2045 Metropolitan Transportation Plan (MTP)

Deficiency Analysis
Presentation Outline

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

<table>
<thead>
<tr>
<th>County</th>
<th>2013</th>
<th>2045</th>
<th>2013-45</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatham*</td>
<td>41,543</td>
<td>72,110</td>
<td>30,567</td>
<td>74%</td>
</tr>
<tr>
<td>Durham</td>
<td>286,210</td>
<td>475,091</td>
<td>188,881</td>
<td>66%</td>
</tr>
<tr>
<td>Orange</td>
<td>139,289</td>
<td>194,867</td>
<td>55,578</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>467,042</td>
<td>742,068</td>
<td>275,026</td>
<td>59%</td>
</tr>
</tbody>
</table>

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

**Employment**

<table>
<thead>
<tr>
<th>County</th>
<th>2013</th>
<th>2045</th>
<th>2013-45</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chatham*</td>
<td>9,339</td>
<td>17,718</td>
<td>8,379</td>
<td>90%</td>
</tr>
<tr>
<td>Durham</td>
<td>192,877</td>
<td>342,910</td>
<td>150,033</td>
<td>78%</td>
</tr>
<tr>
<td>Orange</td>
<td>64,212</td>
<td>107,791</td>
<td>43,579</td>
<td>68%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>266,428</td>
<td>468,419</td>
<td>201,991</td>
<td>76%</td>
</tr>
</tbody>
</table>

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

- Fast growth, especially Durham and Chatham counties.
- Employment growth outpaces population growth.
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.
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.
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)

<table>
<thead>
<tr>
<th>Name</th>
<th>Current 2013</th>
<th>E+C 2045</th>
<th>Change 2013 to 2045 E+C</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE Data ==&gt;</td>
<td>12,698,821</td>
<td>21,108,837</td>
<td>66%</td>
</tr>
<tr>
<td>Transportation Network ==&gt;</td>
<td>30</td>
<td>31</td>
<td>3%</td>
</tr>
<tr>
<td>Total Vehicle Miles Traveled (VMT-daily)</td>
<td>314,735</td>
<td>665,310</td>
<td>111%</td>
</tr>
<tr>
<td>Total Vehicle Hours Traveled (VHT-daily)</td>
<td>0.75</td>
<td>0.99</td>
<td>31%</td>
</tr>
<tr>
<td>Total Vehicle Miles Traveled (VMT-per capita)</td>
<td>30</td>
<td>31</td>
<td>3%</td>
</tr>
<tr>
<td>Total Vehicle Hours Traveled (VHT-per capita)</td>
<td>0.75</td>
<td>0.99</td>
<td>31%</td>
</tr>
</tbody>
</table>

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

- Speed and distance decline.
- Travel time increases.

Large increase in congested VMT
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

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

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

### Travel Time Percent Increase

<table>
<thead>
<tr>
<th></th>
<th>Durham DT</th>
<th>RTP</th>
<th>Raleigh</th>
<th>Chapel Hill</th>
<th>Hillsborough</th>
<th>Pittsboro</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>To</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durham</td>
<td>0%</td>
<td></td>
<td>42%</td>
<td>87%</td>
<td>61%</td>
<td>72%</td>
</tr>
<tr>
<td>RTP</td>
<td>52%</td>
<td></td>
<td>100%</td>
<td>78%</td>
<td>64%</td>
<td>61%</td>
</tr>
<tr>
<td>Raleigh</td>
<td>62%</td>
<td>61%</td>
<td>75%</td>
<td>64%</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td>Chapel Hill</td>
<td>98%</td>
<td>107%</td>
<td>112%</td>
<td>83%</td>
<td>66%</td>
<td></td>
</tr>
<tr>
<td>Hillsborough</td>
<td>48%</td>
<td>40%</td>
<td>72%</td>
<td>38%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>Pittsboro</td>
<td>31%</td>
<td>22%</td>
<td>38%</td>
<td>14%</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

**Compare 2013 and 2045 E+C: PM Peak Travel time (percent increase)**

Commutes toward Raleigh and away from Chapel Hill have largest increases in travel time.
Hotter the line color = larger % increase
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 county-level and close-up map views.
Congestion is almost universal for interstates, freeways and arterials.