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METROPOLITAN PLANNING ORGANIZATION

PLANNING TOMORROW'S TRANSPORTATION

2050 Metropolitan Transportation Plan (MTP)
-- Deficiency Analysis--

Andy Henry, andrew.henry@durhamnc.gov, May 12, 2021, Web page

Presentation Outline

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- Background and Purpose
- SE Data Update
- Deficiency Analysis tools
- MTP Schedule

Where is the data?

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- Presentation is summary that explains how to understand data and graphics
- DCHC web page. Detailed data, graphics, and maps. Click here.
- CAMPO web page. Congestion, highway projects, transit projects, and SE Data on single, region-wide, interactive map. Click here.

Transportation Planning Framework

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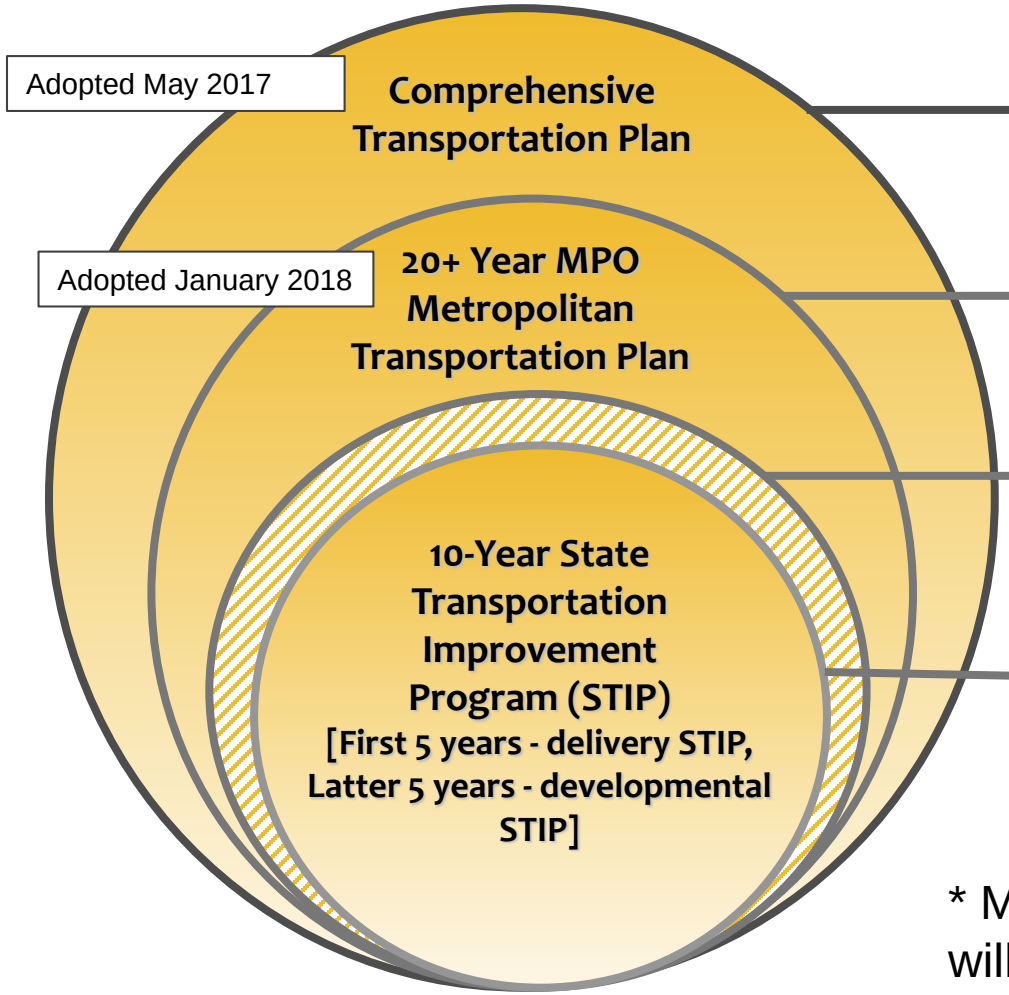

State requirement for MPOs and RPOs, multimodal plan to address future needs

Required federally for MPOs only, includes fiscal constraint

Prioritization process – the gateway into the STIP

Funded projects,
Includes MPO's TIPs plus rural projects
Federal Approval of first 4 years

* MTP is fiscally constrained, thus, it will be a subset of the CTP

2050 MTP Milestones

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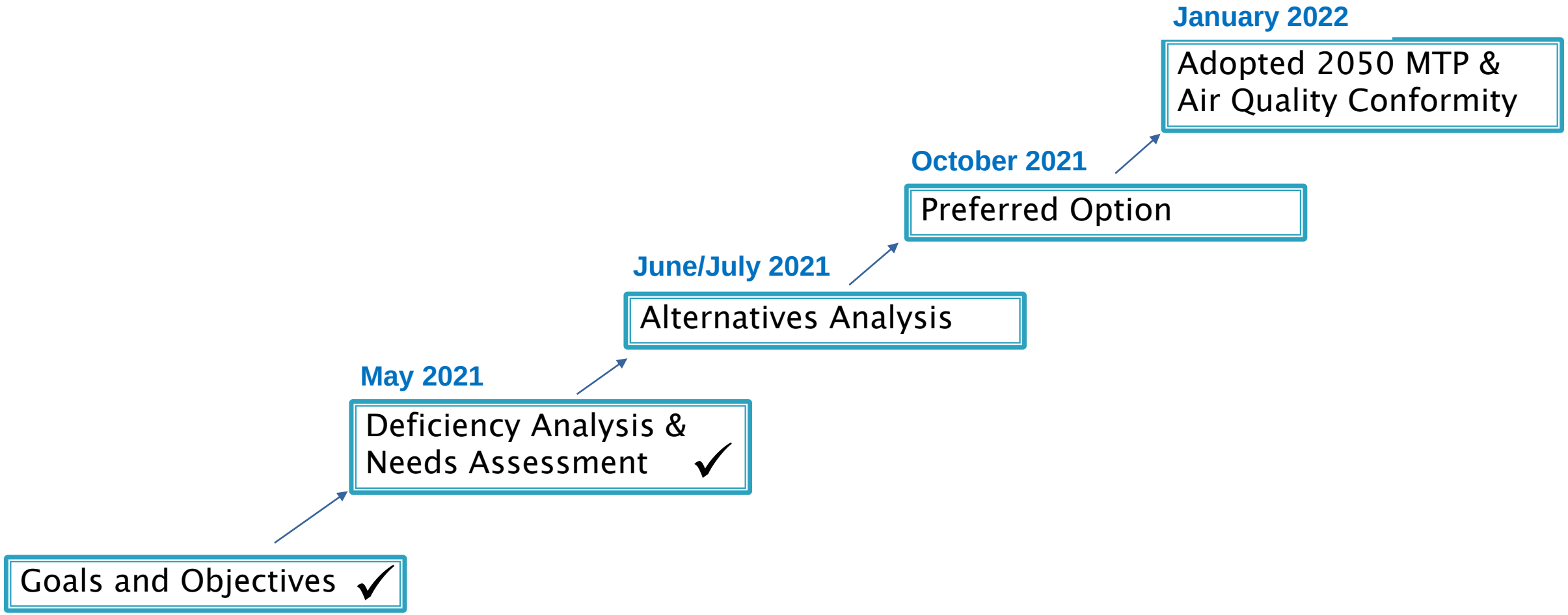


Deficiency Analysis

Overview

- Purpose: ensure staff, public and Board familiar with deficiencies; receive feedback
- What is it? Model 2050 population and employment on today's transportation network.
- Today's presentation has highlights.
- Full complement of tables and maps on Web site
- We will often reference deficiency maps and documents throughout MTP development.

Previous Public Comment

Before review Deficiency Analysis data, remember what public has already told us…

MPO Goals Survey

Highest ranked policies:

- Encourage biking and walking
- Increase transit service
- Coordinate land use and transportation
- Increase car pools and ride shares

See Goals web page (click here) for Goals & Objectives and survey response details.

MPO Goals Survey

Most common themes:

- Reduce personal vehicle dependence
- Protect environment; increase sustainability
- Support low-income & minority populations
- Enhance transit connectivity
- Increase bicycle and pedestrian infrastructure

Previous Public Comment (continued)

Peer review

MPO staff did peer review of Goals from 13 local plans in DCHC MPO planning area. These jurisdictions identified transportation themes similar to those of the DCHC MPO.

Engage Durham

Transit was the most discussed topic in the 2020 survey (among for example, housing, education, etc.)

Among top ten issues, five are relevant to DCHC MPO:

- Transit
- Engagement process
- Infrastructure
- Growth and development
- Walkability

Socioeconomic Data

Guide Totals

Population				
County	**2016**	**2050**	**2016-2050**	% change
Chatham*	46,051	103,345	57,294	124%
Durham	300,939	458,906	157,967	52%
Orange	143,678	193,477	49,799	35%
Total	*490,668*	*755,729*	*265,061*	*54%*

Employment				
County	**2016**	**2050**	**2016-2050**	% change
Chatham*	11,358	24,426	13,068	115%
Durham	217,114	401,168	184,054	85%
Orange	71,516	116,769	45,253	63%
Total	*299,988*	*542,363*	*242,375*	*81%*

* Only includes portion of Chatham County in modeling area.

Fast growth, especially Durham and Chatham counties.

Employment growth outpaces population growth.

* More detailed household and employment forecast data is available on Deficiency Analysis Web page.

Socioeconomic Data

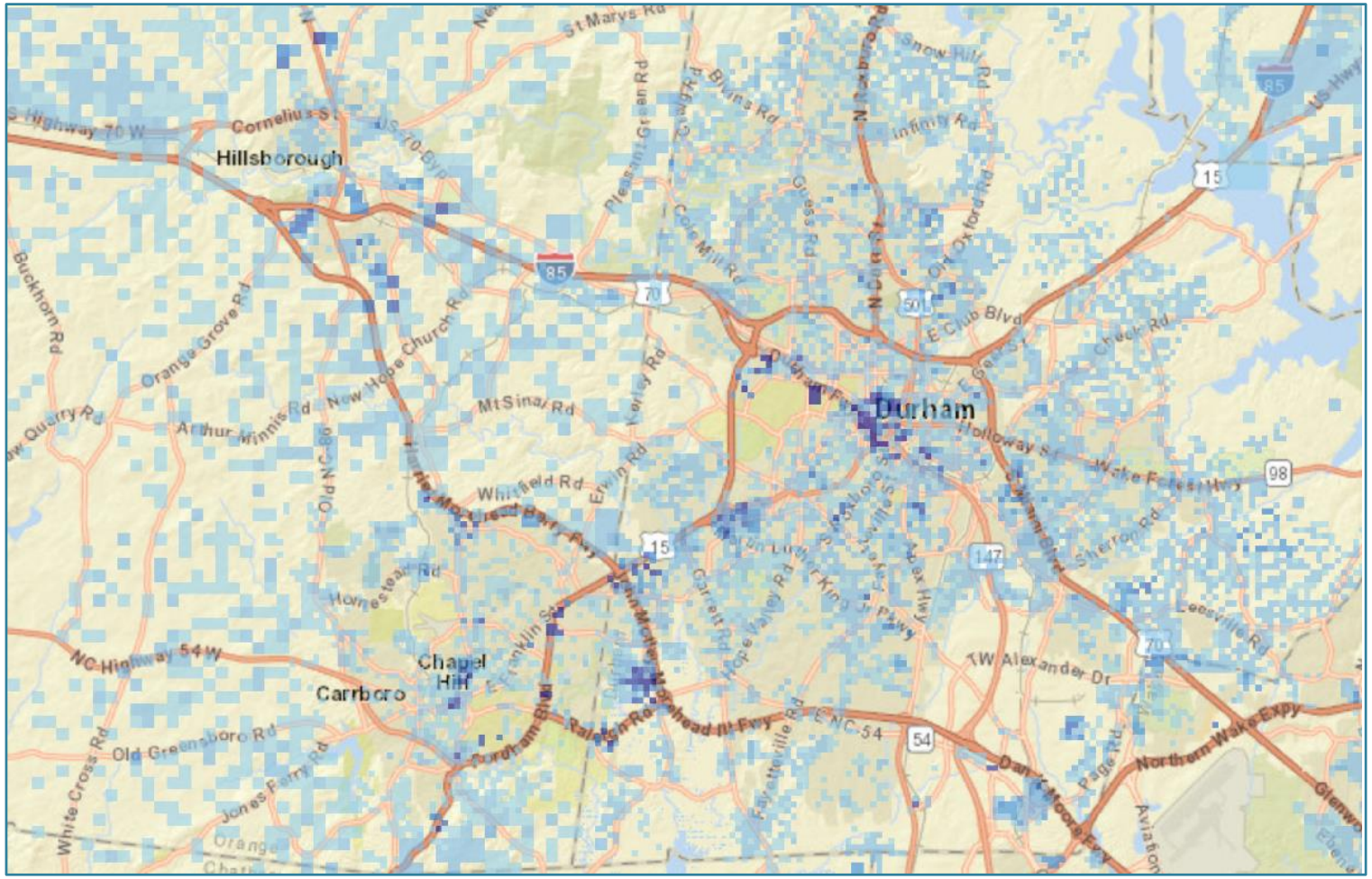
Community Plan – Population growth from 2016 to 2050

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

Note clusters along major travel corridors between Durham and Chapel Hill

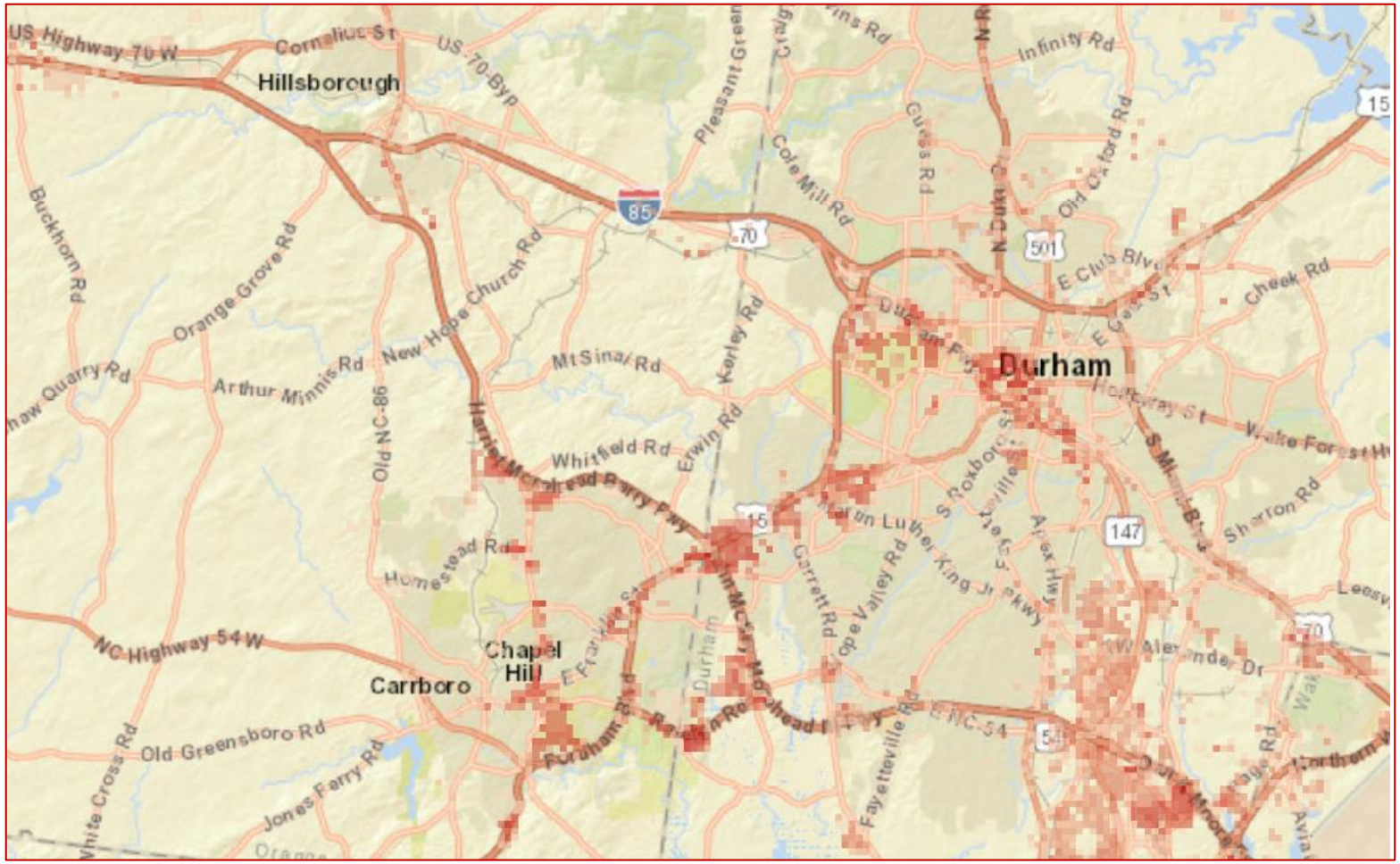
Durham County has spread north and east.

Much of Orange County growth is in towns and west US 70 corridor.



Socioeconomic Data

Community Plan – **Employment** growth from 2016 to 2050



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

Note clusters at major roadway crossroads, downtowns, and universities.

RTP and vicinity continues strong growth

Employment not as spread out as population (dwelling units).

* Larger PDF maps and an interactive online map are available on Deficiency Analysis 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

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Performance Measures

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

Name =	Current	E+C	2016 to 2050 E+C Change
SE Data ==>	2016	2050	
Transportation Network ==>	2016	E+C	
Performance Measures			
Total Vehicle Miles Traveled (VMT-daily)	14,516,717	22,667,044	56%
Total Vehicle Miles Traveled (VMT-per capita)	33	34	4%
Total Vehicle Hours Traveled (VHT-daily)	365,641	726,741	99%
Total Vehicle Hours Traveled (VHT-per capita)	0.82	1.09	33%

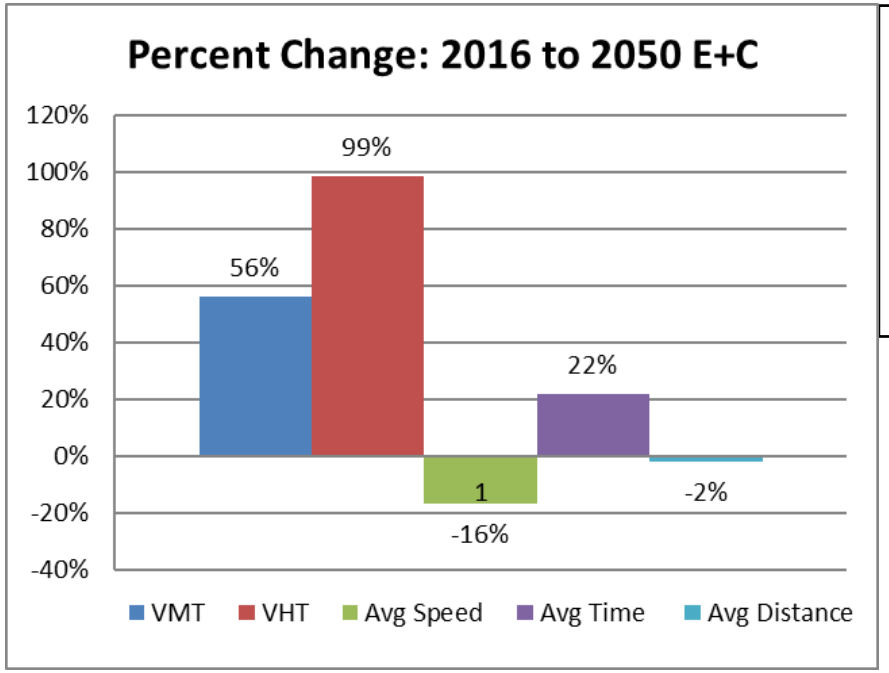
VMT and VHT will dramatically increase in the Existing-plus-Committed (E+C) scenario.

VMT driven by population (49% population increase) (note: VMT per capita is fairly stable)

VHT growth outpaces VMT because of increased congestion

Performance Measures

Changes in Mobility Measures

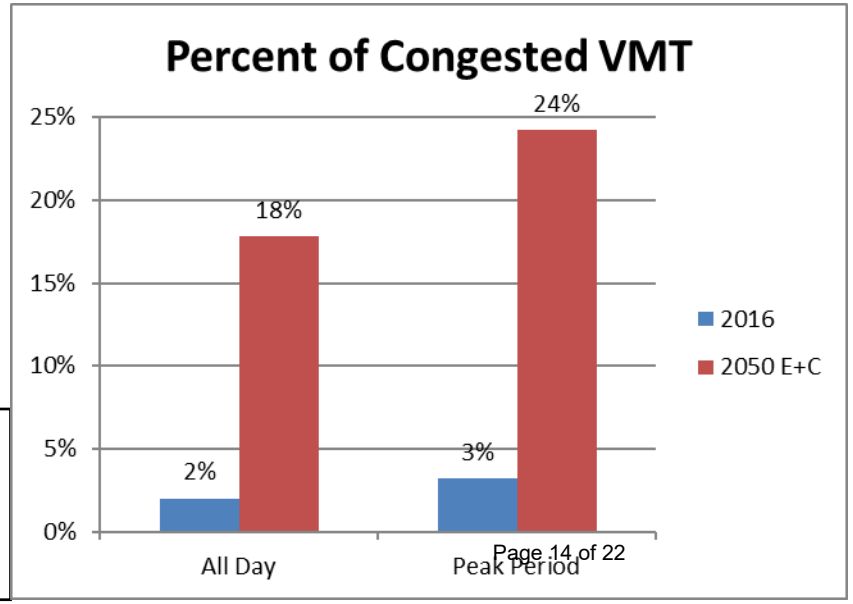


- Although average distance slightly declines, overall VMT and VHT greatly increase because population and employment grow substantially.
- VHT increase outpaces VMT increase because average speed slows due to congestion.

Notes

- VMT = vehicle miles traveled
- VHT = vehicle hours traveled

- Large increase in congested VMT



Travel Isochrones

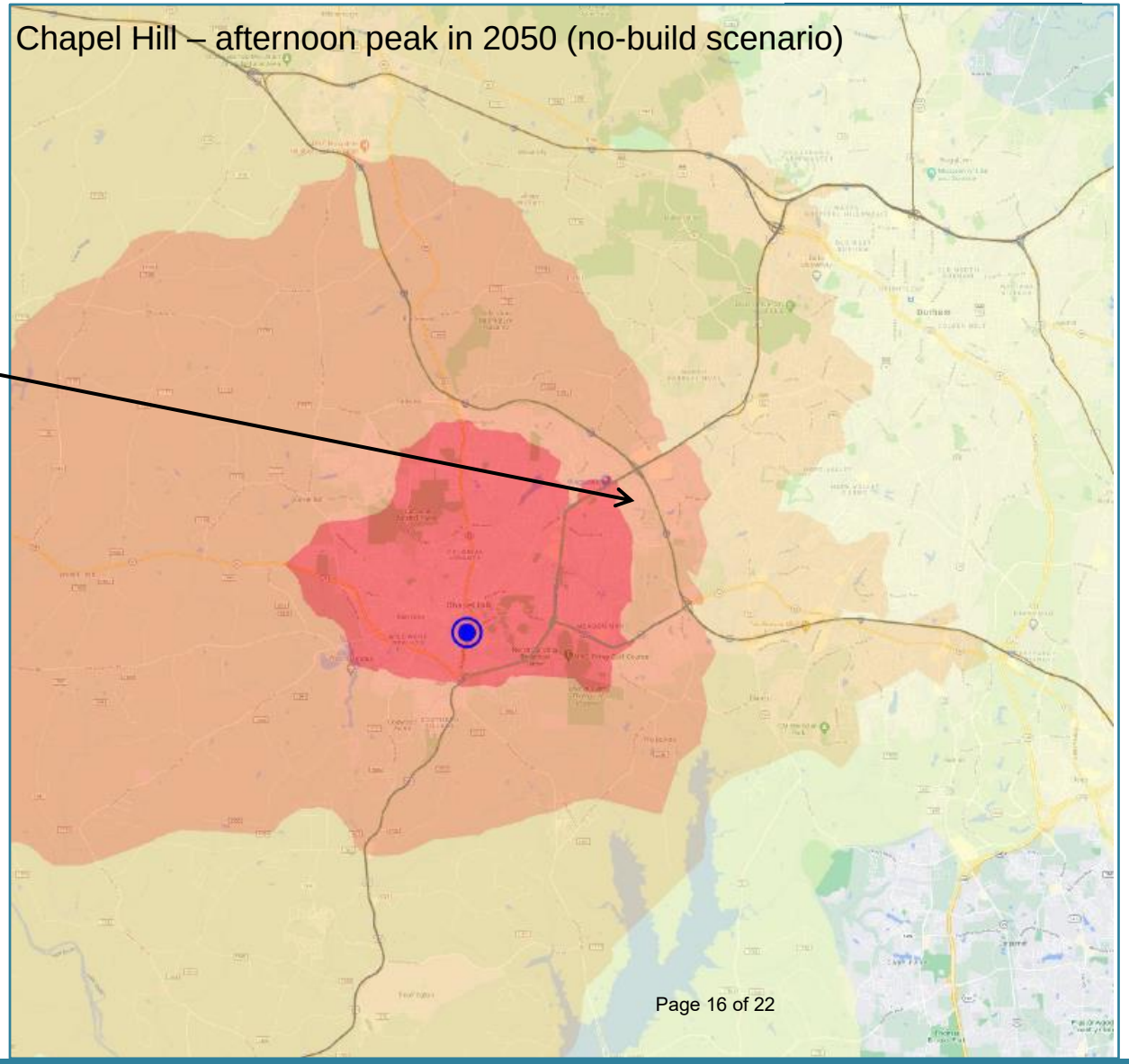
Background

- More specific than Performance Measures – can start to see corridor mobility.
- Based on afternoon peak hour 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:
  - 2016
  - E+C (20505 SE Data using E+C network)

Travel Isochrones

Example

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



Travel Time

Background

- Shows travel time forecasts between regional centers.
- Uses morning and afternoon peak hour (“peak of the peak”).
- Based on commute between six selected centers:
  - Downtown Durham
  - Chapel Hill/Carrboro
  - RTP
  - Hillsborough
  - Pittsboro
  - Downtown Raleigh
- Compares 2016 and E+C travel times

Travel Time

Tables

Hotter the color = larger % increase

Compare 2016 and 2050 AFTERNOON Peak (percent increase)						
To ==>	Durham DWTN	RTP	Raleigh DWTN	Chapel Hill	H'borough	Pittsboro
Durham DWTN		18%	74%	49%	70%	87%
RTP	41%		93%	70%	73%	106%
Raleigh DWTN	82%	90%		87%	89%	114%
Chapel Hill	62%	63%	86%		58%	78%
Hillsborough	31%	26%	64%	27%		30%
Pittsboro	41%	35%	82%	13%	5%	

Largest increases in afternoon travel time will be to/from Raleigh, and to Pittsboro (Chatham Park residents' work-to-home commute?)

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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.)

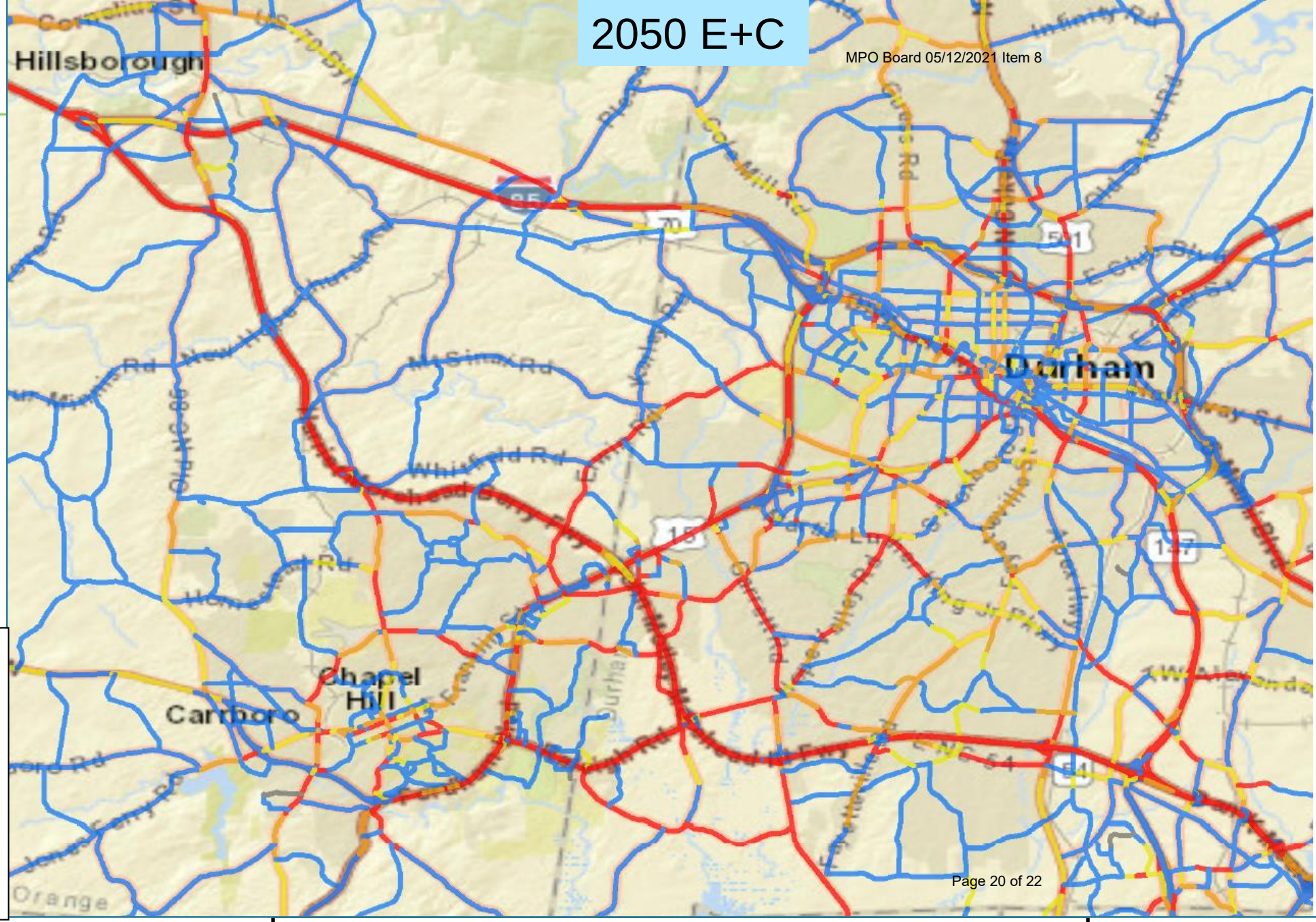
- A V/C of 1.0 is equal to a Level of Service (LOS) of "E", which can be described as:

  Limit of acceptable delay, unstable flow, poor signal progression, traffic near roadway capacity, frequent cycle failures.

- Web site has interactive map, and county-level and close-up PDF map views.

Congestion Maps (V/C)

Example



Orange and Red are very congested!

Congestion (V/C)

- No data
- 0.0 - 0.8 (Free Flow)
- 0.8 - 1.0 (Periodic)
- 1.0 - 1.2 (Congested)
- 1.2+ (Long Delays)

Congestion is almost universal for interstates, freeways and arterials.

Coming Attractions

In the Alternatives Analysis

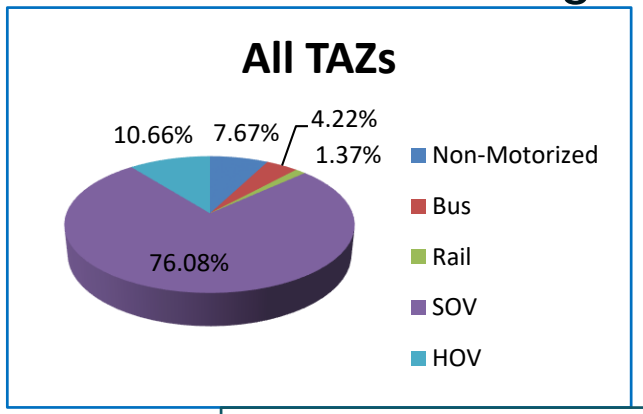
1- Equity Measures

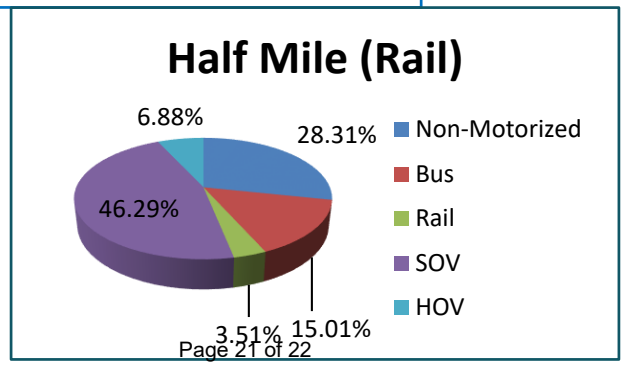
Average commute distance, time and delay, and safety data by:

- Low-income
- Minority
- Zero-car households

2- Travel Choice Neighborhoods

- Compares mode choice for region with areas that have access to high end transit





Schedule

Board Actions

- May – Release Deficiency Analysis for 30-day public comment period
- June/July – Release Alternatives Analysis
  (full set of public input activities)
- October – Release Locally Preferred Alternative (LPA)
- January (2022) – Adopt 2050 MTP and Air Quality Conformity Report