Performance Measures and Training for RWM

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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

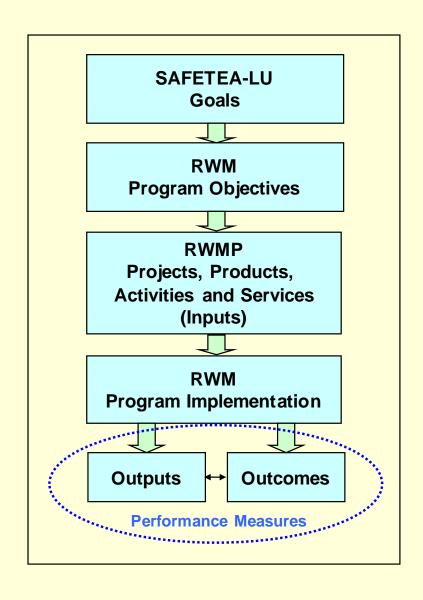


RWMP Performance Goals

- 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



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 Measures & Indicators

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

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

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

Indicator 1: Number of states disseminating weather information to travelers

Indicator 2: Number of agencies adopting MDSS

Indicator 1: Number travelers using agency's 511 for weather info

Indicator 1: Number of agencies contributing ESS data to Clarus

Indicator 3: Number of states using weather information for their operations

Indicator 4: Number of agencies that subscribe to weather products and services

Indicator 2: Number of agencies providing ESS data via the web for agency and public

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Goal 2 Measures and Indicators

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

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

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: Reductions in crashes due to RWMP practices adopted by public agencies

Indicator 2: Reduction in 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

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

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

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

Indicator 1: Number of agencies participating in *Clarus* initiative activities

Indicator 2: Number of agencies participating in MDSS stakeholder meetings

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

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

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

Indicator 3: Number of states adopting MDSS technology and methods

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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)



Road Weather Management OEI Criteria

- 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?

RWM OEI Measures

	MATURE	IN PROCESS/MEDIUM	LOW	NONE
	(Rating = 1.0)	(Rating = 0.66)	(Rating = 0.33)	(Rating = 0)
ADVISORY	All of "Medium" plus	Weather and/or road	Weather (not road	No weather
INFORMATION	contract with a value-	conditions provided based	weather) information is	information
	added weather	on visuals (e.g., cameras) or	provided, and one	provided
	service provider to	internal inputs (e.g., CARS).	advisory strategy is	
	include forecasted	Information is disseminated	used (511/HAR,	
	info. Info is	using at least 2 of the 3	website, or message	
	disseminated via all 3	strategies (511/HAR,	sign)	
	strategies.	website, or message sign).		
TRAFFIC	Fully implementing	Implementing or in the	Implement at least one	No weather-
CONTROL	multiple weather-	process of implementing	weather-responsive	responsive
	responsive control	multiple control strategies.	traffic control strategy	traffic control
	strategies. Integrated	In the process of integrating	(e.g. VSL, ramp meter,	being
	weather information	weather information into	signal timing)	implemented
	in TMC operations.	their TMC.		
MAINTENANCE	Deploying tailored,	Exploring the use of tailored,	Using minimal/non-	No weather-
DECISION-	weather-based DSS	weather-based decision	tailored weather	based
SUPPORT	(e.g., recommended	support systems (e.g.,	information to make	decision
	actions as in MDSS) to	recommended actions as in	maintenance decisions.	support
	make maintenance	MDSS) to make maintenance		system used
	decisions.	decisions.		

Top 12 Metro Areas (4th Qtr, 2010)

METRO AREA	Advisory	Traffic Control	Maintenance Decision- Support	Composite OEI
Houston	1	1	1	1.00
Chicago	0.66	1	1	0.89
Phoenix	1	0.66	1	0.89
St. Louis	1	0.33	1	0.78
Virginia Beach	1	1	0.33	0.78
Philadelphia	1	0.66	0.66	0.77
Seattle	1	0.66	0.66	0.77
Minneapolis-St. Paul	1	0.66	0.66	0.77
Denver	0.66	0.66	1	0.77
Kansas City	1	0.66	0.66	0.77
Nashville	1	0.33	0.66	0.66
AVE. FOR 40 AREAS	0.7	0.44	0.46	0.53

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)

