Memphis MPO Performance Measures

ETC Meeting: November 1, 2018
Background

- Key Feature of **MAP-21 (2012) & FAST ACT (2015)** was the establishment of a performance and outcome based program for transportation decisions.

- Targets are set by TDOT & MDOT. Staff recommends that the Memphis MPO support the established targets of each individual state.
PM1: Safety (ROUND 2 UNDERWAY)

PM2: Infrastructure Condition (UNDERWAY)

PM3: System Performance (UNDERWAY)
PM1: Safety

ROUND TWO
PM1: Safety (Round 2)

- **Area** – Individual State Targets for **all public roads** in the state **developed and adopted annually**
- **Data** – Highway Performance Monitoring System (HPMS) and Fatality Analysis Reporting System (FARS)
- **Performance Measures** –
  - Number of Serious Injuries
  - Rate of Serious Injuries per 100 Million VMTs
  - Number of Fatalities
  - Rate of Fatalities per 100 Million VMTs
  - Number of Non-motorized Fatalities and Serious Injuries
- **Calculation** –
  - 5-Year Rolling Average of 5 individual, consecutive points of data.
    - Number Targets – *Arithmetic average, rounded to tenths place*
    - Rate Targets – *Average, rounded to the thousandths place*
## PM1 Safety: Tennessee

<table>
<thead>
<tr>
<th>Safety Performance Measure</th>
<th>Round 1</th>
<th></th>
<th>Round 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Fatalities</td>
<td>995.6</td>
<td>1021.4</td>
<td>1000.6</td>
<td>1022.0</td>
</tr>
<tr>
<td>Fatality Rate</td>
<td>1.358</td>
<td>1.337</td>
<td>1.329</td>
<td>1.291</td>
</tr>
<tr>
<td>Number of Serious Injuries</td>
<td>7319.4</td>
<td>7630.8</td>
<td>7227.6</td>
<td>7374.6</td>
</tr>
<tr>
<td>Rate of Serious Injuries</td>
<td>9.976</td>
<td>9.982</td>
<td>9.594</td>
<td>9.324</td>
</tr>
<tr>
<td>Number of Non-Motorized Fatalities and Serious Injuries</td>
<td>434.6</td>
<td>493.2</td>
<td>467.7</td>
<td>546.8</td>
</tr>
</tbody>
</table>
## PM1 Safety: Mississippi

<table>
<thead>
<tr>
<th>Safety Performance Measure</th>
<th>Round 1</th>
<th>Round 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Fatalities</td>
<td>633.8</td>
<td>677.8</td>
</tr>
<tr>
<td>Fatality Rate</td>
<td>1.606</td>
<td>1.668</td>
</tr>
<tr>
<td>Number of Serious Injuries</td>
<td>567.6</td>
<td>574.4</td>
</tr>
<tr>
<td>Rate of Serious Injuries</td>
<td>1.439</td>
<td>1.425</td>
</tr>
<tr>
<td>Number of Non-Motorized Fatalities and Serious Injuries</td>
<td>111.8</td>
<td>119.8</td>
</tr>
</tbody>
</table>
PM2: Pavement & Bridge Condition
PM2: Performance Measures

**Subpart C: Pavement Condition**
- Percentage of Pavement in Good Condition (Interstate)
- Percentage of Pavement in Poor Condition (Interstate)
- Percentage of Pavement in Good Condition (Non-Interstate NHS)
- Percentage of Pavement in Poor Condition (Non-Interstate NHS)

State DOT Due Date: May 20, 2018
MPO Due Date: Nov. 16, 2018

**Subpart D: Bridge Conditions**
- Percentage of Bridges in Good Condition (NHS)
- Percentage of Bridges in Poor Condition (NHS)

State DOT Due Date: May 20, 2018
MPO Due Date: Nov. 16, 2018
PM2: Pavement Condition

- **Area** – Individual State 2 & 4 Year Targets for the Non-Interstate NHS and 4 Year Target for Interstate (MPO: 4 Year Target Only)
- **Data** – Highway Performance Monitoring System (HPMS)
- **Performance Measures** –
  - % of Interstate Pavements in Good and Poor Condition
  - % of non-Interstate NHS Pavements in Good and Poor Condition
- **Calculation** –
  - Good and Poor Condition Rating Areas: International Roughness Index (IRI), Cracking, Rutting (Asphalt pavements), and Faulting (Concrete pavements)
## PM2: Pavement Condition

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Tennessee (Baseline)</th>
<th>Tennessee (4-Year Target 2021)</th>
<th>Mississippi (Baseline)</th>
<th>Mississippi (4-Year Target 2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Pavement in Good Condition (Interstate)</td>
<td>75.6%</td>
<td>60.0%</td>
<td>75.0%</td>
<td>55.0%</td>
</tr>
<tr>
<td>Percent of Pavement in Poor Condition (Interstate)</td>
<td>0.14%</td>
<td>1.0%</td>
<td>0.99%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Percent of Pavement in Good Condition (Non-Interstate NHS)</td>
<td>72.7%</td>
<td>40.0%</td>
<td>62.5%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Percent of Pavement in Poor Condition (Non-Interstate NHS)</td>
<td>6.7%</td>
<td>4.0%</td>
<td>9.3%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>
PM2: Bridge Condition

- **Area** – Individual State 2 & 4 Year Targets for all bridges carrying the NHS, including on- and off- ramps (MPO: 4 Year Target Only)
- **Data** – National Bridge Inspection Standards (NBIS)
- **Performance Measures** –
  - % of NHS Bridges by deck area classified as in Good or Poor Condition
- **Calculation** –
  - Good and Poor Condition Rating Areas: Deck, Superstructure, Substructure, and Culvert
## PM2: Bridge Condition

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Tennessee (Baseline)</th>
<th>Tennessee (4-Year Target 2021)</th>
<th>Mississippi (Baseline)</th>
<th>Mississippi (4-Year Target 2021)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of Bridges in Good Condition</td>
<td>39.5%</td>
<td>36.0%</td>
<td>61.7%</td>
<td>60.0%</td>
</tr>
<tr>
<td>Percent of Bridges in Poor Condition</td>
<td>3.5%</td>
<td>6.0%</td>
<td>2.1%</td>
<td>5.0%</td>
</tr>
</tbody>
</table>
PM3: System Performance
Performance Measures

Subpart G: Traffic Congestion
State DOT & MPO Due Date: May 20, 2018
- Annual Hours of Peak-Hour Excessive Delay
- Percentage of Non-Single Occupancy Vehicle Travel

Subpart H: Total Emissions Reduction
State DOT Due Date: May 20, 2018
MPO Due Date: November 16, 2018
- Total Emissions Reductions (VOC) kg/day
- Total Emissions Reductions (CO) kg/day
- Total Emissions Reductions (NOx) kg/day

Subpart E: Travel Time Reliability
State DOT Due Date: May 20, 2018
MPO Due Date: November 16, 2018
- Percentage of Person Miles Traveled that are Reliable (Interstate)
- Percentage of Person Miles Traveled that are Reliable (Non-Interstate NHS)

Subpart F: Freight Reliability
State DOT Due Date: May 20, 2018
MPO Due Date: November 16, 2018
- Truck Travel Time Reliability Index
PM3: On-Road Mobile Source Emissions

- **Area** – Individual State 2 & 4-Year Targets (Applies to Memphis & Knoxville)
- **Data** – FHWA CMAQ Public Access System (UPACS)
- **Performance Measure** –
  - Total Emissions Reduction
- **Calculation** –
  - Cumulative 2 and 4-Year Emissions Reduction for CMAQ funded projects of reduced emissions for:
    - Nitrogen Oxides (NOx)
    - Volatile Organic Compounds (VOCs)
    - Carbon Monoxide (CO)
      - Not applicable to Mississippi target
## PM3: Emissions Targets - Approved

<table>
<thead>
<tr>
<th></th>
<th>Total Emissions Reduction Performance Measures</th>
<th>Baseline (FY 14-17)</th>
<th>2-Year Target (FY 18-19)</th>
<th>4-Year Target (FY 18-21)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (VOC) kg/day</td>
<td>230.025</td>
<td>30.698</td>
<td>61.396</td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (CO) kg/day</td>
<td>530.282</td>
<td>75.000</td>
<td>150.000</td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (NOx) kg/day</td>
<td>363.399</td>
<td>62.840</td>
<td>125.680</td>
</tr>
<tr>
<td><strong>MS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (VOC) kg/day</td>
<td>28.000</td>
<td>&gt; 0</td>
<td>&gt; 0</td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (CO) kg/day</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Total Emissions Reductions (NOx) kg/day</td>
<td>85.000</td>
<td>&gt; 0</td>
<td>&gt; 0</td>
</tr>
</tbody>
</table>
PM3: Travel Time Reliability

- **Area** – Individual State 2 & 4 Year Targets for Interstate and 4 Year Target for Non-Interstate (MPO: 4 Year Target Only)
- **Data** – National Performance Management Research Data Set (NPMRDS) & Highway Performance Monitoring System (HPMS)
- **Performance Measures** –
  - Percent of the Person Miles Traveled on the **Interstate** that are reliable
  - Percent of the Person Miles Traveled on the **Non-Interstate NHS** that are reliable
- **Calculation** –
  - \[ \text{Level of Travel Time Reliability (LOTTR)} = \frac{\text{80th Percentile Travel Time}}{\text{50th Percentile Travel Time}} \]
  - Level of Travel Time Reliability (LOTTR) for the reporting segment must be less than 1.50 to be considered reliable
### PM3: Travel Time Reliability Targets

<table>
<thead>
<tr>
<th>Travel Time Reliability Performance Measures</th>
<th>Tennessee (TDOT)</th>
<th>Mississippi (MDOT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline (2017)</td>
<td>4-Year Target (2021)</td>
</tr>
<tr>
<td>Percentage of Person Miles Traveled that are Reliable (Interstate)</td>
<td>87.7%</td>
<td>83.0%</td>
</tr>
<tr>
<td>Percentage of Person Miles Traveled that are Reliable (Non-Interstate NHS)</td>
<td>N/A</td>
<td>87.5%</td>
</tr>
</tbody>
</table>
PM3: Freight Movement

- **Area** – Individual State 2- and 4-Year Targets (MPO: 4 Year Target Only)
- **Data** – National Performance Management Research Data Set (NPMRDS)
- **Performance Measure** –
  - Percent of the Interstate System Mileage providing for Reliable Truck Travel Times (Truck Travel Time Reliability Index)
- **Calculation** –
  - \[ \text{Truck Travel Time Reliability} = \frac{\text{95th Percentile Truck Travel Time}}{\text{50th Percentile Truck Travel Time}} \]
## PM3: Freight Reliability Targets

<table>
<thead>
<tr>
<th>Freight Reliability Performance Measures</th>
<th>Tennessee (TDOT)</th>
<th>Mississippi (MDOT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck Travel Time Reliability (TTTR) Index</td>
<td>Baseline (2017)</td>
<td>4-Year Target (2021)</td>
</tr>
<tr>
<td></td>
<td>1.35</td>
<td>1.33</td>
</tr>
</tbody>
</table>
PM: Target Setting - Timeline

- **PM1: Safety**
  - 2017: Initial Focus
  - 2018: Continuous Improvement
  - 2019: Enhanced Safety Measures
  - 2020: MPO Action Required
  - 2021: Evaluation
  - 2022: Final Review
  - 2023: Statement of Achievement

- **PM2: Infrastructure**
  - 2017: Pavement & Bridge Analysis
  - 2018: Infrastructure Upgrade
  - 2019: Maintenance Schedule
  - 2020: MPO Action Required
  - 2021: Comprehensive Inspection
  - 2022: Retrofit Plans
  - 2023: Final Assessment

- **PM3: System Performance**
  - 2017: System Performance, Freight, & CMAQ
  - 2018: Performance Indicators
  - 2019: Data Collection
  - 2020: MPO Action Required
  - 2021: Reports
  - 2022: Analysis
  - 2023: Recommendations

- **TAM: Transit**
  - 2017: Transit System Analysis
  - 2018: Service Enhancement
  - 2019: Accessibility
  - 2020: MPO Action Required
  - 2021: Operational Adjustments
  - 2022: Expansion
  - 2023: Service Improvement

Legend:
- **MPO Action Required**