# Comparing MTP Scenarios using Corridor Performance Measures



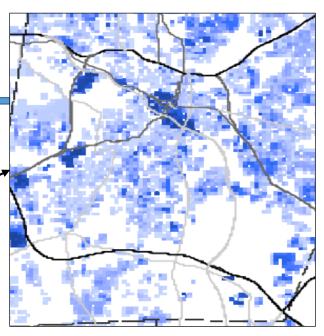
#### Scenarios to Compare

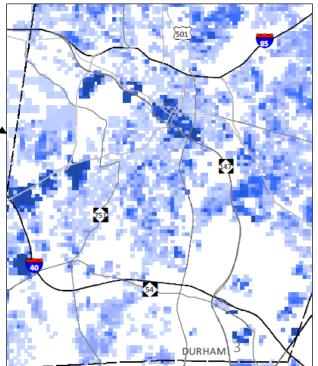
The DCHC MPO compared four different network scenarios with 2 different land use allocation scenarios (Community Plan/Aim High) for their 2045 MTP

- 2013 Baseline
- 2045 E+C
- Moderate 1: MTP/CP
- Moderate 3: MTP, Hwy+, No Fixed Guideway/Commuter Rail
- Aspirational1: MTP, Transit+/AIM High
- Aspirational2: MTP/AIM High

# MTP Scenarios

Scenario	Highway	Transit Network	SE Data
	Network		
Alternatives			
Moderate1- 2040 MTP	2040 MTP	2040 MTP (LRT, CRT, BRT)	Community Plan
Moderate3- Highway Enhanced/No Fixed Guideway	2040 MTP+	No Fixed Guideway (no LRT, CRT, BRT)	Community Plan
Aspirational1- Transit Enhanced	2040 MTP	Fixed Guideway+  • LRT to Carrboro  • 15min peak bus headway  • 30min off-peak bus headway	AIM High
Apirational2- 2040 MTP	2040 MTP	2040 MTP (LRT, CRT, BRT)	AIM High
Baseline and E+C			
<b>2013</b> – Baseline	2013	2013	2013
<b>2015</b> Baseline	2015	2015	2015 — interpolate SE Data
2045 E+C	E+C	E+C	Community Plan





#### Performance Measures

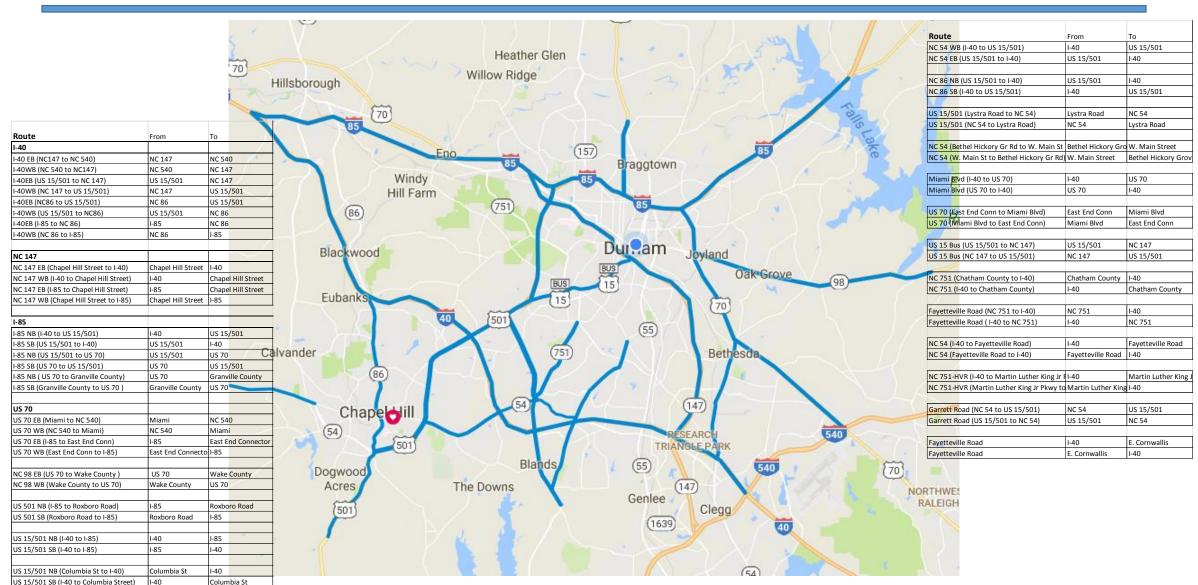
#### Corridors

Measures were calculated for selected travel corridors of the MPO for each Scenario. In addition to the travel time and speed, the travel time index and hourly cost of congestion indicate levels of congestion and are useful for measuring a corridor's performance:

The <u>Travel Time Index</u> indicates the level of congestion by dividing the peak period travel time by the free-flow travel time. For example, a TTI of 1.2 means that a 10-minute free-flow trip will take 12 minutes in the afternoon peak.

The <u>Hourly Cost of Congestion</u> shows the value of the additional time it takes for all the motorists, both car and truck, while traveling in that corridor under congested conditions.

#### Corridors Evaluated



### TransCAD - Shortest Path Skim (setup)

 Add the PM peak hour VMT and PM peak hour congested travel time to TransCAD network file, highway.net (length and FFtime are already in highway.net)

```
Step 1. Join the PM peak hour assignment result file, PMP2.bin to Highway_line.dbd (under \input\highway\)
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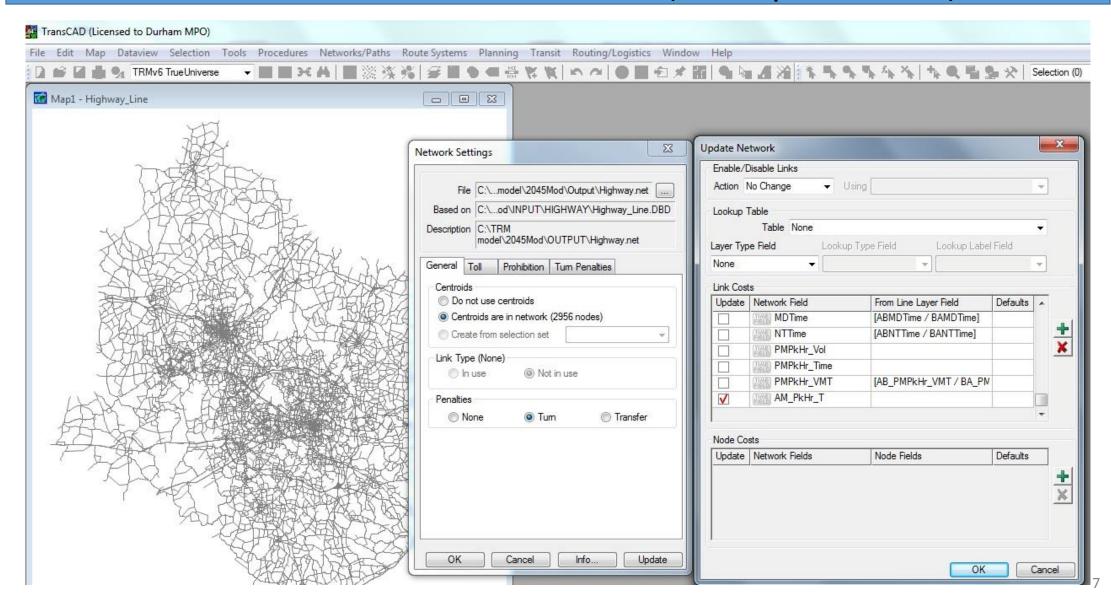
Step 2. Calculate PM peak hour VMT and travel time fields in the highway line file

```
Step 2. Add the PM peak hour VMT and travel time fields in the highway.net using update network, AB_PMPkHr_VMT=length*AB_PkFlow BA_PMPkHr_VMT=length*BA_PkFlow AB_PMPk_TT = length*60/AB_Pktime BA_PMPk_TT=length*60/BA_Pktime
```

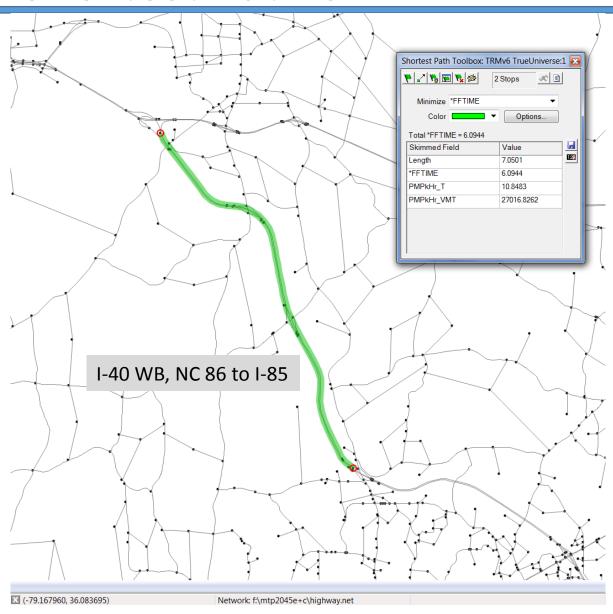
 Use TransCAD Geo file, e.g. Highway\_line.dbd with the network file to calculate the measures using Shortest Path tool

Field ID1 AB\_Flow\_PCE BA\_Flow\_PCE Tot Flow PCE AB\_Time BA\_Time Max\_Time AB\_VOC BA VOC Max\_VOC AB\_V\_Dist\_T BA\_V\_Dist\_T Tot\_V\_Dist\_T AB\_VHT BA\_VHT Tot VHT AB\_Speed **BA** Speed AB\_VDF BA\_VDF Max\_VDF AB\_Flow\_SOV2 BA\_Flow\_SOV2 AB\_Flow\_HOV2 BA\_Flow\_HOV2 AB\_Flow\_SUT2 BA\_Flow\_SUT2 AB\_Flow\_MUT2 BA\_Flow\_MUT2 AB Flow BA Flow Tot\_Flow 6

#### TransCAD - Shortest Path Skim (setup - cont.)



#### TransCAD - Shortest Path Skim



#### Performance Calculations by Scenario

2045 E+C PM Peak H	Hour																	
Corridor	From	То	Period	Direction	Length	FF TT	Peak Avg	Tot_Flow*L	Peak TT	Peak Speed	FF Speed	ПП	Total Veh	Total Veh	VO	T/hour	VOT	/hour/
						(min)	Volume	ength (all	(min)		(spd Limit)		Delay PP (min)	Delay PP			п	mile
							(Tot_Flow*L	links)						(hrs)				
							ength/Leng											
							th)		<u> </u>									
I-40								X	X									
I-40 EB (NC147 to NC 540)	NC 147	NC 540	PM Peak	Eastbound	3.43	3.12	8,257	28,317	6.38	32	66	2.0	26,876	448	\$	10,181	\$	2,968
I-40WB (NC 540 to NC147)	NC 540	NC 147	PM Peak	Westbound	3.26	2.97	7,744	25,220	4.53	43	66	1.5	12,090	201	\$	4,580	\$	1,406
I-40EB (US 15/501 to NC 147)	US 15/501	NC 147	PM Peak	Eastbound	9.52	8.61	6,522	62,110	20.89	27	66	2.4	80,140	1,336	\$	30,357	\$	3,188
I-40WB (NC 147 to US 15/501)	NC 147	US 15/501	PM Peak	Westbound	9.70	8.77	6,002	58,202	16.20	36	66	1.8	44,586	743	\$	16,889	\$	1,742
I-40EB (NC86 to US 15/501)	NC 86	US 15/501	PM Peak	Eastbound	4.23	3.85	3,637	15,374	6.38	40	66	1.7	9,187	153	\$	3,480	\$	823
I-40WB (US 15/501 to NC86)	US 15/501	NC 86	PM Peak	Westbound	4.42	4.03	4,377	19,365	12.14	22	66	3.0	35,480	591	\$	13,440	\$	3,038
I-40EB (I-85 to NC 86)	I-85	NC 86	PM Peak	Eastbound	7.25	6.56	2,996	21,717	8.10	54	66	1.2	4,619	77	Ş	1,750	\$	241
I-40WB (NC 86 to I-85)	NC 86	I-85	PM Peak	Westbound	7.05	6.09	3,832	27,017	10.85	39	69	1.8	18,218	304	\$	6,901	\$	979

Aspirational 2																		
Corridor	From	То	Period	Direction	Length	FF TT (min)	Peak Avg Volume (Tot_Flow*L ength/Leng th)	1	Peak TT (min)	Peak Speed	FF Speed (spd Limit)	ш	Total Veh Delay PP (min)	Total Veh Delay PP (hrs)	V	OT/hour	VOT/ł mi	
I-40																		
I-40 EB (NC147 to NC 540)	NC 147	NC 540	PM Peak	Eastbound	3.43	3.12	7,757	26,579	5.09	40	66	1.6	15,248	254	\$	5,776	\$	1,686
I-40WB (NC 540 to NC147)	NC 540	NC 147	PM Peak	Westbound	3.27	2.98	7,591	24,831	4.16	47	66	1.4	8,945	149	\$	3,388	\$	1,036
I-40EB (US 15/501 to NC 147)	US 15/501	NC 147	PM Peak	Eastbound	9.22	8.32	5,867	54,069	14.31	39	66	1.7	35,116	585	\$	13,302	\$	1,443
I-40WB (NC 147 to US 15/501)	NC 147	US 15/501	PM Peak	Westbound	9.32	8.42	5,915	55,122	14.08	40	66	1.7	33,453	558	\$	12,672	\$	1,360
I-40EB (NC86 to US 15/501)	NC 86	US 15/501	PM Peak	Eastbound	4.15	3.79	4,481	18,575	4.63	54	66	1.2	3,778	63	\$	1,431	\$	345
I-40WB (US 15/501 to NC86)	US 15/501	NC 86	PM Peak	Westbound	4.17	3.81	5,425	22,626	5.36	47	66	1.4	8,429	140	\$	3,193	\$	766
I-40EB (I-85 to NC 86)	I-85	NC 86	PM Peak	Eastbound	6.76	5.82	4,356	29,460	6.64	61	70	1.1	3,585	60	\$	1,358	\$	201
I-40WB (NC 86 to I-85)	NC 86	I-85	PM Peak	Westbound	6.71	5.79	4,821	32,363	6.95	58	70	1.2	5,596	93	\$	2,120	\$	316

# Performance Calculations – Summary Sheet

		Page	Hoor Tran	el Time (min.)		TTI				<b>7</b> 01/L==					VOT / I	kaar/mila				- 1	Peak Spee	d bu Corr	idor			Fr	oo Fla	ow Speed	bu Corridor		
		2013		2045 Mad-MTF	Mod- Arp-	Arp - MTP 2013 20	5 2045 E+C	Maderat Mader	at Arpirati Arpirat		015 Baro 204	15 E+C	Mod- Mod-	Arp - Arp -	2013			Maderat Mader	at Arpiration Ar				Mad-	Med-	Arp - A			2015 2045		lad- Arp	- Arp-
Fram	To	Barelin	e Bare	E+C	Huy+ Transit	Bareline Ba		o1: 2045 o3: 204	15 anal1: anal2:	Bareline	Year	_	MTP Huy+	Transit MTP	Bareline	Boro		o1: 2045 o3: 20	15 al1:2045 al	2:2045	Bareline Bare	E+C	MTP	Huyt	Transit	Bar	eline l	Baro E+C	MTP H	av+ Trans	vit MTP
NC 147	NC 540	3.	7 4.0	6.4 5.6	5.4 5.0	5.1 1.2	1.3 2.0	1.8 1.	7 1.6 1.6	\$ 1,506	2.391 \$	10.181 5	7,394 \$6,989	\$5,422 \$5,776	\$ 446	\$ 702	\$ 2.968	\$ 2.158 \$ 2.04	0 \$ 1,583 \$	1,686	54.8 50.	8 32.3	37.0	37.7	41.2	40.4	65.7	65.8 65.9	65.8	65.8 65	5.8 65.8
NC 540	NC 147	3.	5 3.6	4.5 4.0		4.2 1.1	1.2 1.5							\$3,613 \$3,388	\$ 298	\$ 385	\$ 1,406	\$ 831 \$ 85	4 \$ 1,105 \$	1,036	57.8 56	.1 43.1	49.5	49.2	46.5	47.2	66.0	66.0 65.8	65.8	65.8 65	5.8 65.8
US 15/501	NC 147	9.					1.3 2.4		2 1.7 1.7	\$ 3,027	4,880 \$	30,357	**** ****	**** ****	\$ 331	\$ 530	\$ 3,188	\$ 2,124 \$ 2,72	0 \$ 1,444 \$	1,443	56.2 52.	2 27.3	32.7	29.6	38.7	38.6	67.4	67.4 66.4	66.4	66.5 66	6.5 66.4
NC 147 NC 86	US 15/501 US 15/501	10.		16.2 14.6 6.4 4.5			1.3 1.8							\$ 1,441 \$ 1,431							54.5 52. 55.7 50	.0 35.9 4 39.8	38.3 54.9	37.2 57.6	40.0 53.7	39.7 53.7	67.3	67.4 66.3	66.3	65.4 66	5.4 66.4
US 15/501	NC 86	4.					1.3 3.0						4,786 \$3,109					\$ 1,147 \$ 74			55.3 50.	.7 21.9	41.7	47.4	46.5	46.7	66.3	65.8 65.8	65.8	65.8 65	5.7 65.7
1-85	NC 86	7.			6.7 6.6	6.6 1.1	1.2 1.2 1.2 1.8	1.1 1.	1 1.1 1.1	\$ 724 :	1,182 \$	1,750 \$	1,128 \$ 716	\$ 1,370 \$ 1,358						201	59.9 56.	.9 53.7	62.1	60.6	61.0		66.4	66.3 66.3	69.5	66.0 69.	9.7 69.7
NC 86	1-85	6.	6 6.8	10.8 7.5	7.6 7.0	6.9 1.1	1.2 1.8	1.3 1.	3 1.2 1.2	\$ 881	1,288 \$	6,901 \$	3,374 \$3,577	\$2,248   \$2,120	\$ 131	\$ 192	\$ 979	\$ 503 \$ 53	3 \$ 335 \$	316	61.5 59	.1 39.0	53.4	52.8	57.5	58.0	69.7	69.7 69.4	69.4	69.4 69	9.6 69.6
Chapel Hill Stre		9.		14.3 11.7	13.9 11.4	11.4 1.2	1.3 1.7	1.5 1.		\$ 2,002	3,659 \$	11,122 \$		\$8,158 \$8,168	\$ 243			\$ 1,156 \$ 1,42		992	51.2 48.	.2 33.6	41.5	35.5	43.3	43.2	61.1	64.2 57.3	63.6	57.5 63	3.2 63.2
1-40 1-85	Chapel Hill Str Chapel Hill Str			13.8 11.2 5.4 5.0	11.4 10.8 5.1 4.9	10.9 1.2 4.9 1.1	1.2 1.8 1.1 1.2	1.5 1. 1.1 1.	5 1.4 1.4 1 1.1 1.1	\$ 1,814	2,298 \$	12,921 \$	8,060 \$8,270	\$ 6,914 \$7,072 \$ 300 \$ 309	\$ 226	\$ 286	\$ 1,609	\$ 1,003   \$ 1,02	9 \$ 861 <b>\$</b>	880 71	53.9 52. 54.1 53.		42.9 52.5	42.4 51.5	44.6 53.3	44.3 53.2	63.8 56.9	64.3 63.0 56.9 56.8	63.6 56.8	63.1 63 56.8 56	3.1 63.1
Chapel Hill Stre	I-85	4.		6.2 5.2			1.1 1.4	1.2 1.	1 11 11	\$ 331	390 \$	2,188	1,171 \$ 1,025	\$ 865 \$1,005	\$ 79	\$ 93	\$ 518	\$ 278 \$ 24	4 \$ 206 \$			.1 40.9	49.0	49.6	50.4			57.0 56.7		56.7 56.	6.7 56.7
																													$\Box$	=	
1-40	US 15/501	10.	40.3	47.4	40.4	42 40	44 40	45 4	1 1 11	<b>\$</b> 340		43 244 4	2.072 45.024	42.024 42.04	A 34	A 55	A 4454	4 3/4 4 53	0 4 353 4	354	(5.0 (4	0 204	E4 0	62.2	E0.4	50.4		(0.3) (2.0	(7.0	(70 (	
US 15/501	1-40	10.		20.7 14.0	13.8 12.8	13.0 1.1	1.1 2.1	1.4 1.				18,672	7,703 \$7,843	\$5,799 \$6,202	\$ 57	\$ 118	\$ 1,662	\$ 686 \$ 69	8 <b>\$</b> 516 <b>\$</b>	552	63.2 60.	0 32.5	48.2	49.0	52.6	51,9	67.5	66.9 67.7	66.4	67.7 68	8.0 68.0
US 15/501	US 70	4.	4 4.4	6.0 6.1	6.2 5.3	5.3 1.1	1.1 1.4	1.4 1.	5 1.3 1.3	\$ 334	429 \$	4,472	4,736 \$6,687	\$3,574 \$3,651	\$ 78	\$ 100	\$ 1,040	\$ 1,102 \$ 1,55	3 \$ 830 \$	848	58.6 58	.1 42.9	42.4	41.7	48.6	48.4	62.0	62.0 60.6	60.6	63.5 63	3.5 63.5
US 70	US 15/501	4. ty 6.		4.9 4.8 17.9 17.4			1.0 1.1 1.2 3.0		1 1.1 1.1 1 1.7 1.7	\$ 154	211 \$	1,234 \$	1,127 \$ 1,300	\$1,027 \$1,036 \$8,704 \$8,956	\$ 36	\$ 49	\$ 288	\$ 264 \$ 30	4 \$ 240 \$	242	58.9 62. 60.6 58.	2 52.9	53.4 23.8	55.8 32.5	56.9 41.0			64.7 60.4	69.3	63.5 63. 69.3 69	3.5 63.5
US 70 Granville Count	Granville Coun	ty 6.					1.2 3.0							\$ 774 \$ 760							64.4 63.		60.1	63.4	62.6		68.0	68.6 68.5		69.0 69	9.0 69.0
		T		7.7	***										<u> </u>		,		T												
	NO. 540	7.	9 8.9	18.1 17.9	17.4 15.2	15.2 1.2						40.450	****			1	4 457	45.544 4.1.11	6 <b>\$</b> 2,449 <b>\$</b>	2.455					17.5	43.5		44.0	-	42.0	
Miami NC 540	NC 540 Miami	7.					1.4 2.9	2.9 Z. 1.6 1.					4.257 \$4.080	\$4,099 \$3,984							33.3 Z9. 35.4 33	.1 15.0	26.0	26.2	26.3	26.5	40.7	40.9 41.3	42.3	41.4 42	2.8 42.8
1-85	Eart End Conne	-c1 2.		3.4 2.5	2.6 2.6	2.6 1.1	1.1 1.1	1.1 1.	1 1.1 1.1					\$ 375 \$ 373							52.2 51		58.5	57.8	58.2			55.9 57.4		64.1 64	
Eart End Conno	1-85	2.	9 2.9	4.2 3.6	3.6 3.5	3.5 1.0	1.1 1.4	1.5 1.	5 1.4 1.4	\$ 84 5	125 \$	2,193	2,686 \$2,508	\$2,355 \$2,400	\$ 33	\$ 49	\$ 749	\$1,024 \$ 95	6 \$ 898 \$	915	53.3 52.	.6 42.0	43.3	44.1	44.9	44.7	55.9	55.9 57.4	64.7	64.7 64	4.7 64.7
US 70	Wake County	14.	8 15.9	36.9 31.1	30.3 22.4	22.7 1.3	1.4 2.9	2,6 2.	6 1.9 1.9	e 1350 ·	t 1256 e	13.052		\$8,004 \$8,286	e 152	<b>\$</b> 209	e 1473	e1455 e1%	2 4 903 4	935	35.9 33.	5 14.4	17.1	17.5	23.7	23.4	46.3	46.3 42.1	44.5	44.8 44	4.5 44.5
	US 70	12.					1.1 1.2							\$ 295 \$ 281						32	44.3 43.		41.1	41.5	41.5	41.5	46.3	46.3 42.1		44.8 44	
																													-		-
I-85 Raxbara Raad	Rexbera Road	5.		8.2 6.8 4.8 4.7			1.3 1.9 1.1 1.2	1.6 1. 1.1 1.						\$ 2,146 \$ 2,348 \$ 237 \$ 243						1,008	26.5 26.	.2 17.1	29.6	21.8 29.9	21.3 29.2	29.1	33.3	33.3 33.3	31.9	31.9 31	1.9 31.9
Naxoara Naga	1-02	1	4.0	4.0 4.1	4.1 4.0	4.0 1.1	1.1					571	110 3 140	\$ 251 \$ 245	. 100	. 103	* 123	. 10 . 0	1 102 1	104	E7.5 E7.	.4 69.7	27.0	27.7	E7.E	27.1	-				- 31.9
1-40	I-85	9.					1.2 2.6	2.3 2.						\$8,293 \$7,988							40.5 39.		20.4	19.8	27.8		48.4	48.4 45.2		46.3 48	
1-85	1-40	11.	0 11.1	16.7 17.3	17.1 14.2	14.2 1.3	1.4 1.9	2.0 2.	0 1.7 1.7	\$ 2,623	\$ 2,787 \$	8,488	*****	\$6,906 \$6,947	\$ 408	\$ 433	\$ 1,319	\$ 1,578 \$ 1,61	9 \$ 1,073 \$	1,079	35.0 34.	.9 23.1	22.3	22.6	27.2	27.1	47.2	47.6 44.1	45.1	45.4 47.	7.3 47.3
Calumbia St	1-40	14.	0 14.8	26.7 16.9	17.0 17.2	17.0 1.5	1.6 2.6	1.7 1.	7 1.6 1.6	\$ 2,818 9	3,284 \$	11,896 \$	6,957 \$ 7,183	\$5,267 \$5,099	\$ 504	\$ 587	\$ 2,062	\$ 1,244 \$ 1,28	4 \$ 941 \$	911	23.9 22.	.7 13.0	19.9	19.7	19.5	19.7	36.4	36.4 33.8	34.3	34.3 31	1.2 31.2
1-40	Calumbia St	13.	9 14.5	25.6 15.9	15.8 15.7	15.8 1.5	1.6 2.7	1.6 1.	7 1.5 1.5	\$ 2,998	3,500 \$	12,708	6,422 \$6,422	\$4,928 \$4,941	\$ 540	\$ 631	\$ 2,292	\$ 1,15% \$ 1,15	6 <b>\$</b> 887 <b>\$</b>	890	24.0 23.	.0 13.0	20.9	21.0	21.2	21.2	36.3	36.3 34.7	34.3	35.1 32	2.1 32.1
1-40	US 15/501	7.	1 7.8	17.1 10.3	10.6 8.9	8.9 1.6	1.7 3.6	2.1 2.	2 1.9 1.9	e 213d	2511 8	13 005 4	7 725 \$ 7 902	\$5,387 \$5,534	<b>e</b> 778	e 916	e d 7d2	e > 215   e > 26	2 4 1963 4	2 017	23.1 21.	.2 9.6	16.1	15.7	18.6	18.4	37.1	35.7 34.3	34.5	34.7 34	4.5 34.5
US 15/501	1-40	7.	9 8.8	23.0 12.6	12.4 11.7		2.0 4.8	2.6 2.						**** ****							20.9 18.	.6 7.1		13.2	14.0			37.1 34.3		34.6 34	
																								-							-
US 15/501	I-40 US 15/501	13.					1.3 2.4 1.3 2.2	2.0 1. 1.8 1.		\$ 1,401	1,767 \$	2 153 4	7,167 \$7,148	\$5,387 \$5,395 \$3,991 \$4,020	\$ 256	\$ 323	\$ 2,039 \$ 1,493	\$ 1,309   \$ 1,30	5 \$ 985 <b>\$</b>	985 736	24.3 23.		14.9 15.8	15.0 15.6	16.8			30.4 29.2		29.2 29.	
1.40	05 151501	1	7 13.3	24.0	21.0	10.1				1 .,	1,420	V,122	3,540 35,001	42,771 44,020		201	• 1,472	* /// * ///	· · · · · · ·	120	LJ.V EE.	. 15.5	15.0	15.0			-				
	NC 54	7.					1.1			\$ 94 :				\$ 278 \$ 269		\$ 33		\$ 60 \$ 6		54	39.0 35.	.9 36.8	34.5	34.4	34.8	34.8	41.0	39.4 41.0		39.4 39.	
NC 54	Lyztra Road	7.	5 10.0	17.9 14.7	14.6 12.9	13.1 1.2	1.3 2.5	1.9 1.	9 1.7 1.7	\$ 850	876 \$	8,634 \$	3,977 \$3,860	\$2,738 \$2,864	\$ 175	\$ 174	\$ 1,777	\$ 792 \$ 76	9 \$ 545 \$	570	32.9 30	.1 16.3	20.5	20.7	23.3	23.0	41.0	39.4 41.0	39.4	39.4 39.	9.4 39.4
BotholHickory	W. Main Stroot	4	1 4.4	4.4 4.4	4.4 4.3	4.3 1.0	1.1 1.1	1.1 1.	1 1.1 1.1	\$ 22 9	76 \$	140 \$	141 \$ 144	\$ 112 \$ 112	\$ 7	\$ 23	\$ 42	\$ 42 \$ 4	3 \$ 34 \$	34	48.6 45.	.8 45.7	45.6	45.6	46.3	46.3	50.1	49.5 50.2	50.2	50.2 50.	0.2 50.2
W. Main Street	Bethel Hickory	·G 4.	2 4.5	7.0 5.6	5.7 4.7	4.7 1.0	1.1 1.8	1.4 1.	4 1.2 1.2	\$ 44 5	133 \$	1,757 \$	851 \$ 898	\$ 313 \$ 312	\$ 13	\$ 40	\$ 527	\$ 255 \$ 26	9 \$ 94 \$	94	47.9 44.	.3 28.4	35.6	35.1	42.5	42.5	50.1	49.5 50.2	50.2	50.2 50.	0.2 50.2
1-40	US 70		1 8.2	10.4 9.0	9.3 8.5	8.6 1.2	12 15	13 1	4 12 12	e 743	778 \$	2.163 4	1.140 \$ 1.327	\$ 715 \$ 775	<b>t</b> 182	<b>t</b> 190	<b>e</b> 533	<b>e</b> 281 <b>e</b> 32	7 6 176 6	191	30.1 30.	0 23.4	27.0	26.1	28.6	28.3	37.0	37.0 35.4	35.4	35.4 34	4.7 34.7
US 70	1-40	7.			7.8 7.8		1.1 1.2	1.1 1.	1 1.1 1.1	\$ 117 5	195 \$	680 \$	305 \$ 328	\$ 309 \$ 325	\$ 29	\$ 48	\$ 167	\$ 75 \$ 8	1 \$ 76 \$	80		2 29.3	31.7	31.4	31.2	31.1	37.0	37.0 35.4		35.4 34	
		3	1 3.5	1.6 1.7	1.8 1.8	1.8 1.3	1.5 1.1																	58.5			42.8	42.8 68.3	66.0	66.0 63	25 625
Eart End Conn Miami Blud	Eart End Conn	3	1 3.6		1.8 1.8		1.5 1.1 1.6 1.0	1.1 1.	1 1.1 1.1 1 1.1 1.1	\$ 496	929 6	72 6	156 \$ 146	\$ 304 \$ 301 \$ 163 \$ 160	\$ 297	\$ 502 \$ 557	\$ 97 \$ 43	\$ 186 \$ 21 \$ 43 \$ 8	7 6 97 6	95	31.8 27.	.4 63.6 .6 65.4	59.1 61.6	61.8	57.1 59.1			42.8 68.3		66.0 63. 65.9 63.	
																						7211	7.117	**		F71E	-		-		-
US 15/501	NC 147	7.					1.1 1.4			\$ 218 9	253 \$	1,229 \$	703 \$ 793	\$ 575 \$ 597	\$ 56	\$ 65	\$ 315	\$ 180 \$ 20	8 \$ 148 \$	153	29.5 29.				25.0	24.9	33.1	33.1 30.9	30.9	31.2 30	0.9 30.9
NC 147	US 15/501	8.	2 8.3	10.5 9.7	9.8 9.3	9.5 1.2	1.2 1.4	1.3 1.	3 1.3 1.3	\$ 357 5	407 \$	1,118   1	779 \$ 831	\$ 613 \$ 664	\$ 93	\$ 106	\$ 290	\$ 203   \$ 21	7 \$ 159 \$	173	28.2 27.	.8 22.0	23.7	23.4	24.8	24.3	33.1	33.4 31.1	31.2	31.2 31	1.4 31.2
Chatham Coun	1-40	4.	3 4.5			4.4 1.2	1.2 1.9	1.2 1.	2 1.1 1.1	\$ 153 5	242 \$	1,324 \$	397 \$ 533	\$ 257 \$ 257	\$ 56	\$ 89	\$ 485	\$ 146 \$ 19	5 \$ 94 \$	94	37.9 36	.1 21.8	34.2		37.1	37.1	43.6	43.6 40.5	40.4	40.4 42	2.1 42.1
	Chatham Coun	ty 6.	7 8.0	17.4 6.6	8.7 6.3	6.4 1.8	2.1 4.3	1.6 2.	1 1.6 1.6	\$ 1,219	1,878 \$	6,529	1,795 \$3,630	\$ 1,790 \$ 1,834	\$ 447	\$ 689	\$ 2,393	\$ 658 \$ 1,33	1 \$ 656 \$	672	24.4 20.	.5 9.4	25.0	18.9	25.9	25.7	43.6	43.6 40.5	40.4	40.4 42	2.1 42.1
NC 751	1-40	5.	0 5.1	5.3 4.5	4.5 4.5	4.5 1.2	1.3 1.3	1.1 1.	2 1.2 1.1	1 8 184 4	222 4	329 4	127 \$ 146	\$ 123 \$ 122	<b>e</b> 76	<b>8</b> 92	<b>e</b> 136	t 52 t 6	0 4 51 4	50	28.8 28	3 272	32.1	32.0	32.0	32.1	35.7	35.7 35.7	36.9	36.9 36	69 369
1-40	NC 751	5.		7.6 4.9			1.4 1.9							\$ 317 \$ 338											29.4	29.1	35.7	35.7 35.7	36.9	36.9 36	6.9 36.9
		-																									-		-		-
I-40 Fayottovillo Ro	Fayetteville Re	5. 5.		15.1 8.5 8.5 6.4	9.3 6.5 6.5 5.6		1.3 3.2 1.2 1.8	1.7 1. 1.3 1.	9 1.4 1.4 3 1.2 1.2	\$ 222	272 \$	1,302 9	2,346 \$2,905 851 \$ 954	\$ 988 \$ 978 \$ 408 \$ 421	\$ 130	\$ 1/1	\$ 1,556	\$ 297 \$ 33	2 \$ 344 \$ 3 \$ 142 \$	147	29.0 27. 31.1 30.	.5 11.4 .3 20.1	20.3	18.6 26.3	26.5 30.7	26.6 30.6	36.7 36.7	36.7 36.1 36.7 36.1	35.4	35.4 36. 35.4 35.	6.0 36.0 5.9 35.9
																											-				
	Martin Luthor I	Cir 8		11.7 10.0 11.6 10.1			1.1 1.6 1.2 1.6		3 1.2 1.2	\$ 199 5	227 \$	1,475	958 \$ 912	\$ 458 \$ 446 \$ 712 \$ 737	\$ 48	\$ 55	\$ 358	\$ 232 \$ 22	1 \$ 111 \$	108	30.5 30.			25.0 23.9	27.8		34.4	34.4 33.4		33.3 33. 33.3 33.	
Martin Luthor k	41-40	*.	3.4	11.6   10.1	10.4 9.5	9.6 1.2	1.6	1.9 1.	1.5 1.3	5 Z98 S	309 \$	1,416   \$	961   \$ 1,103	a na \$ 137	<b>5</b> 63	\$ 75	¥ 344	a css \$ 26	o 5 173 \$	179	29.8 29.	.>  21.3	24.5	23.9	26.0	29.8	>q.q	54.4 33.4	- 35.3	20.5 33	53.3
NC 54	US 15/501	6.		10.1 7.5			1.2 1.9							\$ 784 \$ 789											26.7	26.7	33.1	33.1 33.9	35.3	35.3 35.	5.3 35.3
US 15/501	NC 54	6.	7 7.0	10.7 7.6	7.7 7.1	7.1 1.2	1.2 2.0	1.4 1.	5 1.3 1.3	\$ 202 5	270 \$	1,659 \$	1,128 \$ 1,218	\$ 791 \$ 814	\$ 64	\$ 86	\$ 543	\$ 360 \$ 38	9 \$ 253 \$	260	28.0 27.	.0 17.1	24.8	24.3	26.7	26.5	33.1	33.1 33.9	35.3	35.3 35	5.3 35.3
1-40	E. Cornuallir	6.	9 6,9	8.5 8.0	8.0 7.2	7.2 1.2	1.2 1.5	1.4 1.	4 1.2 1.2	\$ 345	386 ±	1,541 4	1,172 \$ 1,166	\$ 655 \$ 641	\$ 103	\$ 116	\$ 462	\$ 351 \$ 34	9 \$ 196 \$	192	29.1 28.	9 23.5	25.0	25.1	27.7	27.8	35.1	35.5 34.3	34.3	34.3 34	4.3 34.3
E. Carnuallir	1-40	7.					1.4 1.4		3 1.3 1.3	\$ 590	736 \$	1,305	952 \$ 1,059	\$ 759 \$ 783	\$ 177	\$ 221	\$ 391	\$ 285 \$ 31	7 \$ 227 \$	234	26.7 25.	.3 24.6	26.1		27.2			35.5 34.3	34.3	34.3 34	
			-																												

# pm Peak Hour Travel Time

	<b>Travel Time</b>	(min.)				
	2015 Base	2045 E+C	Mod-MTP	Mod - Hwy+	Asp - Transit	Asp - MTP
Route	Year					
I-40						
I-40 EB (NC147 to NC 540)	4.0	6.4	5.6	5.4	5.0	5.1
I-40WB (NC 540 to NC147)	3.6	4.5	4.0	4.0	4.2	4.2
I-40EB (US 15/501 to NC 147)	10.6	20.9	16.9	18.6	14.2	14.3
I-40WB (NC 147 to US 15/501)	10.8	16.2	14.6	15.0	14.0	14.3
I-40EB (NC86 to US 15/501)	4.9	6.4	4.5	4.3	4.6	4.0
I-40WB (US 15/501 to NC86)	4.9	12.1	6.0	5.3	5.4	5.4
I-40EB (I-85 to NC 86)	7.1	8.1	7.0	6.7	6.6	6.0
I-40WB (NC 86 to I-85)	6.8	10.8	7.5	7.6	7.0	6.9

# pm Peak Hour & FF Speed

	DCHC M	O - Altern	atives Ana	alysis									
	Peak Sp	eed by (	Corridor				Free Fl	ow Spee	<b>d</b> by Cor	ridor			
	2015 Base	2045 E+C	Mod-MTP	Mod -	Asp - Transit	Asp - MTP	2013	2015 Base	2045 E+C	Mod-MTP	Mod -	Asp -	Asp - MTP
Route	Year			Hwy+			Baseline	Year			Hwy+	Transit	
I-40													
I-40 EB (NC147 to NC 540)	50.8	32.3	37.0	37.7	41.2	40.4	65.7	65.8	65.9	65.8	65.8	65.8	65.8
I-40WB (NC 540 to NC147)	56.1	43.1	49.5	49.2	46.5	47.2	66.0	66.0	65.8	65.8	65.8	65.8	65.8
I-40EB (US 15/501 to NC 147)	52.2	27.3	32.7	29.6	38.7	38.6	67.4	67.4	66.4	66.4	66.5	66.5	66.4
I-40WB (NC 147 to US 15/501)	52.0	35.9	38.3	37.2	40.0	39.7	67.3	67.4	66.3	66.3	66.4	66.4	66.4
I-40EB (NC86 to US 15/501)	50.4	39.8	54.9	57.6	53.7	53.7	65.9	65.8	65.8	65.8	65.8	65.7	65.7
I-40WB (US 15/501 to NC86)	50.7	21.9	41.7	47.4	46.5	46.7	66.3	65.8	65.8	65.8	65.8	65.7	65.7
I-40EB (I-85 to NC 86)	56.9	53.7	62.1	60.6	61.0	61.1	66.4	66.3	66.3	69.5	66.0	69.7	69.7
I-40WB (NC 86 to I-85)	59.1	39.0	53.4	52.8	57.5	58.0	69.7	69.7	69.4	69.4	69.4	69.6	69.6

<sup>\*</sup> Peak Speed =Length/(PKTT\*60)

<sup>\*</sup> Free Flow Speed = Length/(FFTT\*60)

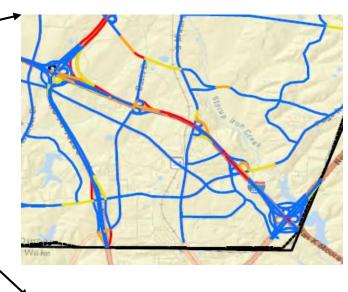
#### Travel Time Index

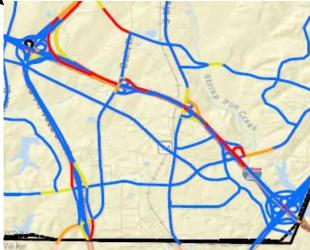
Afternoon Peak Period

#### DCHC MPO - Alternatives Analysis

#### **Travel Time Index** by Corridor

	2015 Base	2045 E+C	Mod-MTP	Mod-Hwy	Asp-	Asp-MTP
Route	Year				Transit	
1-40						
I-40 EB (NC147 to NC 540)	1.3	2.0	1.8	1.7	1.6	16
I-40WB (NC 540 to NC147)	1.2	1.5	1.3	1.3	1.4	1.4
I-40EB (US 15/501 to NC 147)	1.3	2.4	2.0	2.2	1.7	1.7
I-40WB (NC 147 to US 15/501)	1.3	1.8	1.7	1.8	1.7	1.7
I-40EB (NC86 to US 15/501)	1.3	1.7	1.2	1.1	1.2	1.2
I-40WB (US 15/501 to NC86)	1.3	3.0	1.6	1.4	1.4	1.4
I-40EB (I-85 to NC 86)	1.2	1.2	1.1	1.1	1.1	1.1
I-40WB (NC 86 to I-85)	1.2	1.8	1.3	1.3	1.2	1.2





# Value of Time/Hour

VO	T/hour										
20	15 Base	2	045 E+C	М	lod-MTP		Mod -		Asp -	As	p - MTP
	Year						Hwy+	٦	Transit		
\$	2,391	\$	10,181	\$	7,394	\$	6,989	\$	5,422	\$	5,776
\$	1,288	\$	4,580	\$	2,718	\$	2,794	\$	3,613	\$	3,388
\$	4,880	\$	30,357	\$	19,607	\$	24,969	\$	13,258	\$	13,302
\$	4,915	\$	16,889	\$	13,978	\$	15,307	\$	12,430	\$	12,672
\$	1,569	\$	3,480	\$	1,226	\$	811	\$	1,441	\$	1,431
\$	1,538	\$	13,440	\$	4,786	\$	3,109	\$	3,227	\$	3,193
\$	1,182	\$	1,750	\$	1,128	\$	716	\$	1,370	\$	1,358
\$	1,288	\$	6,901	\$	3,374	\$	3,577	\$	2,248	\$	2,120
	\$ \$ \$ \$ \$ \$	\$ 2,391 \$ 1,288 \$ 4,880 \$ 4,915 \$ 1,569 \$ 1,538 \$ 1,182	2015 Base Year  \$ 2,391 \$ \$ 1,288 \$ \$ 4,880 \$ \$ 4,915 \$ \$ 1,569 \$ \$ 1,538 \$ \$ \$ 1,182 \$	2015 Base Year  \$ 2,391 \$ 10,181 \$ 1,288 \$ 4,580 \$ 4,880 \$ 30,357 \$ 4,915 \$ 16,889 \$ 1,569 \$ 3,480 \$ 1,538 \$ 13,440 \$ 1,182 \$ 1,750	2015 Base Year  \$ 2,391 \$ 10,181 \$ \$ 1,288 \$ 4,580 \$ \$ 4,880 \$ 30,357 \$ \$ 4,915 \$ 16,889 \$ \$ 1,569 \$ 3,480 \$ \$ 1,538 \$ 13,440 \$ \$ 1,182 \$ 1,750 \$	2015 Base Year  \$ 2,391 \$ 10,181 \$ 7,394 \$ 1,288 \$ 4,580 \$ 2,718 \$ 4,880 \$ 30,357 \$ 19,607 \$ 4,915 \$ 16,889 \$ 13,978 \$ 1,569 \$ 3,480 \$ 1,226 \$ 1,538 \$ 13,440 \$ 4,786 \$ 1,182 \$ 1,750 \$ 1,128	2015 Base Year  \$ 2,391 \$ 10,181 \$ 7,394 \$ \$ 1,288 \$ 4,580 \$ 2,718 \$ \$ \$ 4,880 \$ 30,357 \$ 19,607 \$ \$ 4,915 \$ 16,889 \$ 13,978 \$ \$ 1,569 \$ 3,480 \$ 1,226 \$ \$ \$ 1,538 \$ 13,440 \$ 4,786 \$ \$ \$ 1,182 \$ 1,750 \$ 1,128 \$	2015 Base Year 2045 E+C Mod-MTP Mod-Hwy+  \$ 2,391 \$ 10,181 \$ 7,394 \$ 6,989 \$ 1,288 \$ 4,580 \$ 2,718 \$ 2,794 \$ 4,880 \$ 30,357 \$ 19,607 \$ 24,969 \$ 4,915 \$ 16,889 \$ 13,978 \$ 15,307 \$ 1,569 \$ 3,480 \$ 1,226 \$ 811 \$ 1,538 \$ 13,440 \$ 4,786 \$ 3,109 \$ 1,182 \$ 1,750 \$ 1,128 \$ 716	2015 Base Year 2045 E+C Mod-MTP Mod-Hwy+ 7  \$ 2,391 \$ 10,181 \$ 7,394 \$ 6,989 \$ \$ 1,288 \$ 4,580 \$ 2,718 \$ 2,794 \$ \$ 4,880 \$ 30,357 \$ 19,607 \$ 24,969 \$ \$ 4,915 \$ 16,889 \$ 13,978 \$ 15,307 \$ \$ 1,569 \$ 3,480 \$ 1,226 \$ 811 \$ \$ 1,538 \$ 13,440 \$ 4,786 \$ 3,109 \$ \$ 1,182 \$ 1,750 \$ 1,128 \$ 716 \$	2015 Base Year 2045 E+C Mod-MTP Mod - Hwy+ Transit  \$ 2,391 \$ 10,181 \$ 7,394 \$ 6,989 \$ 5,422 \$ 1,288 \$ 4,580 \$ 2,718 \$ 2,794 \$ 3,613 \$ 4,880 \$ 30,357 \$ 19,607 \$ 24,969 \$ 13,258 \$ 4,915 \$ 16,889 \$ 13,978 \$ 15,307 \$ 12,430 \$ 1,569 \$ 3,480 \$ 1,226 \$ 811 \$ 1,441 \$ 1,538 \$ 13,440 \$ 4,786 \$ 3,109 \$ 3,227 \$ 1,182 \$ 1,750 \$ 1,128 \$ 716 \$ 1,370	2015 Base Year 2045 E+C Mod-MTP Mod - Hwy+ Transit 2015 Base Year 2045 E+C Mod-MTP Mod - Hwy+ Transit 2015 Base Year 2015 Base

<sup>14</sup> 

#### Value of Time/Hour/Mile

Afternoon Peak Period

DCHC MPO - Alternatives Analysis

**Hourly Cost of Congestion\*** by Corridor

	201	L5 Base	20	45 E+C	M	od-MTP	M	od-Hwy	Asp	o-Transit	As	p-MTP
Route	١	/ear										
I-40												
I-40 EB (NC147 to NC 540)	\$	702	\$	2,968	\$	2,158	\$	2,040	\$	1,583	\$	1,686
I-40WB (NC 540 to NC147)	\$	385	\$	1,406	\$	831	\$	854	\$	1,105	\$	1,036
I-40EB (US 15/501 to NC 147)	\$	530	\$	3,188	\$	2,124	\$	2,720	\$	1,444	\$	1,443
I-40WB (NC 147 to US 15/501)	\$	527	\$	1,742	\$	1,500	\$	1,642	\$	1,334	\$	1,360
I-40EB (NC86 to US 15/501)	\$	379	\$	823	\$	296	\$	196	\$	348	\$	345
I-40WB (US 15/501 to NC86)	\$	369	\$	3,038	\$	1,147	\$	745	\$	774	\$	766
I-40EB (I-85 to NC 86)	\$	175	\$	241	\$	155	\$	106	\$	203	\$	201
I-40WB (NC 86 to I-85)	\$	192	\$	979	\$	503	\$	533	\$	335	\$	316

<sup>15</sup> 

#### Conclusions

- Corridor Performance Measures are an effective way to compare the impact of different MTP and LU scenarios on specific corridors.
- Using TransCADs shortest path tool and a loaded network provides the data for the measures.
- For the future: Write a script to facilitate the extraction and calculation of the measures for each corridor.

# Questions?