Performance Measures and Training for RWM

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Road Weather Management Stakeholder Meeting
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RWM Performance Measurement

1. Program Level - Road Weather Management (RWMP)

2. Office Level - Transportation Operations

3. Agency Level - Federal-Aid Highway Program
RWMP Performance Goals

1. Maximize use of available road weather information and technologies

2. Expand Road Weather R&D efforts to enhance roadway safety, capacity, and efficiency while minimizing environmental impacts; and

3. Promote technology transfer of effective road weather scientific and technological advances.
Performance Measurement Process

SAFETEA-LU
Goals

RWM
Program Objectives

RWMP
Projects, Products, Activities and Services (Inputs)

RWM
Program Implementation

Outputs
Outcomes

Performance Measures
Relevant Activities and Products

- *Clarus* Initiative
- Maintenance Decision Support System (MDSS)
- Weather Responsive Traffic Management
- Connected Vehicles Weather Research
- Stakeholder Coordination/Partnership
- Training and Education
Progress to Date

PHASE 1 - Identify measures (completed 2008)
- 11 output and outcome measures
- 16 performance indicators

PHASE 2 - Quantify the measures (completed 2010)
- Compiled available data on measures
- Conducted interviews with States
- Published final report, flyer

PHASE 3 - Update the measures and identify gaps (to be initiated in 2011)
Goal 1: Maximize use of available road weather information and technologies

**Measure 1:** Number or percentage of agencies using information for advisory, control, treatment decisions

- **Indicator 1:** Number of states disseminating weather information to travelers
- **Indicator 2:** Number of agencies adopting MDSS
- **Indicator 3:** Number of states using weather information for their operations
- **Indicator 4:** Number of agencies that subscribe to weather products and services

**Measure 2:** Number or percentage of travelers who use road weather information for making travel decisions

- **Indicator 1:** Number of travelers using agency’s 511 for weather info
- **Indicator 2:** Number of agencies providing ESS data via the web for agency and public

**Measure 3:** Number of ESS deployed and used by agencies to support decision-making

- **Indicator 1:** Number of agencies contributing ESS data to Clarus
Goal 2: Expand road weather R&D efforts to enhance roadway safety, capacity, and efficiency while minimizing environmental impacts.

**Measure 1:** Number of agencies participating in and benefiting from road weather R&D projects

**Measure 2:** Percentage of time roadway meets safety and capacity LOS standards during and after weather events

**Measure 3:** Reduction in agency costs (labor, equipment, material) due to adoption of decision support systems

**Measure 4:** Reduction in user costs (e.g., delay, crashes, emissions) due to improved road weather strategies

**Indicator 1:** State-level winter response LOS statistics and performance standards

**Indicator 2:** Reduction in crashes and capacity losses, delays due to RWMP practices adopted by public agencies
Goal 3 Measures and Indicators

Goal 3: Promote technology transfer of effective road weather scientific and technological advances

Measure 1: Number of agencies/individuals visited or contracted through technology transfer and outreach activities

Indicator 1: Number of agencies participating in Clarus initiative activities

Indicator 2: Number of agencies participating in MDSS stakeholder meetings

Measure 2: Rate of adoption of RWMP technologies by agencies that participated in workshops or training

Indicator 3: Number of participants in RWMP hosted, sponsored or promoted training

Measure 3: Number of RWMP technology development, testing and deployment activities of the public or private sector

Indicator 1: Number of agencies contributing their ESS data to Clarus

Indicator 2: Public and private sector use of quality-checked Clarus data

Measure 4: Number of road weather technologies developed through partnerships reaching operational deployment

Indicator 3: Number of states adopting MDSS technology and methods
Transportation Operations Efficiency Index (OEI)

- Composite index that reflects the level at which the 40 largest metropolitan areas are deploying proactive transportation management and operations strategies.
- Replaces the old Congestion Reduction Efficiency Index (more about Traffic Incident Management)
- Broader look at Operations strategies FHWA is promoting
Operations Efficiency Index (OEI) Measures

1. Have regional traffic signal operations programs
2. Have one or more active congestion pricing projects
3. Have an established bottleneck relief program
4. **Deploy road weather management strategies**
5. Deploy traffic incident management strategies
6. Deploy work zone management strategies to improve work zone operations
7. Display travel times on variable message signs (VMS)
1. Do they provide current and forecast weather and road conditions on 511/HAR, public websites and message signs?

2. Are they implementing traffic control in response to weather events (e.g., VSL, ramp meter, signal timing) and integrating weather information in their TMC?

3. Do they use weather-based decision support systems to determine timing and amount of staffing and treatment during snow/ice events, or to schedule non-winter maintenance activities based on weather?
<table>
<thead>
<tr>
<th>RWM OEI Measures</th>
<th>MATURE (Rating = 1.0)</th>
<th>IN PROCESS/MEDIUM (Rating = 0.66)</th>
<th>LOW (Rating = 0.33)</th>
<th>NONE (Rating = 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVISORY INFORMATION</td>
<td>All of &quot;Medium&quot; plus contract with a value-added weather service provider to include forecasted info. Info is disseminated via all 3 strategies.</td>
<td>Weather and/or road conditions provided based on visuals (e.g., cameras) or internal inputs (e.g., CARS). Information is disseminated using at least 2 of the 3 strategies (511/HAR, website, or message sign).</td>
<td>Weather (not road weather) information is provided, and one advisory strategy is used (511/HAR, website, or message sign)</td>
<td>No weather information provided</td>
</tr>
<tr>
<td>TRAFFIC CONTROL</td>
<td>Fully implementing multiple weather-responsive control strategies. Integrated weather information in TMC operations.</td>
<td>Implementing or in the process of implementing multiple control strategies. In the process of integrating weather information into their TMC.</td>
<td>Implement at least one weather-responsive traffic control strategy (e.g. VSL, ramp meter, signal timing)</td>
<td>No weather-responsive traffic control being implemented</td>
</tr>
<tr>
<td>MAINTENANCE DECISION-SUPPORT</td>
<td>Deploying tailored, weather-based DSS (e.g., recommended actions as in MDSS) to make maintenance decisions.</td>
<td>Exploring the use of tailored, weather-based decision support systems (e.g., recommended actions as in MDSS) to make maintenance decisions.</td>
<td>Using minimal/non-tailored weather information to make maintenance decisions.</td>
<td>No weather-based decision support system used</td>
</tr>
</tbody>
</table>
## Top 12 Metro Areas (4th Qtr, 2010)

<table>
<thead>
<tr>
<th>METRO AREA</th>
<th>Advisory</th>
<th>Traffic Control</th>
<th>Maintenance Decision-Support</th>
<th>Composite OEI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1.00</td>
</tr>
<tr>
<td>Chicago</td>
<td>0.66</td>
<td>1</td>
<td>1</td>
<td>0.89</td>
</tr>
<tr>
<td>Phoenix</td>
<td>1</td>
<td>0.66</td>
<td>1</td>
<td>0.89</td>
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<tr>
<td>St. Louis</td>
<td>1</td>
<td>0.33</td>
<td>1</td>
<td>0.78</td>
</tr>
<tr>
<td>Virginia Beach</td>
<td>1</td>
<td>1</td>
<td>0.33</td>
<td>0.78</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>1</td>
<td>0.66</td>
<td>0.66</td>
<td>0.77</td>
</tr>
<tr>
<td>Seattle</td>
<td>1</td>
<td>0.66</td>
<td>0.66</td>
<td>0.77</td>
</tr>
<tr>
<td>Minneapolis-St. Paul</td>
<td>1</td>
<td>0.66</td>
<td>0.66</td>
<td>0.77</td>
</tr>
<tr>
<td>Denver</td>
<td>0.66</td>
<td>0.66</td>
<td>1</td>
<td>0.77</td>
</tr>
<tr>
<td>Kansas City</td>
<td>1</td>
<td>0.66</td>
<td>0.66</td>
<td>0.77</td>
</tr>
<tr>
<td>Nashville</td>
<td>1</td>
<td>0.33</td>
<td>0.66</td>
<td>0.66</td>
</tr>
<tr>
<td><strong>AVE. FOR 40 AREAS</strong></td>
<td><strong>0.7</strong></td>
<td><strong>0.44</strong></td>
<td><strong>0.46</strong></td>
<td><strong>0.53</strong></td>
</tr>
</tbody>
</table>
FHWA FY12 Budget: Outlines Performance Management Process

- Secretary, with input, establishes quantifiable performance measures and national performance goals
- States work in partnership with FHWA to set state targets
- Envisions planning process as vehicle to implement performance management
- Calls on States to report annually on progress in meeting targets
- Provides additional flexibility when targets are met
- Requires performance improvement plan when targets not met
FHWA-Wide Performance Management Framework

1. National Goal Areas
2. Performance Definitions & Metrics
3. National & State Targets
4. Investment Plans & Strategies
5. Program Delivery
6. Monitoring, Evaluation, & Reporting

Framework Elements
National Performance Goal Areas

- Safety
- Pavement and bridge condition
- Reliability
- Freight/economic competitiveness
- Environment/climate change
- Livability
Training for RWM

- Principles & Tools for Road Weather Management (NHI/CITE)
- RWIS Equipment and Operations (CITE)
- Weather-responsive Traffic Management (under development)
- Weather & Road Management (COMET)
- User Needs to Mitigate Societal Impacts: Road Weather (NWS)