

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 2008. These options were further reduced to a “preferred option” that incorporated a road network, a transit network, and light rail transit. A series of modifications to the road network were made from December, 2008 through February, 2009. The resulting road, transit, and rail networks were endorsed by the TACs of both MPOs, and modeled by the Triangle Regional Model Service Bureau.

## 6.5 Performance Evaluation Measures

The evaluation measures provide a comparative set of 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 in the regional transportation system. Figure 6.5.1 compares the transportation network performance from a regional, Capital Area MPO, and Durham-Chapel Hill-Carrboro MPO perspective for the Year 2005, Year 2035 using only an “Existing plus Committed” network, and the 2035 network as recently endorsed by both MPOs. The 2035 E+C congestion map (V/C map) presented in the previous section (section 6.4) illustrates a high degree of regional congestion as compared to the 2005 V/C map; but the performance measure values for the 2035 E+C also validates the illustration by comparing daily “Vehicle Hours Traveled” (VHT daily – Row 1.2). Vehicle Hours Traveled is highest for the 2035 E+C highway network as compared to the 2005 base year and 2035 LRTP 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.

Figure 6.5.1 Evaluation Measures

TRM LRTP Evaluation Measures										
Comparison of Performance Measures		2005 Baseline			2035 Existing plus Committed			Endorsed 2035 LRTP		
Measures		Region	CAMPO	DCHC	Region	CAMPO	DCHC	Region	CAMPO	DCHC
<b>1</b>	<b>Performance Measures</b>									
1.1	Total VMT (daily)	37,898,756	25,012,126	10,673,559	73,245,842	50,861,790	17,397,077	73,861,276	51,472,776	17,603,017
1.2	Total VHT (daily)	814,486	537,890	234,968	2,218,639	1,644,052	459,072	1,826,903	1,317,244	406,044
1.3	Average Speed by Facility (miles/hour)									
1.3.1	Freeway	62.9	63.8	60.4	54.5	52.1	57.1	59.2	57.8	60.6
1.3.2	Arterial	44.5	45.1	40.1	38.1	37.5	35.5	42.7	42.6	39.2
1.3.3	All Facility	50.7	50.5	49.9	42.3	40.6	44.6	46.9	45.5	49.5
1.4	Peak Average Speed by Facility (miles/hour)									
1.4.1	Freeway	61.6	62.5	59.0	49.2	45.3	54.2	56.8	54.8	59.1
1.4.2	Arterial	43.5	44.0	39.1	35.1	33.9	33.6	41.1	40.7	38.2
1.4.3	All Facility	49.6	49.5	48.8	38.5	36.2	42.2	45.0	43.4	48.1
1.5	Average Travel Time - All Trips	14.04	14.65	14.78	16.72	17.72	17.15	15.42	16.13	15.94
1.6	Average Travel Time - Work Trips	18.45	19.38	19.39	25.76	27.85	25.79	21.93	23.21	22.45
1.7	Peak Average Travel Time - All Trips	15.55	16.30	16.60	19.86	21.28	20.50	17.52	18.43	18.28
1.8	Hours of Delay (daily)	92,958	62,923	28,474	781,421	646,383	112,862	407,045	323,917	66,791
1.8.1	CV Hours of Delay (daily)	3,503	2,247	1,200	23,637	18,494	4,580	13,336	10,016	2,865
1.9	Percent of VMT experiencing congestion - All Day									
1.9.1	Freeway	1.4%	1.0%	2.3%	13.4%	18.2%	5.8%	5.5%	7.7%	2.3%
1.9.2	Arterial	2.3%	2.5%	1.9%	15.1%	17.9%	9.2%	6.4%	7.6%	3.0%
1.9.3	All Facility	1.5%	1.5%	1.8%	13.0%	16.2%	6.4%	5.3%	6.5%	2.5%
1.1	Percent of VMT experiencing congestion - Peak									
1.10.1	Freeway	2.5%	1.7%	4.1%	23.5%	31.7%	10.5%	9.0%	12.4%	3.6%
1.10.2	Arterial	3.5%	3.9%	3.1%	23.5%	28.2%	13.8%	9.8%	11.6%	4.5%
1.10.3	All Facility	2.4%	2.4%	3.0%	21.0%	26.1%	10.4%	8.2%	10.2%	3.7%
1.10.4	Degree of congestion (V/C>1) on designated truck routes	2.6%	2.8%	2.7%	14.4%	17.5%	8.4%	7.1%	8.8%	3.9%
1.10.5	Degree of congestion (V/C>1) on facilities w/ bus routes	2.6%	2.0%	3.2%	15.4%	19.8%	8.7%	6.8%	8.7%	2.8%
<b>2</b>	<b>Mode Share Measures</b>									
2.1	Number Mode Choice - All Trips									
2.1.1	Drive alone (single occupant vehicle - SOV)	2,973,888	2,086,422	1,012,202	6,048,183	4,597,094	1,660,787	6,040,374	4,604,838	1,666,243
2.1.2	Carpool (share ride)	2,054,835	1,453,868	685,476	4,067,176	3,105,362	1,095,943	4,109,989	3,146,850	1,104,137
2.1.3	Bus	66,563	24,530	44,441	103,988	39,665	69,664	125,208	44,268	87,234
2.1.4	Rail	0	0	0	0	0	0	16,233	11,705	9,076
2.2.5	Non-Motorized (Bike and Walk)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2.3	Number Mode Choice - Non-Work Trips									

TRM L RTP Evaluation Measures										
Comparison of Performance Measures		2005 Baseline			2035 Existing plus Committed			Endorsed 2035 L RTP		
Measures		Region	CAMPO	DCHC	Region	CAMPO	DCHC	Region	CAMPO	DCHC
2.2.5	Non-Motorized (Bike and Walk)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2.3	Number Mode Choice - Non-Work Trips									
2.3.1	Drive alone (single occupant vehicle - SOV)	2,038,311	1,398,900	671,996	4,211,854	3,154,639	1,098,746	4,199,906	3,146,564	1,099,902
2.3.2	Carpool (share ride)	1,896,367	1,340,851	626,238	3,757,494	2,867,576	998,378	3,804,046	2,908,406	1,009,078
2.3.3	Bus	47,985	17,190	32,176	79,608	30,602	53,261	88,439	30,671	61,834
2.3.4	Rail	0	0	0	0	0	0	21,851	15,837	11,508
2.3.5	Non-Motorized (Bike and Walk)	392,503	249,805	128,939	822,259	586,303	199,646	835,531	598,151	201,231
2.4	Daily Bicycle and Pedestrian Trips	406,779	259,179	133,302	852,248	608,028	206,552	866,118	620,407	208,207
<b>3</b>	<b>Transit Measures</b>									
3.1	Average Weekday Transit Ridership									
3.1.1	TTA (including Rail)	3,449			4,900			37,046		
3.1.2	CAT	12,998			22,874			35,760		
3.1.3	CHT	29,536			44,990			65,864		
3.1.4	DATA	13,801			23,312			47,590		
3.1.5	NCSU	12,599			20,080			14,042		
3.1.6	DUKE	8,924			14,642			11,546		
3.1.7	OPT									
3.1.8	CARY	N/A			1,557			5,824		
3.1.9	Total	81,309			132,358			217,672		
3.2	Ridership by Routes									
3.2.1	Selma-Wake Forest NB (ID: 439)							748		
3.2.2	Selma-Wake Forest SB (ID: 440)	1,311,565						837		
3.2.3	Apex-Cary Light Rail NB (ID: 441)	683,139						1,638		
3.2.4	Apex-Cary Light Rail SB (ID: 442)	5,502,066						1,573		
<b>4</b>	<b>Demographics Measures</b>									
4.1	Population	1,311,565	880,490	375,052	2,646,987	1,949,831	551,362	2,647,122	1,951,817	549,763
4.2	Employment	683,139	439,715	227,208	1,332,378	905,568	389,249	1,331,909	906,523	388,647
4.3	Total Daily Trips	5,502,066	3,824,000	1,875,413	11,069,597	8,350,150	3,032,947	11,169,946	8,436,503	3,081,072
4.4	Total Daily Work Trips	1,126,898	817,252	416,063	2,198,381	1,711,029	682,913	2,220,171	1,736,872	697,516
4.5	Total Daily Non-Work Trips	4,375,167	3,006,747	1,459,350	8,871,215	6,639,120	2,350,033	8,949,775	6,699,631	2,383,556