



2045 Metropolitan Transportation Plan (MTP)

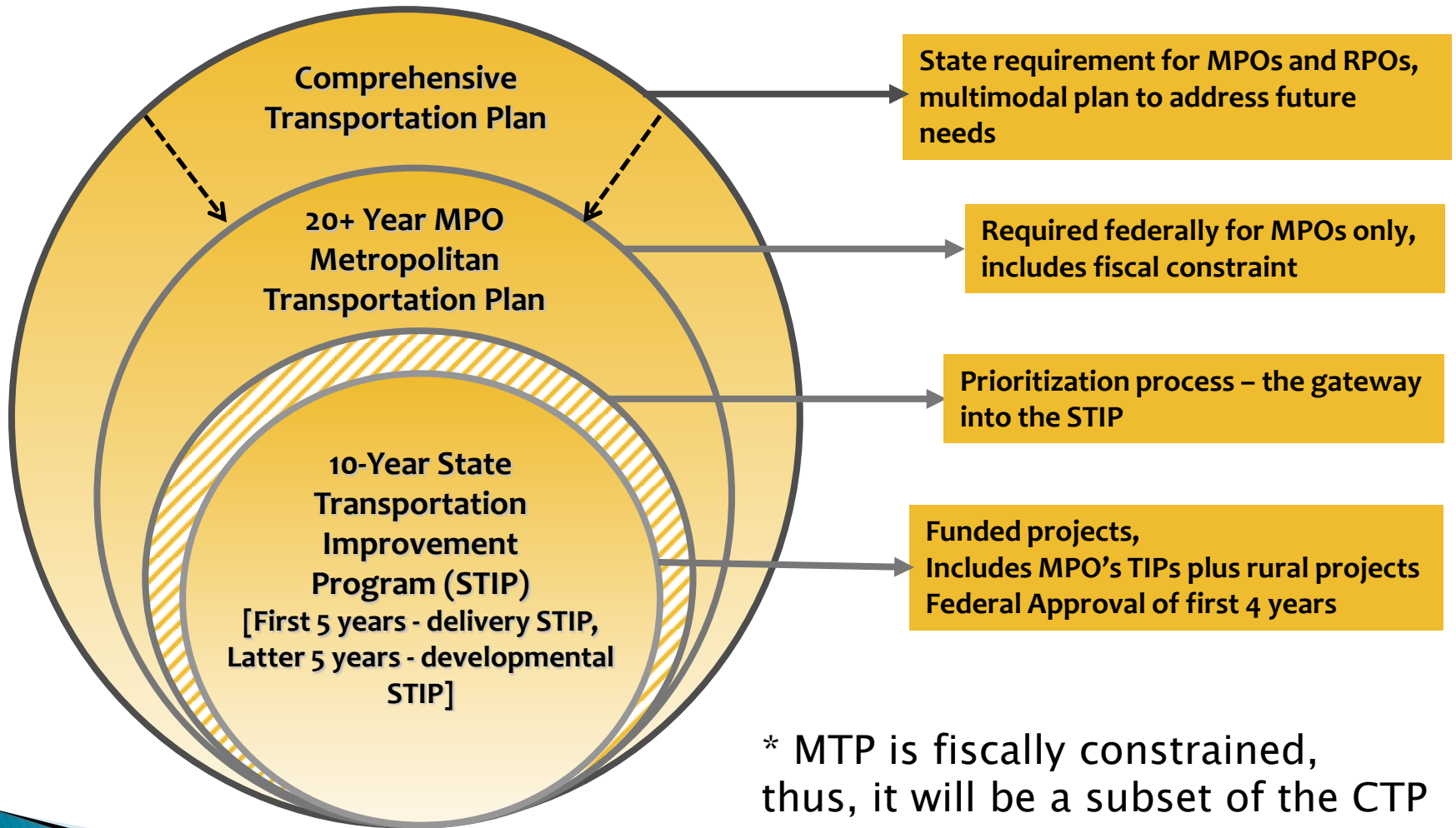
Deficiency Analysis

Technical Committee
May 24, 2017

Presentation Outline

- ▶ Background and Purpose
- ▶ SE Data Update
- ▶ Triangle Regional Model Output
- ▶ Schedule

Transportation Planning Framework



Purpose

- ▶ Purpose: staff, public and Board familiar with deficiencies
- ▶ Today's presentation has highlights.
- ▶ Full complement of tables and maps on Web site
- ▶ We will often reference deficiency maps and documents through MTP development
- ▶ TC: provide comments and forward to Board
- ▶ Board: – provide comments and release for comments

Socioeconomic Data

Guide Totals

Population				
County	2013	2045	2013-45	% change
Chatham*	41,543	72,110	30,567	74%
Durham	286,210	475,091	188,881	66%
Orange	139,289	194,867	55,578	40%
<i>Total</i>	<i>467,042</i>	<i>742,068</i>	<i>275,026</i>	<i>59%</i>
Employment				
County	2013	2045	2013-45	% change
Chatham*	9,339	17,718	8,379	90%
Durham	192,877	342,910	150,033	78%
Orange	64,212	107,791	43,579	68%
<i>Total</i>	<i>266,428</i>	<i>468,419</i>	<i>201,991</i>	<i>76%</i>

Fast growth, especially Durham and Chatham counties.

Employment growth outpaces population growth.

* Only includes portion of Chatham County in the modeling area.

Socioeconomic Data

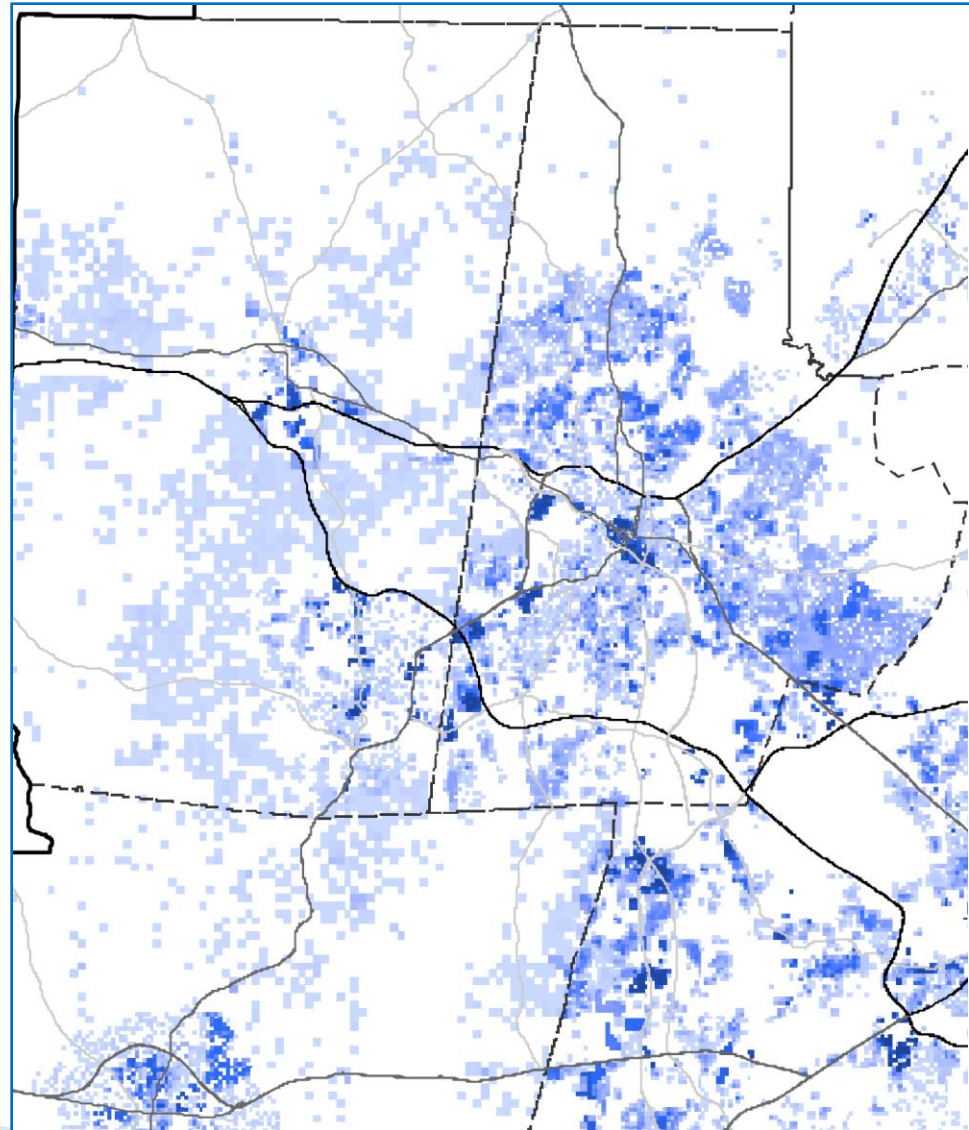
Community Plan -- Population

Community Plan allocates guide total population based on local land use plans and policies.

Note clusters along light rail and bus rapid transit lines.

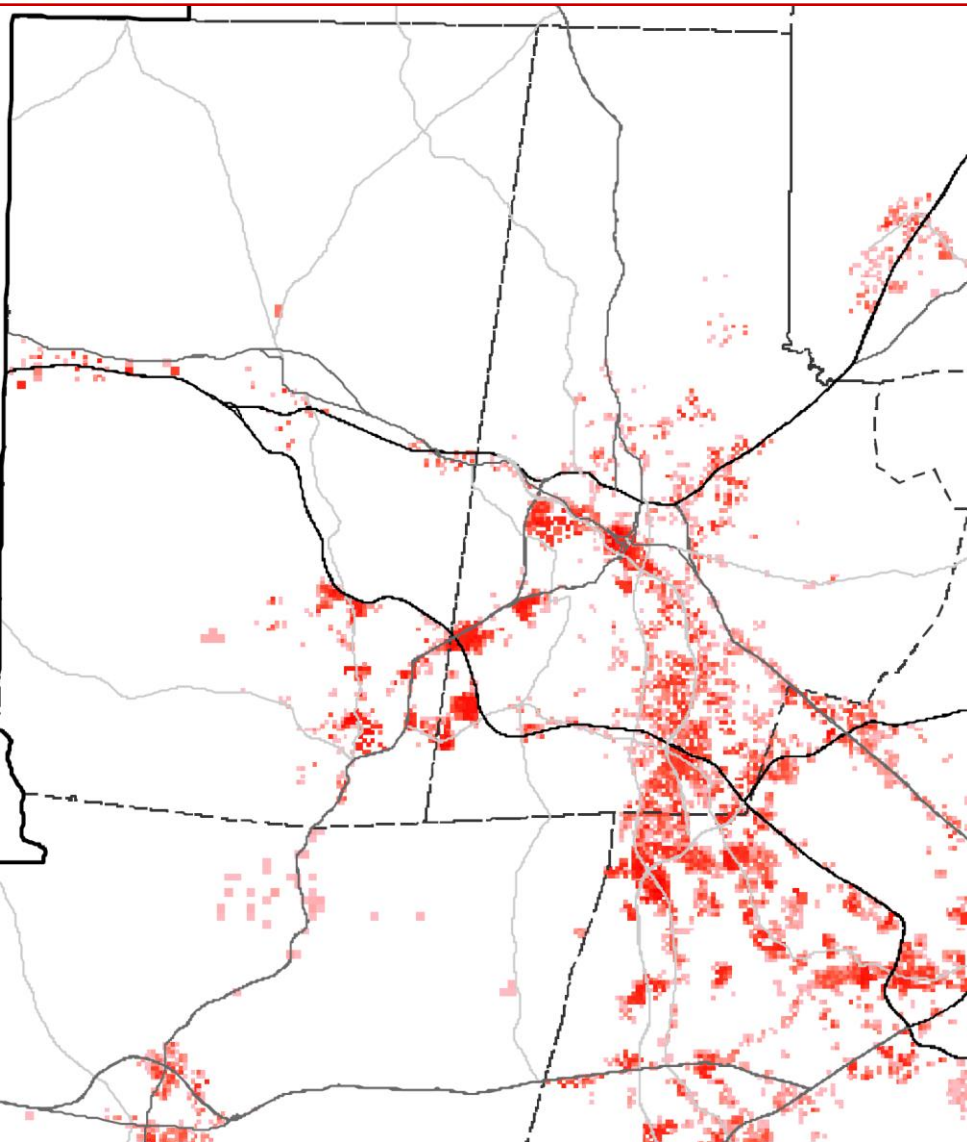
Durham County has spread north and east.

Much of Orange County growth is in towns.



Socioeconomic Data

Community Plan -- Employment



Community Plan – based on local land use plans and policies.

Note clusters along light rail and bus rapid transit lines.

RTP and vicinity receive quite a bit of growth

* Larger maps and allocation tables available on Web page.

Performance Measures Background

- ▶ General indicators of overall system:
 - Mobility Performance (e.g., travel time)
 - Mode Choice
 - Travel volume (e.g., VMT, VHT)

- ▶ Not specific to corridor or project.

- ▶ Useful for overall comparison of MTP Alternatives

Performance Measures

Vehicle Miles Traveled (VMT) & Vehicle Hours Traveled (VHT)

		Name =	Current	E+C	2013 to 2045 E+C Change
		SE Data ==>	2013	2045	
		Transportation Network ==>	2013	E+C	
1	Performance Measures				
1.1.1	Total Vehicle Miles Traveled (VMT-daily)		12,698,821	21,108,837	66%
1.1.1a	Total Vehicle Miles Traveled (VMT-per capita)		30	31	3%
1.2.1	Total Vehicle Hours Traveled (VHT-daily)		314,735	665,310	111%
1.2.1a	Total Vehicle Hours Traveled (VHT-per capita)		0.75	0.99	31%

VMT and VHT will dramatically increase in the Existing-plus-Committed (E+C) scenario.

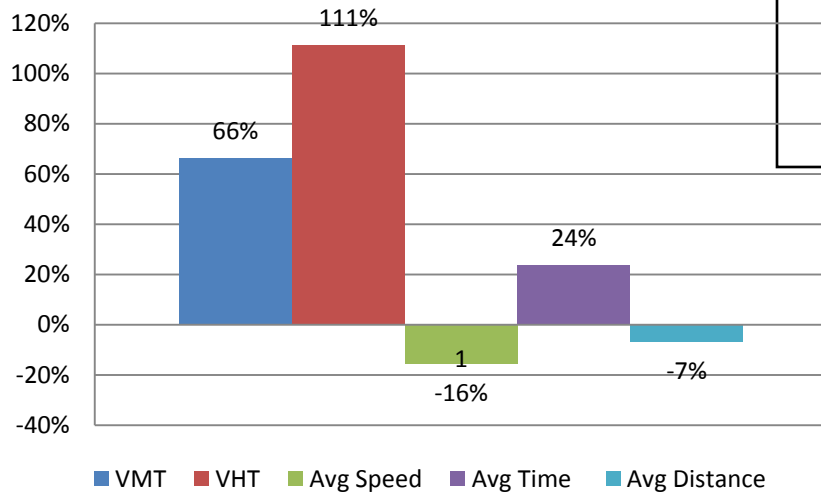
VMT driven by population (59% population increase) (note: VMT per capita is stable)

VHT growth outpaces VMT because of congestion

Performance Measures

Changes in Mobility Measures

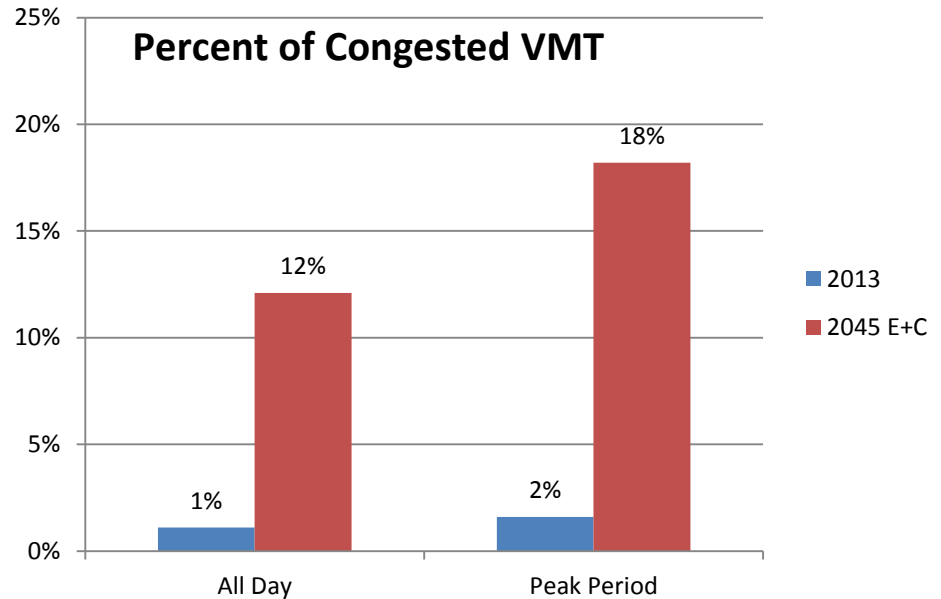
Percent Change: 2013 to E+C



▶ Speed and distance decline.
▶ Travel time increases.

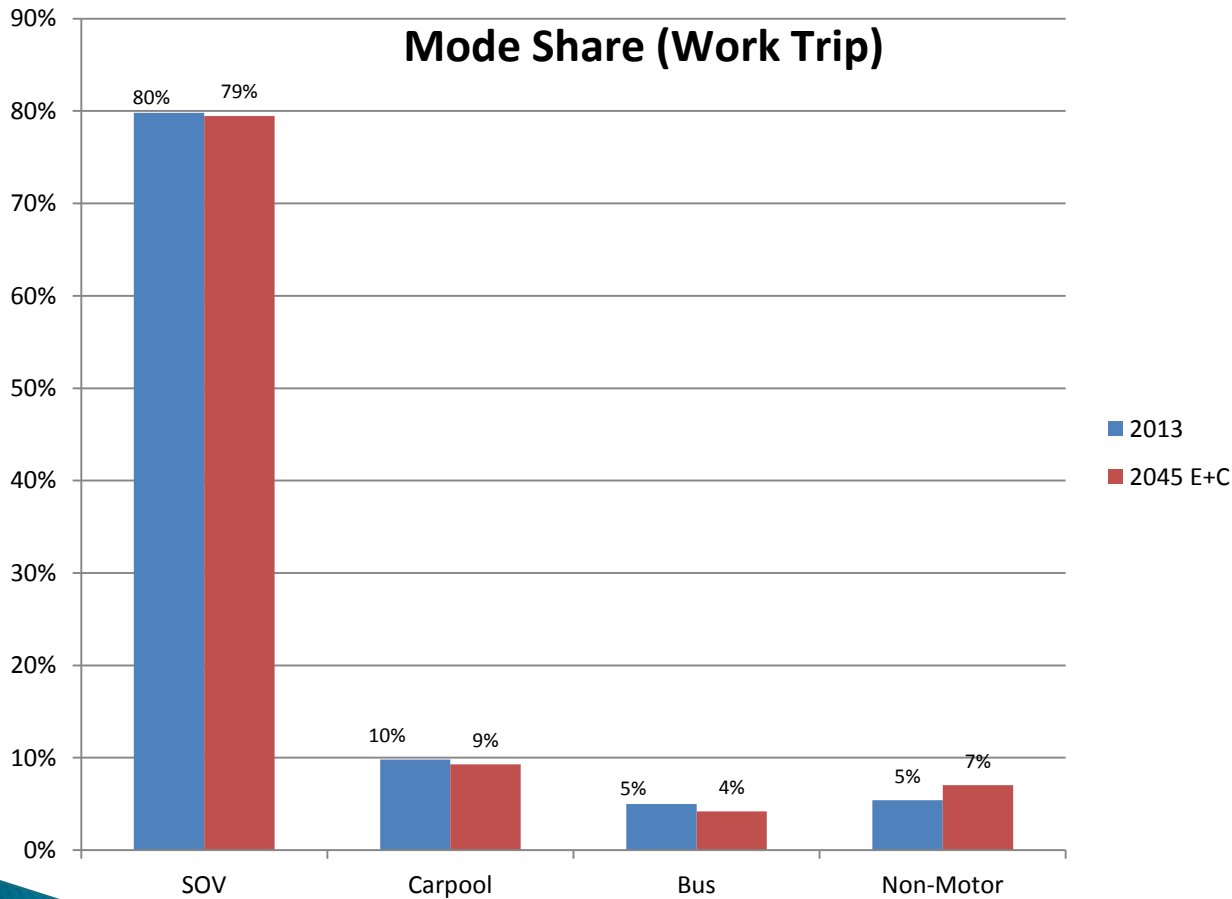
■ Large increase in congested VMT

Percent of Congested VMT



Performance Measures

Mode Share

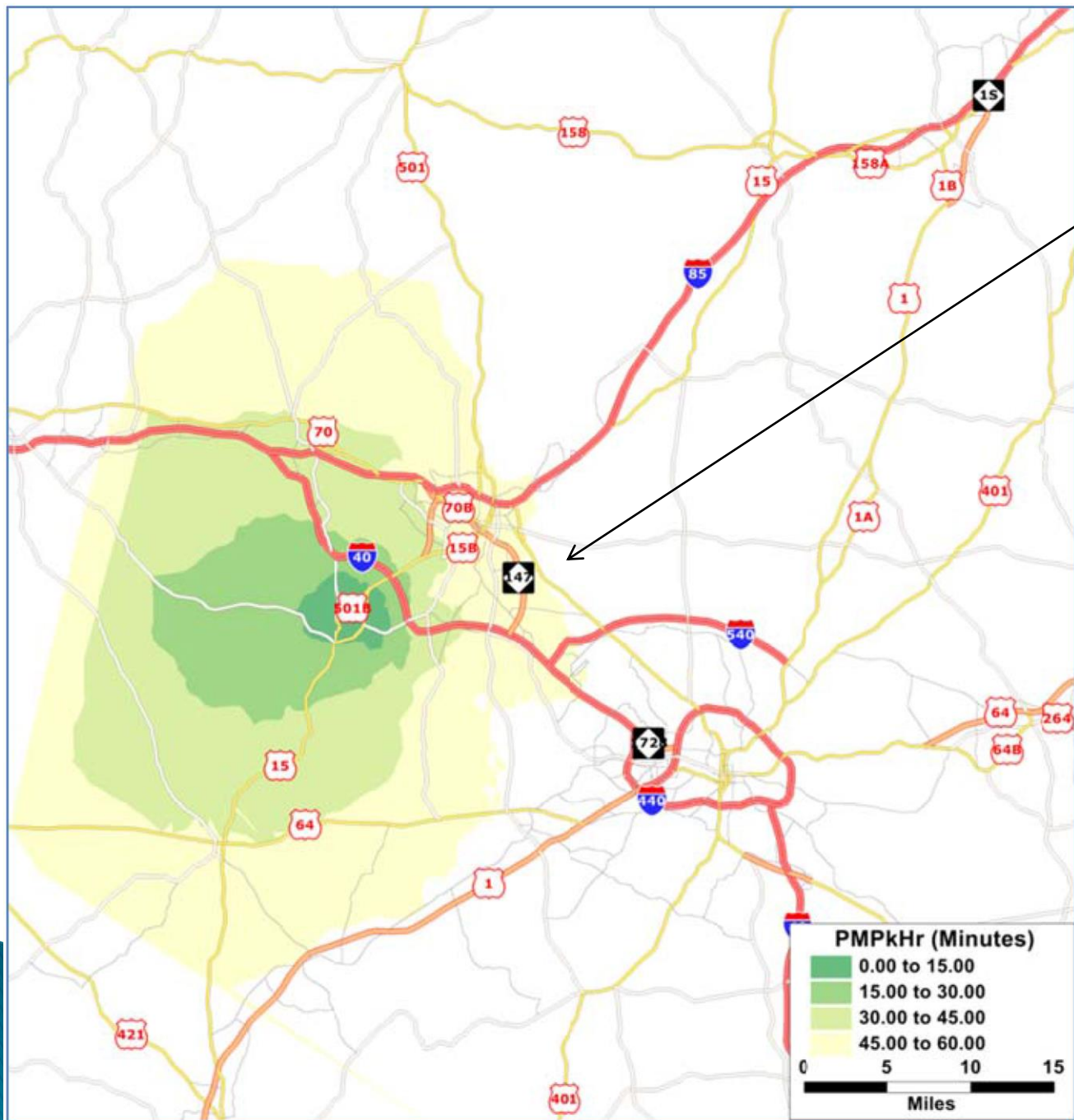


For Mode Choice, the travel model is fairly insensitive to changes in population and employment, and network (2013 and E+C, i.e., no LRT or BRT)

Travel Isochrones

Background

- ▶ More specific than Performance Measures – can start to see corridor mobility.
- ▶ Based on afternoon commute from four selected centers:
 - Downtown Durham
 - Chapel Hill/Carrboro
 - RTP
 - Downtown Raleigh
- ▶ Map illustrates “contours” for 15–, 30–, 45–minute, etc. commutes from the centers.
- ▶ Two maps for each center:
 - 2013
 - E+C (2045 SE Data using E+C network)



Contours narrow dramatically in afternoon peak hour leaving Chapel Hill to the east.

Travel Time

Background

- ▶ Shows mobility forecasts to/from regional centers.
- ▶ Uses AM and PM peak hour (“peak of the peak”).
- ▶ Based on commute to/from six selected centers:
 - Downtown Durham
 - Chapel Hill/Carrboro
 - RTP
 - Hillsborough
 - Pittsboro
 - Downtown Raleigh
- ▶ Presented two ways 2013 and E+C:
 - Tables with morning and afternoon peak hour
 - Map of afternoon peak hour
- ▶ Full set of tables on Web site.

Travel Time

2010 and E+C Travel Time Table

2013		<u>PM Peak Hr Travel time</u>					
		To					
		Durham	RTP	Raleigh	Chapel Hill	Hillsboroug	Pittsboro
From	Durham DT		10	35	28	18	39
	RTP	10		26	25	26	32
	Raleigh DT	34	25		46	50	46
	Chapel Hill	27	25	46		23	28
	Hillsborough	18	25	50	20		42
	Pittsboro	39	32	44	26	42	

2045 E+C		<u>PM Peak Hr Travel time</u>					
		To					
		Durham	RTP	Raleigh	Chapel Hill	Hillsboroug	Pittsboro
From	Durham DT		15	66	45	31	63
	RTP	15		52	44	43	52
	Raleigh DT	55	41		81	82	72
	Chapel Hill	54	51	98		43	47
	Hillsborough	26	35	86	28		47
	Pittsboro	51	39	61	29	44	

Travel Time

Travel Time Percent Increase

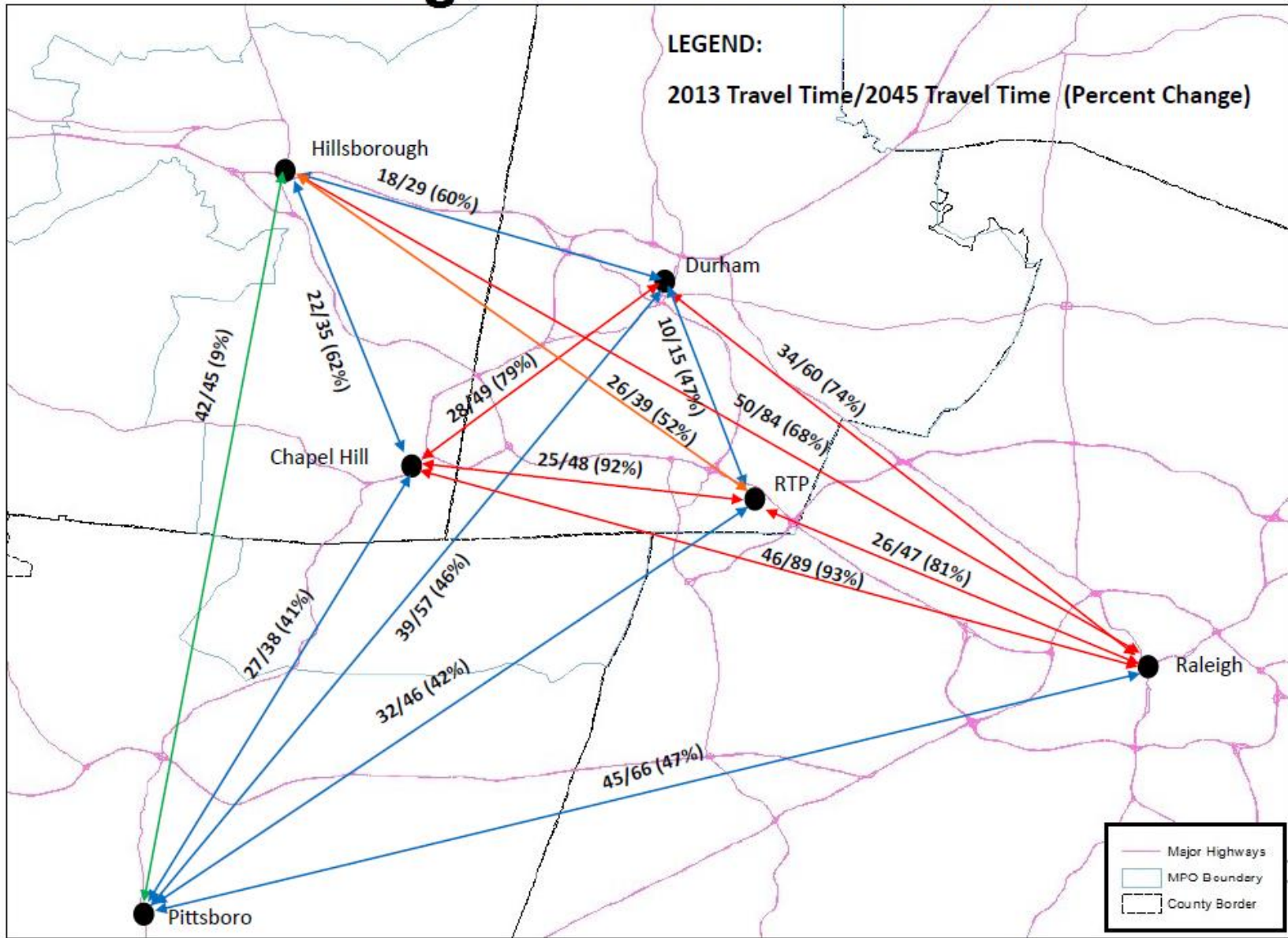
Hotter the color = larger % increase

		<u>Compare 2013 and 2045 E+C: PM Peak Travel time (percent increase)</u>					
		To					
		Durham	RTP	Raleigh	Chapel Hill	Hillsboroug	Pittsboro
From							
	Durham DT		42%	87%	61%	72%	61%
	RTP	52%		100%	78%	64%	61%
	Raleigh DT	62%	61%		75%	64%	56%
	Chapel Hill	98%	107%	112%		83%	66%
	Hillsborough	48%	40%	72%	38%		13%
	Pittsboro	31%	22%	38%	14%	5%	

Commutes toward Raleigh and away from Chapel Hill have largest increases in travel time.

Hotter the line color = larger % increase

Regional Travel Time In Minutes



(based on afternoon peak hour travel time)

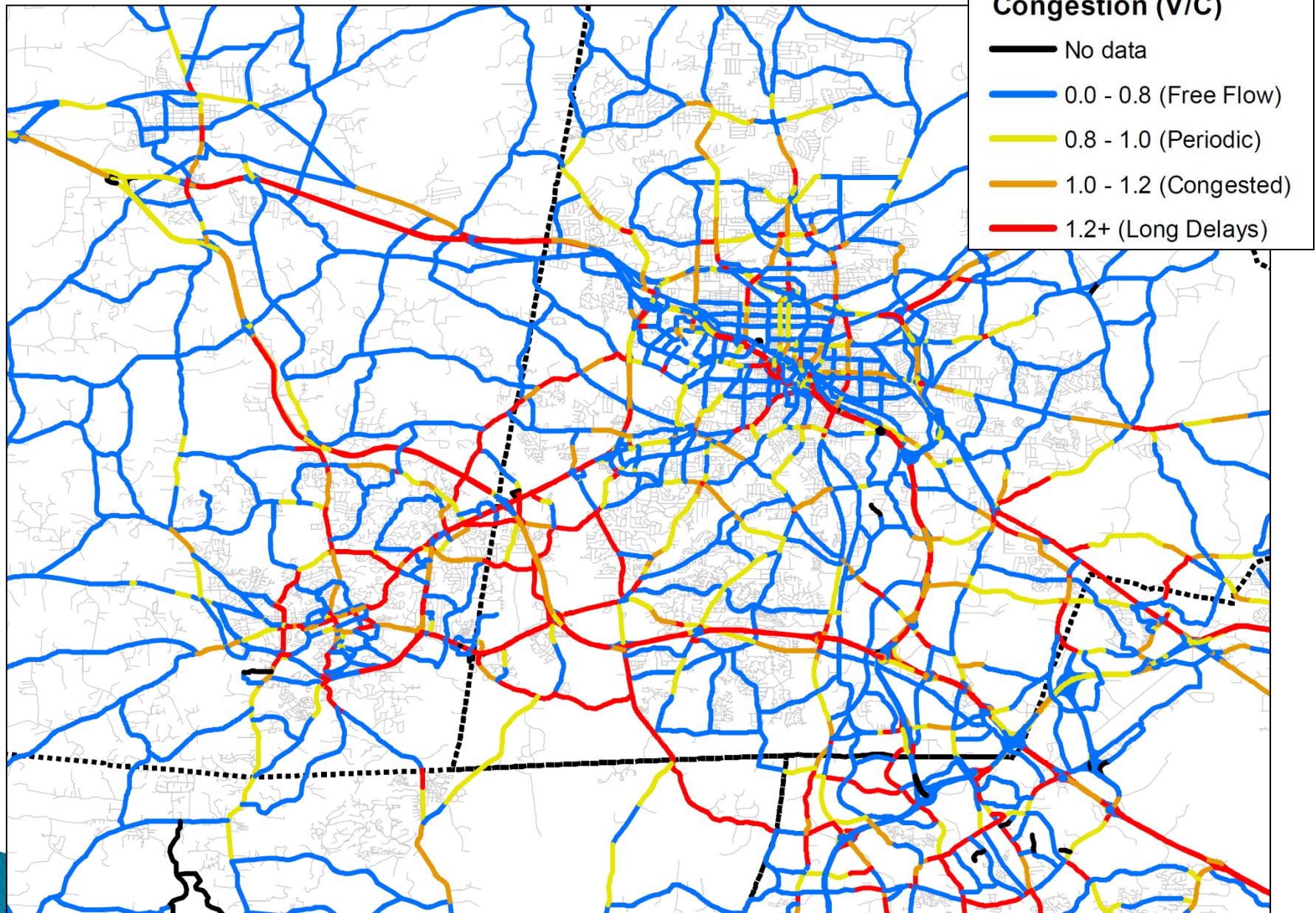
Congestion Maps (V/C)

Background

- ▶ Maps show the forecasted congestion on specific road segments: Daily and Afternoon Peak Hour will be available
- ▶ "V/C" means the traffic volume divided by the traffic capacity of the road segment. (For example, a volume of 9,000 vehicles on a road that is capable of carrying 10,000 vehicles will produce a V/C of 0.9.)
- ▶ A V/C of 1.0 is equal to a Level of Service (LOS) of "E", which can be described as:

Limit of acceptable delay, unstable flow, poor signal progression, traffic near roadway capacity, frequent cycle failures.
- ▶ Web sit has county-level and close-up map views.

2045 E+C



Congestion is almost universal for interstates, freeways and arterials.