# The Capital Area MPO 2030 Long Range Transportation Plan

## The Triangle Regional Model

A travel demand model, such as the Triangle Regional Model, uses socio-economic, demographic, land use, and transportation data to forecast the number and types of trips (car, bus, and walk) that will be generated in the years to come. The model produces output that can determine the effectiveness and efficiency of the proposed transportation network, essentially, how it will serve demand. The TRM is capable of producing specific and aggregate information on congestion, vehicle miles and hours of travel, average trip lengths, mode share, and other important transportation network performance measures. Deficiency analyses are conducted from which future inadequacies in the Triangle's transportation system can be identified. The Institute for Transportation Research and Education (ITRE) operates the TRM at the behest of a partnership that includes the Capital Area MPO (CAMPO), the DCHC MPO, North Carolina Department of Transportation (NCDOT), and Triangle Transit Authority (TTA).

Forecasts of trip and travel volumes have been derived from the Triangle Regional Model and are presented in figure 3-2 for these areas:

Region: The entire Triangle Regional Model Area (Shown in figure below) CAMPO: The area within the Capital Area MPO boundary (Wake County)



Figure 3-1: Triangle Regional Model Boundary

### Figure 3-2: CAMPO/DCHC 2030 LRTP Performance Measures

	_			
	2002	2030	Change	Annual Rate
DCHC	363,993	558,343	53%	1.54%
CAMPO	728,489	1,420,828	95%	2.41%
Region	1,200,533	2,325,254	94%	2.39%

		Total Trips			
		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	1,062,061	1,701,278	1,764,557	66%	1.83%
CAMPO	1,808,437	3,890,735	3,890,810	115%	2.77%
Region	3,059,371	6,075,401	6,188,587	102%	2.55%

	Total Vehicles Miles of Travel (VMT)					
		2030 Data 2010				
	2002	Network	2030	Change		
DCHC	10,477,762	19,829,253	19,281,767	84%		
CAMPO	20,046,452	44,563,756	44,872,951	124%		

Region	33,735,444	72,915,480	72,090,271	114%	2.75%		
Total Vehicles Hours of Travel (VHT)							
	Total ve	2030 Data 2010			Annual		
	2002	2030 Data 2010	2020	<b>C</b> h	Annual		
	2002	Network	2030	Change	Rate		
DCHC	264,131	466,601	466,582	77%	2.05%		
CAMPO	490,498	1,704,693	1,234,836	152%	3.35%		
Region	821,546	2,571,948	1,929,205	135%	3.10%		

26.3

25.1

Average Vehicle-Miles per Trip (All Purposes)					
		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	9.87	11.66	10.93	11%	0.37%
CAMPO	11.08	11.45	11.53	4%	0.14%
Region	11.03	12.00	11.65	6%	0.20%

Т	Total Percent VMT at Congestion - Total Facilities					
		2030 Data 2010				
	2002	Network	2030	С		
IC	11.6	39.1	22.8			

49.1

44.7

	Annual
Change	Rate
97%	2.46%
117%	2.81%
122%	2.89%

Annual

Rate

2.20%

2.92%

Total Percent VIII at Congestion - Freeways	<b>Total Percent</b>	VMT at	Congestion - Freeways	
---	----------------------	--------	-----------------------	--

		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	23.4	44.6	30.7	31%	0.97%
CAMPO	6.1	42.0	22.7	270%	4.79%
Region	10.9	44.1	25.1	130%	3.02%

#### **Total Percent VMT at Congestion - Other Facilities**

		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	6.9	32.5	12.7	86%	2.24%
CAMPO	15.6	52.2	29.7	91%	2.34%
Region	12.3	44.9	24.9	103%	2.56%

Note: CAMPO = (Wake County)

12.1

11.3

DCHC

CAMPO

Region

Total Employment					
				Annual	
	2002	2030	Change	Rate	
DCHC	255,328	441,611	73%	1.98%	
CAMPO	391,815	869,658	122%	2.89%	
Region	679,213	1,338,475	97%	2.45%	

Total Daily Trips / Person (based on Population)					
		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	2.92	3.05	3.16	8%	0.29%
CAMPO	2.48	2.74	2.74	10%	0.35%
Region	2.55	2.61	2.66	4%	0.16%

|--|

	į	2030 Data 2010			Annua
	2002	Network	2030	Change	Rate
DCHC	28.79	35.51	34.53	20%	0.65%
CAMPO	27.52	31.36	31.58	15%	0.49%
Region	28.10	31.36	31.00	10%	0.35%

Total Daily Vehicle Minutes / Person (based on Population)

		2030 Data 2010			Annual
	2002	Network	2030	Change	Rate
DCHC	43.54	50.14	50.14	15%	0.51%
CAMPO	40.40	71.99	52.15	29%	0.92%
Region	41.06	66.37	49.78	21%	0.69%

Average Vehicle-Minutes per Trip (All Purposes)						
		2030 Data 2010			Annual	
	2002	Network	2030	Change	Rate	
DCHC	14.9	16.5	15.9	6%	0.22%	
CAMPO	16.3	26.3	19.0	17%	0.56%	
Region	16.1	25.4	18.7	16%	0.53%	

Mode Share - DCHC						
		2030 Data 2010			Annua	
	2002	Network	2030	Change	Rate	
Drive alone	63.3%	59.5%	61.7%	-2%	-0.09%	
Carpool	36.1%	37.5%	35.0%	-3%	-0.11%	
Transit	0.6%	3.1%	3.3%	464%	6.38%	

Mode Share - CAMPO						
		2030 Data 2010			Annua	
	2002	Network	2030	Change	Rate	
Drive alone	62.0%	62.9%	64.8%	5%	0.16%	
Carpool	36.9%	36.1%	34.2%	-7%	-0.27%	
Transit	1.1%	0.9%	0.9%	-12%	-0.45%	

Mode Share - Region						
		2030 Data 2010			Annua	
	2002	Network	2030	Change	Rate	
Drive alone	61.7%	62.1%	64.5%	5%	0.16%	
Carpool	36.9%	36.5%	33.9%	-8%	-0.30%	
Transit	1.2%	1.5%	1.6%	27%	0.86%	

## **Regional Trends**

The following maps show Average Daily Traffic Volumes for 2002 and 2030 as predicted by the Triangle Regional Model. You'll notice the highway network is simplified and taken directly from the Triangle Regional Model. Thicker lines depict roadways with higher traffic volumes; thinner lines represent segments carrying lesser volumes. The colors of the segments correspond with Volume/Capacity ratios, and greater Volume/Capacity ratios correspond with more congestion. A Volume/Capacity ratio below 1.0 is indicative of a relatively free flowing roadway with little or no congestion. Once the Volume/Capacity ratios greater than 1.2 represent roadways which are consistently congested throughout and beyond the peak hours of travel.

It is predicted that between now and 2030 the population of the Triangle will increase by 94% with the Vehicle Miles Traveled growing by 114% (See figure 3-2). Future stress on the regional transportation network is exemplified by the high levels of congestion predicted in 2030. Even with a substantial amount of expansion in the physical capacity (lane miles) of the region's transportation network, in the year 2030, 26.3% of the vehicle miles traveled in Wake County will be on congested roadways (up from 12% in 2002). Trip lengths in Wake County are forecasted to increase; model runs indicate that people will spend an average of about 30 more minutes in their cars each day.

In the Durham Chapel-Hill Carrboro MPO the amount of congestion is expected to climb as well, albeit at a much slower rate. This can be attributed to growth limits introduced in Durham County, and major investments predicted to improve the extent and quality of transit service in the DCHC planning area.



Figure 3-3: US 70 between Garner and Clayton



