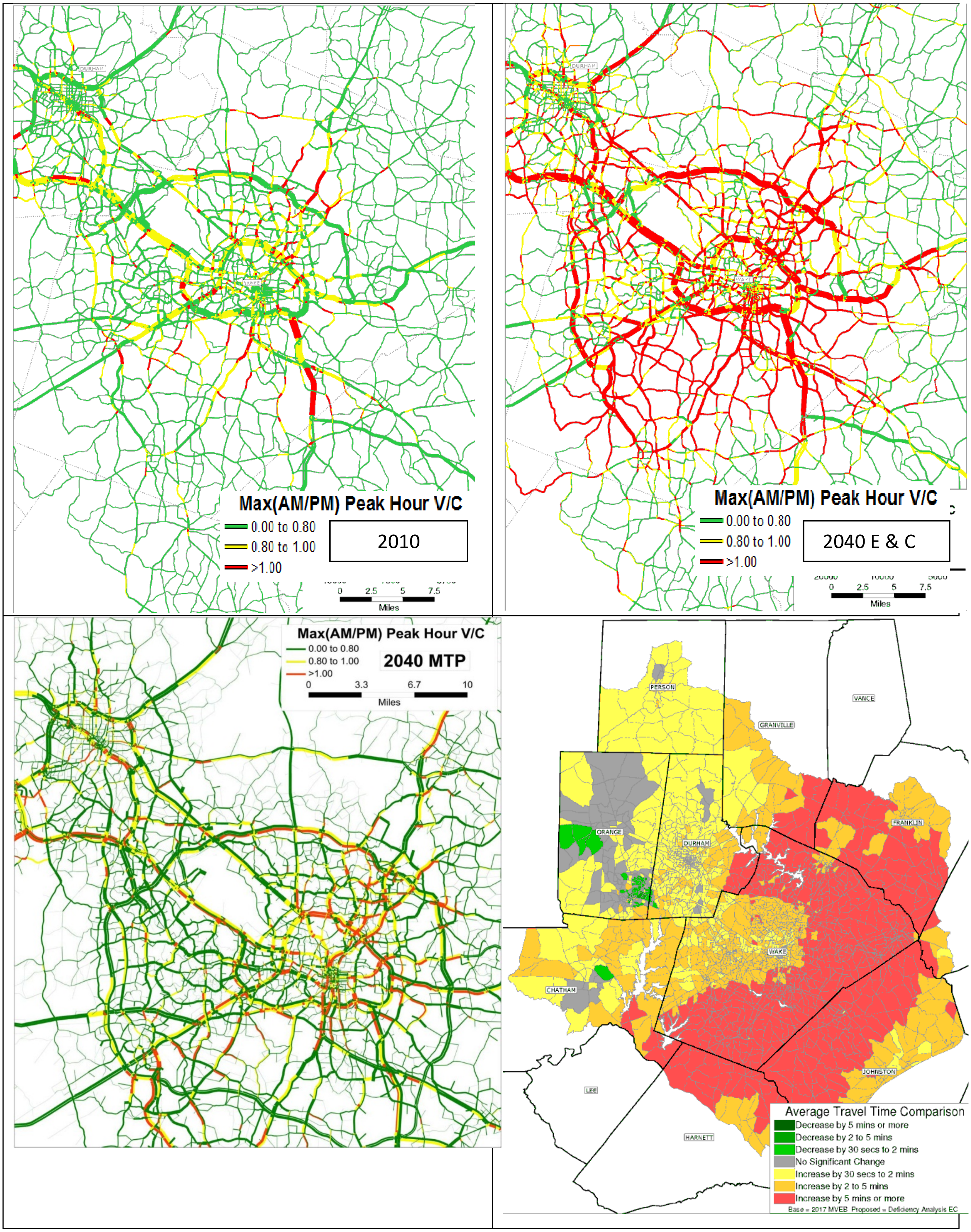
Trip Volumes and Capacity

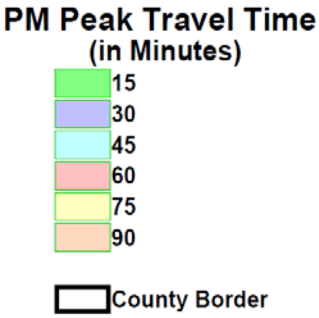
The roadway networks shown on the next page are simplified representations taken from the region's travel model. Thicker lines depict roadways with higher traffic volumes, thinner lines segments carrying lesser volumes. The colors correspond to Volume/Capacity ratios (this is the number of vehicles divided by the theoretical capacity of the road); greater Volume/Capacity ratios correspond with more congestion. A Volume/Capacity ratio below 0.8 (in **green**) is indicative of a relatively free flowing roadway with little or no congestion. Once the Volume/Capacity, or V/C ratio, rises towards 1.0, motorists will experience more periods of congestion. Volume/Capacity ratios greater than 1.0 (in **red**) represent roadways which are consistently congested throughout and beyond the peak hours of travel. The first map shows conditions in 2010. The 2040 E & C map shows that without significant new investments, chronic congestion will occur on major arterials and freeways throughout the region, and particularly within Wake County. The 2040 MTP map shows forecast conditions if we build and operate the facilities and services in this plan.

Travel Time

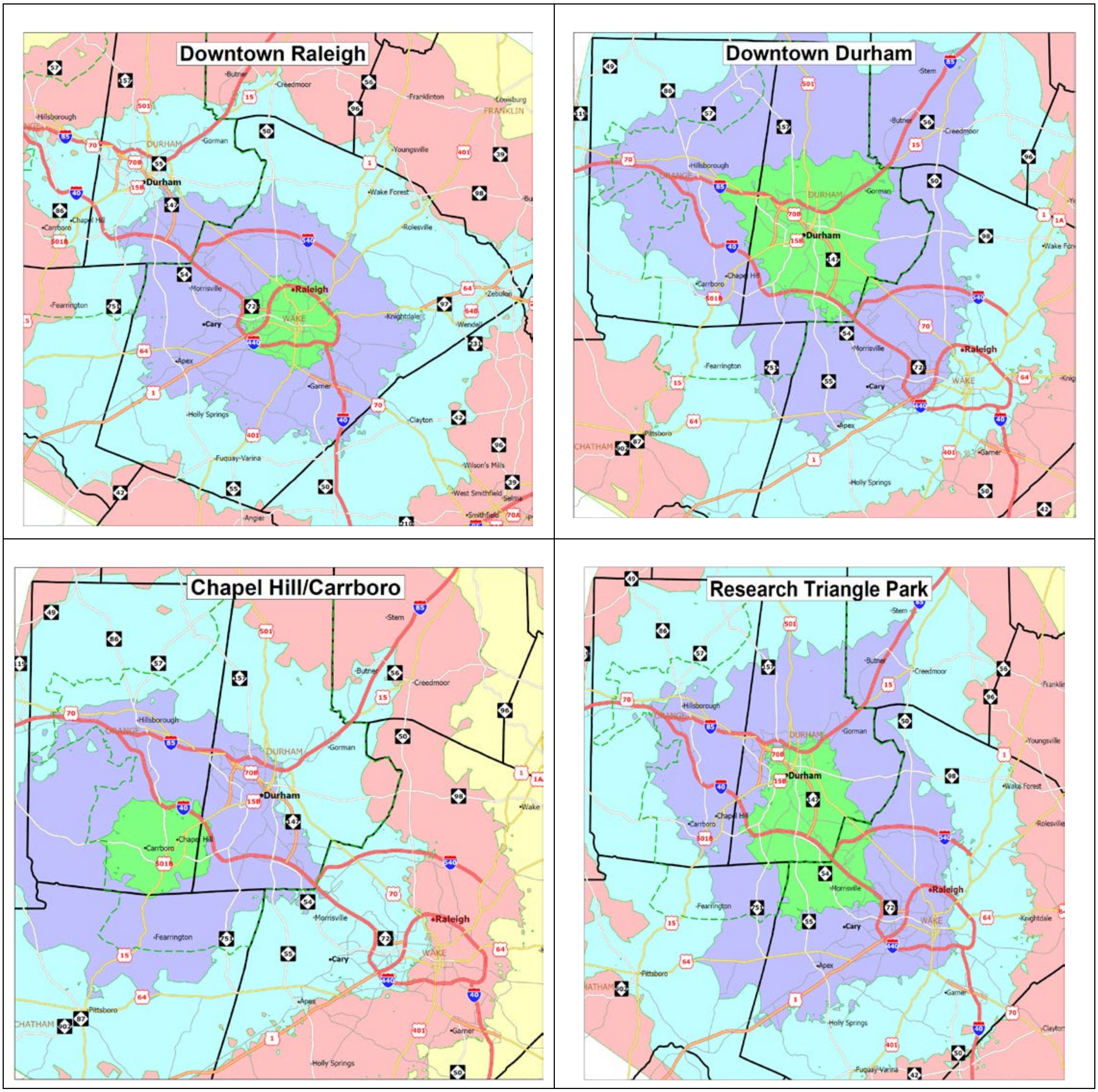
A more meaningful way to measure the effects of congestion to the average traveler is how it affects the time it takes to make a trip. Maps on the following pages illustrate these travel time effects in a number of ways.

The map at the lower right shows how average travel time in different zones changes between the road network that will be finished by 2017 and 2040 conditions. For example, if a zone has an average increase of four minutes, each trip in that zone in 2040 can expect to take an extra four minutes compared to today.





The maps below convey travel time impacts in a different way, showing how far a person could travel from a given location by motor vehicle in a given amount of time during a typical afternoon "rush hour" in the Year 2040. Each color band represents 15 minutes of travel time.



6.4 Alternatives Analysis

In order to address the statement as expressed in the Goals and Objectives, the Capital Area MPO and the Durham-Chapel Hill-Carrboro MPO developed and evaluated several alternatives in the process to create the 2040 Metropolitan Transportation Plan (MTP). Each alternative was a combination of a transportation system, which includes a set of roadway, transit and other transportation improvements; and a land use scenario that distributes the forecasted population and employment for the Year 2040. These alternatives were run on the Triangle Regional Model (TRM) to produce a set of transportation performance measures that described how the transportation system will handle the travel demand generated by a particular population and employment distribution in the year 2040.

Performance measures, such as the level of roadway congestion, average travel time, and transit ridership, were used to evaluate and compare the various alternatives. No alternative in its entirety was advanced as the final adopted plan. The alternatives were designed to emphasize a particular mode in meeting the future travel demands so that the technical staff and public can understand how well that specific mode addresses travel demand and can choose various projects to create the final 2040 MTP. Figure 6.4.1 is a list of the combinations of transportation systems and land use that were used to create the Alternatives that were analyzed to develop the final 2040 MTP.

Figure 6.4.1 Alternatives Evaluated

#	Transportation System	Land Use Scenario
1	Roadway Intensive – Abundant highway projects, including all those from CTP such as managed lanes in almost all freeway grade roadways; current bus transit services.	Community Plan – Population and employment growth occurs based on current land use plans.
2	Transit Intensive – Only highway projects from 2020 and 2030 horizons, and no large scale highway projects in rail transit corridors; large bus transit improvements and extensive light rail and commuter rail service.	Community Plan – Population and employment growth occurs based on current land use plans.
3	Moderate – Most of the highway projects and bus transit and rail transit that are in the 2040 MTP.	Community Plan – Population and employment growth occurs based on current land use plans.
4	Trend and Transit Plans – Highway projects at current spending levels; and bus and rail transit that are in the 2040 MTP	Community Plan – Population and employment growth occurs based on current land use plans.
5	Transit Intensive – Only highway projects from 2020 and 2030 horizons, and no large scale highway projects in rail transit corridors; large bus transit improvements and extensive light rail and commuter rail service.	All-in-Transit – Population and employment growth based on current land use plans but uses additional and more intensive transit oriented development, and land use modeling increased attractiveness to rail and premium transit.
6	Moderate – Most of the highway projects and bus transit and rail transit that are in the 2040 MTP.	All-in-Transit – Population and employment growth based on current land use plans but uses additional and more intensive transit oriented development, and land use modeling increased attractiveness to rail and premium transit.

The MPO staffs in conjunction with staff from the Triangle Regional Model Service Bureau worked together to create and run the model scenarios during the fall of 2012. These options were further reduced to a "preferred option" that incorporated a road network, a bus transit network, and light rail and commuter rail transit investments. The resulting road, transit, and rail networks were approved by the TACs of both MPOs, and modeled by the Triangle Regional Model Service Bureau.

The DCHC MPO developed a set of maps and tables to present the results of the Alternatives Analysis and posted them for easy access on the MPO web site.

CAMPO used the analysis results to develop an innovative method based on the return-on-investment. From these alternatives, CAMPO evaluated over 600 roadway projects based on the benefits they would generate compared to their costs. This was used as a first draft of the plan, which was then refined via staff input from the MPO and member agencies. The majority of projects remained funded in the order of payback, while others were modified based on factors outside of what could be calculated.

The purpose of this step in the alternatives analysis was to calculate the benefit of each of the 600 projects with just two scenarios: one with no projects and one with all projects. After these two scenarios were run the payback calculation used the results to determine how much impact each road project had.

These calculations were based on three basic concepts; delay; primary and secondary benefits; change in vehicle miles traveled. Delay calculations measured a project's impact by the hours of delay it saves travelers. This is defined as the difference between the time to travel in light traffic compared to actual traffic conditions. The more cars on the road, the slower they travel, and the more delay increases.

The second concept is the idea of primary and secondary benefits. If a congested road is widened, vehicles will be able to travel faster and save time. This is the primary benefit of the project. Additionally, that project may alleviate traffic problems on other roads, improving their travel time as well. That is a secondary benefit. Thus, for all projects, both the primary and secondary delay improvements must be calculated.

The third, and final, concept is Vehicle-Miles-Traveled (VMT). This is a measurement of how much a road is being used. It is similar to volume, but introduces a length component which allows overall use of a project to be calculated. If two projects are built next to each other, the one with higher VMT is being used more.

To determine the payback metric for each project, two model scenarios were run. The scenario with every project will have much less delay because many new roads have been built or widened. For each road in the model, the first determination is how much of the improvement is primary and secondary. Once this is calculated, the primary benefit is simply added up along the length of widening projects. The last part, secondary benefit, is divided among neighboring projects based on the increase in their use (VMT). A widening on a facility with little use will have little to no secondary benefit. Widening a road with a large increase in the VMT indicates vehicles being taken off nearby roads creating a lot of secondary benefit.

The primary and secondary benefits are added together and compared to the costs. The cost of the project divided by its annual delay benefit provides a number that describes the years required for a project to pay for itself. It's important to point out that this number is not the absolute, actual payback metric of the project for a number of reasons. For one, road widening projects have other benefits, like safety, which are not included in this calculation. Instead, this payback number is only good in comparing projects to each other in a relative sense. A project with a payback period of 1.5 years is a good indicator that the project could be a more cost-effective choice than another taking 10 years.

6.5 Performance Evaluation Measures

Evaluation measures provide a comparative set of metrics for statistical analyses between transportation systems and land use scenarios. Comparisons between transportation systems and land use scenarios can be performed in a number of variations. The comparisons as shown in each evaluation measure table on the next two pages also validate the usefulness of the Triangle Regional Model as a tool to perform travel forecasts and create output necessary for staff, elected officials, and the public to determine the best approach to invest limited financial resources in the regional transportation system.

Figure 6.5.1 compares the transportation network performance for the Capital Area MPO and Durham-Chapel Hill-Carrboro MPO planning areas for the Year 2010, Year 2040 Deficiency network, and the 2040 Metropolitan Transportation Plan network. The Year 2010 represents the current state of the system. The Year 2040 Deficiency, or E+C (existing plus committed), network includes only those projects that will be operational in the next few years , but serving the forecast Year 2040 population and employment. This is the “no build” scenario. The 2040 system represents the highway and transit networks from the 2040 MTP, serving the forecast Year 2040 population and employment.

The performance evaluation measures in this summary table are system-wide metrics and therefore do not provide performance information on specific roadways or travel corridors, or at the scale of a municipality or type of area (e.g., urban and suburban). The congestion maps (V/C maps), presented in Section 6.3, provide a more localized picture of transportation performance for individual roadways or roadway segments. The conclusions drawn from the performance evaluation measures (system-wide) and congestion maps (roadway specific) tend to be similar. For example, the 2040 Deficiency congestion map illustrates a high degree of regional congestion as compared to the 2010 congestion map. This is validated by comparing performance measure values for the 2040 Deficiency and 2040 MTP networks such as daily “Vehicle Hours Traveled” (VHT daily – Row 1.2). Vehicle Hours Traveled is highest for the 2040 Deficiency roadway network as compared to the 2010 base year and 2040 MTP networks.

Figure 6.5.1: Performance Evaluation Measures By Transportation System

		2010 System		**Existing + Committed System**		**2040 System**	
1	**Performance Measures**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**
1.1	Total Vehicle Miles Traveled (VMT-daily)						
1.1.1	All Facility+Centroid Connectors	31,018,970	13,217,550	57,534,876	21,281,636	56,644,594	20,884,276
1.1.2	All Facility (no Centroid Connectors)	28,834,792	12,430,435	53,150,751	19,842,072	52,440,275	19,514,455
1.2	Total Vehicle Hours Traveled (VHT-daily)						
1.2.1	All Facility+Centroid Connectors	755,779	312,669	1,935,342	614,488	1,496,308	538,533
1.2.2	All Facility (no Centroid Connectors)	609,607	260,012	1,641,149	517,982	1,214,310	446,706
1.3	Average Speed by Facility (miles/hour)						
1.3.1	- Freeway	64	63	54	55	61	60
1.3.2	- Arterial	46	42	40	37	46	39
1.3.3	- All Facility	51	53	43	46	49	50

		2010 System		Existing + Committed System		2040 System	
		CAMPO	DCHC	CAMPO	DCHC	CAMPO	DCHC
1.4	Peak Average Speed by Facility (miles/hour)						
1.4.1	- Freeway	62	62	49	52	57	58
1.4.2	- Arterial	45	41	36	35	44	37
1.4.3	- All Facility	50	51	39	43	46	48
1.5	Daily Average Travel Length - All Person Trips						
1.5.1	- Travel Time	15.1	14.0	19.7	15.4	16.7	14.4
1.5.2	- Travel Distance	7.3	6.3	7.6	5.9	7.9	6.0
1.6	Daily Average Travel Length - Work Trips						
1.6.1	- Travel Time	20.1	17.7	30.1	19.4	23.2	18.0
1.6.2	- Travel Distance – Work Trips	11.1	9.1	11.8	8.0	12.3	8.4
1.7	Peak Average Travel Length - All Person Trips						
1.7.1	- Peak Travel Time	16.0	14.8	22.5	16.7	17.9	15.4
1.7.2	- Peak Travel Distance	7.8	6.7	7.7	6.1	8.2	6.4
1.8	Daily Average Travel Length - All Commercial Vehicle Trips						
1.8.1	- Travel Time	15.8	15.0	19.0	17.2	16.8	15.9
1.8.2	- Travel Distance	8.9	8.3	9.2	8.5	9.3	8.6
1.9	Daily Average Travel Length - Truck Trips						
1.9.1	- Travel Time	15.9	15.3	19.1	17.4	16.9	16.2
1.9.2	- Travel Distance	9.1	8.5	9.2	8.8	9.4	8.9
1.10	Hours of Delay (daily)	68,576	27,446	629,340	139,455	231,744	77,074
1.10.1	Truck Hours of Delay (daily)	2,449	1,086	14,495	4,742	5,887	2,554
1.11	Percent of VMT experiencing congestion - All Day						
1.11.1	- Freeway	4%	2%	24%	17%	12%	6%
1.11.2	- Arterial	4%	3%	20%	15%	8%	7%
1.11.3	- All Facility	3%	2%	19%	14%	8%	6%
1.12	Percent of VMT experiencing congestion - Peak						
1.12.1	- Freeway	6%	3%	39%	31%	20%	11%
1.12.2	- Arterial	6%	5%	33%	23%	13%	12%
1.12.3	- All Facility	5%	3%	30%	23%	13%	10%
1.12.4	- Designated truck routes	3%	5%	22%	17%	8%	8%
1.12.5	- Facilities w/bus routes	4%	4%	23%	20%	11%	7%

		2010 System		Existing + Committed System		2040 System	
2	**Mode Share Measures**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**
2.1	All Trips - Daily						
2.1.1	- Drive alone (single occupant vehicle -SOV)	2,000,471	864,965	3,712,137	1,535,469	3,716,238	1,522,001
2.1.2	- Carpool (Share ride)	1,660,871	683,083	3,140,077	1,184,575	3,150,006	1,185,196
2.1.3	- Bus	28,927	50,579	45,205	71,588	54,102	74,735
2.1.4	- Rail					28,234	25,459
2.1.5	- Non-Motorized (Bike and Walk)	221,319	176,554	447,650	281,839	445,900	310,467
2.2	Work Trips - Daily						
2.2.1	- Drive alone (single occupant vehicle -SOV)	582,193	270,716	1,060,142	473,750	1,063,569	467,747
2.2.2	- Carpool (Share ride)	81,765	35,360	154,206	61,545	148,462	60,956
2.2.3	- Bus	8,236	12,852	11,422	19,080	18,545	21,791
2.2.4	- Rail					7,896	8,556
2.2.5	- Non-Motorized (Bike and Walk)	17,344	16,343	33,031	25,102	35,845	29,316
2.3	All Trips - Peak Hours						
2.3.1	- Drive alone (single occupant vehicle -SOV)	1,104,456	483,159	2,034,359	845,886	2,043,639	846,516
2.3.2	- Carpool (Share ride)	1,009,310	411,958	1,901,194	704,589	1,919,098	712,182
2.3.3	- Bus	15,012	25,416	21,102	34,741	28,064	36,190
2.3.4	- Rail					15,476	14,634
2.3.5	- Non-Motorized (Bike and Walk)	126,813	101,821	276,518	165,869	261,839	177,083

3	**Transit Measures**	**2010 System**	**Existing + Committed System**	**2040 System**
3.1	Transit Ridership (by "Production Ends")	Region	Region	Region
3.1.1	- TTA (Including Rail)	5,362	8,853	56,557
3.1.2	- CAT	16,639	22,957	44,700
3.1.3	- CHT	26,788	38,460	48,901
3.1.4	- DATA	17,637	25,924	33,253
3.1.5	- NCSU	12,147	21,332	16,491
3.1.6	- DUKE	14,007	17,358	14,457
3.1.7	- OPT	N/A	N/A	N/A
3.1.8	- CARY	1,412	2,136	13,524
3.1.9	Total	93,988	137,020	227,878
3.2.1	Regional Rail (Durham-Wake)	N/A	N/A	8,720
3.2.3	Light Rail (Durham-Orange)	N/A	N/A	19,099
3.2.5	Light Rail (Wake)	N/A	N/A	18,003
3.3	Total Rail Ridership	N/A	N/A	45,822

		2010 System		Existing + Committed System		2040 System	
4	**Demographic Measures**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**	**CAMPO**	**DCHC**
4.1	Population	1,060,192	403,494	2,014,027	632,102	1,989,641	636,059
4.2	Employment	532,365	261,566	838,976	427,876	841,164	427,893
4.3	Total Daily Person Trips	3,911,590	1,775,182	7,345,069	3,073,472	7,394,482	3,117,861
4.3.1	Work Person Trips	689,539	335,271	1,258,803	579,478	1,274,320	588,368
4.4	Total Daily CV Trips	291,587	137,279	431,889	211,324	430,351	210,500
4.4.1	Daily Truck Trips	131,132	57,715	187,233	85,991	185,497	85,165
5	**Other Measures**						
5.1	Lane Miles	6,174	2,472	6,426	2,548	7,800	2,786

Notes:

N/A = Not available

Travel time is in minutes, and travel distance is in miles.

CV = Commercial vehicles (which includes large and small trucks and vans).

Trucks = Subset of Commercial Vehicles that includes only large trucks.

Transit ridership is higher than transit trips because a trip involving a transfer counts as two riders 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)

Key points from this section:

- The starting point for analyzing our choices is to understand how our communities' comprehensive plans envision guiding future growth.
- The next step is to make our best estimates of the types, locations and amounts of future population and job growth based on market conditions and trends and community plans.
- Based on these forecasts, we can look at future mobility trends and needs, and where our transportation system may become deficient in accommodating these trends and meeting these needs.
- Working with a variety of partners and based on public input, we then develop different transportation system alternatives and analyze their performance.
- We can compare the performance of system alternative s against one another and to performance targets derived from our goals and objectives.