Mobility Performance Measure Reporting Using SERPM 7.0 Outputs

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September 18, 2015
Project History
Purpose

- Develop a methodology for calculating Mobility Performance Measure projections for future year scenarios using SERPM 7.0 model outputs.
- No data collection or importing data into the model
- No model refinement, validation, or manipulation
Purpose

Select Performance Measures:

- Vehicle Miles Traveled
- Person Miles Traveled
- Travel Time Reliability
- Travel Time Variability
- Vehicle Hours of Delay
- Average Travel Speed
- Percentage of Miles Severely Congested
- Hours Severely Congested
### Purpose

<table>
<thead>
<tr>
<th>Mode</th>
<th>Quantity</th>
<th>Quality</th>
<th>Accessibility</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Highway</strong></td>
<td>Vehicle Miles Traveled</td>
<td>% Travel Meeting LOS Criteria</td>
<td>% Miles Meeting LOS Criteria</td>
<td>% Miles Severely Congested</td>
</tr>
<tr>
<td></td>
<td>Person Miles Traveled</td>
<td>Travel Time Reliability</td>
<td>Travel Time Reliability</td>
<td>% Travel Severely Congested</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Travel Time Variability</td>
<td>Vehicle Hours of Delay</td>
<td>Hours Severely Congested</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average Travel Speed</td>
<td></td>
<td>Vehicles Per Lane Mile</td>
</tr>
<tr>
<td><strong>Aviation</strong></td>
<td>Passengers</td>
<td>Departure Reliability</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>Passengers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Seaport</strong></td>
<td>Passengers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transit</strong></td>
<td>Passenger Miles Traveled</td>
<td>Average Headway</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Passenger Trips</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pedestrian</strong></td>
<td></td>
<td></td>
<td>% Sidewalk Coverage</td>
<td></td>
</tr>
<tr>
<td><strong>Bicycle</strong></td>
<td></td>
<td></td>
<td>% Bike Lane/Shoulder Coverage</td>
<td></td>
</tr>
<tr>
<td><strong>Freight</strong></td>
<td>Combination Truck Miles Traveled</td>
<td>Travel Time Reliability</td>
<td></td>
<td>% Miles Severely Congested</td>
</tr>
<tr>
<td></td>
<td>Truck Miles Traveled</td>
<td>Travel Time Variability</td>
<td></td>
<td>Vehicles Per Lane Mile</td>
</tr>
<tr>
<td><strong>Aviation</strong></td>
<td>Tonnage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rail</strong></td>
<td>Tonnage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Seaport</strong></td>
<td>Tonnage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Truck Equivalent Units</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Reporting Periods:**
- 🕒 = Peak Hour
- 🕒 = Peak Period
- 🗓️ = Daily
- 🌐 = Yearly

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**Overview**

**Methods**

**Results**

**Conclusion**
Methodology

Largely consistent with the methodology used in the FDOT 2014 Source Book

Some modifications due to fundamental differences…

- **Directionality:** The Source Book is based exclusively on bidirectional AADT, using K and D factors to estimate directional hourly volumes. The SERPM 7 model is based on directional links, with their own directional volumes by time of day. This allows for a better representation of the directionality of traffic patterns.

- **Peak Hour:** In the Source Book, hourly volumes are the product of a roadway’s AADT and a default K factor for each facility type. The SERPM 7 contains five time periods—early morning, AM peak period, mid-day, PM peak period and evening—allowing for a more accurate definition of peak hour performance measures.

- **Speeds:** Speed calculations in SERPM 7 are based on the Bureau of Public Roads (BPR) function. The FDOT Source Book uses BPR curves and other methods contained in the HCM 2010 and the FDOT Generalized Service Volume Tables.

- **Delay Thresholds:** The FDOT Source Book calculates delay against LOS B conditions. However, LOS B volume thresholds are not available from SERPM 7, and are therefore extrapolated based on the LOS C volume thresholds contained in SERPM 7 and the FDOT Generalized Service Volume Tables.
### Daily VMT and PMT

#### Broward

<table>
<thead>
<tr>
<th>Miles Traveled (in millions)</th>
<th>2010-VMT</th>
<th>2040-VMT</th>
<th>2010-PMT</th>
<th>2040-PMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeways (incl. off- and on-ramps)</td>
<td>10.0</td>
<td>11.2</td>
<td>15.5</td>
<td></td>
</tr>
<tr>
<td>Turnpike (incl. off- and on-ramps)</td>
<td>4.3</td>
<td>7.4</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>Highways</td>
<td>0.8</td>
<td>3.0</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Arterials</td>
<td>21.4</td>
<td>27.4</td>
<td>33.2</td>
<td></td>
</tr>
</tbody>
</table>

#### Palm Beach

<table>
<thead>
<tr>
<th>Miles Traveled (in millions)</th>
<th>2010-VMT</th>
<th>2040-VMT</th>
<th>2010-PMT</th>
<th>2040-PMT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeways (incl. off- and on-ramps)</td>
<td>8.2</td>
<td>10.2</td>
<td>12.8</td>
<td></td>
</tr>
<tr>
<td>Turnpike (incl. off- and on-ramps)</td>
<td>3.2</td>
<td>6.4</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Highways</td>
<td>2.4</td>
<td>4.6</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>Arterials</td>
<td>15.9</td>
<td>22.7</td>
<td>35.2</td>
<td></td>
</tr>
</tbody>
</table>

#### Purpose

- Overview
- Methods
- Results
- Conclusion
Travel Time Reliability and Variability

**Broward**

- Reliability: 0.60 to 1.83
- Variability: 0.55 to 2.14

**Palm Beach**

- Reliability: 0.77 to 1.69
- Variability: 0.36 to 2.13
**Daily Vehicle Hours of Delay**

### Broward

- **Freeways (incl. off- and on-ramps):** 6
- **Turnpike (incl. off- and on-ramps):** 0
- **Highways:** 0
- **Arterials:** 113

### Palm Beach

- **Freeways (incl. off- and on-ramps):** 2
- **Turnpike (incl. off- and on-ramps):** 0
- **Highways:** 0
- **Arterials:** 60

### Purpose

- Overview
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Forecasting how different strategies and alternatives, at facility and system level, achieve mobility targets

Better information about the outcomes of investment decisions in comparison with goals and objectives

- Demand/Congestions Management
- Alternative Corridor Evaluation
- TSM&O
- Long Range Planning