Weather-Responsive Traffic Management: Overview

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NTOC Webinar
March 20, 2012
FHWA Road Weather Management Program

- Road Weather Observation/Forecasting
  - *Clarus*, RWIS

- Maintenance Decision Support
  - MDSS (Winter Maintenance), AVL technologies

- Weather Responsive Traffic Management

ITS Connected Vehicles Program
Congestion Pie: Sources of Traffic Delays

- Bottlenecks: 40%
- Traffic Incidents: 25%
- Bad Weather: 15%
- Work Zones: 10%
- Special Events: 5%
- Poor Signal Timing: 5%
FHWA Vision and Goals for WRTM

- Better understanding of the impacts of weather on traffic flow and operations
- Develop, promote and implement strategies and tools to mitigate weather impacts
- Transportation agencies use current and forecast weather and traffic conditions to manage traffic flow and highway operations
- Motorists receive and respond to road weather and traffic information
- Weather impacts incorporated in traffic analysis and engineering models
WRTM Strategies

- Advisory
  - Warning Systems
  - Traveler Info. Systems

- Control
  - Signal Timing
  - Ramp Metering
  - Variable Speed Limits
  - Road/Lane Closures

- Treatment
  - Maintenance
  - Obstruction Removal

*Developments in WRTM Strategies. Final Report. FHWA-JPO-11-086*
Traffic Analysis and Modeling

- Empirical Studies on Weather and Traffic
- Microscopic Analysis of Traffic in Inclement Weather
  - Car Following, Gap Acceptance, Lane Changing
- Traffic Estimation and Prediction
  - Incorporating Weather Impacts in Traffic Estimation and Prediction Systems (TrEPS)
  - New York, Salt Lake City, Chicago
- Developing Weather Module in Traffic Analysis Tools
- SHRP2, L8 – Incorporating Non-Recurring Congestion in the Highway Capacity Manual
- Guidelines for Variable Speed Limit during Wet Weather
Traffic/Weather Data Collection and Integration

- Weather Integration in TMC’s
  - TMC Self-Evaluation and Planning Guide
  - Sacramento, Kansas City, CO Springs, Wyoming, Louisiana

- Data Sources for WRTM
  - Data Mining and Gap Analysis for WRTM
  - Use of Mobile Data for WRTM Studies

- Baselining Current Road Weather Information

- Clarus Initiative and Connected Vehicles Program
Human Factors Analysis of Road Weather Advisory and Control Information

Testing and Evaluation of Design Guide for Road Weather Messages

Enhanced Road Weather Content for Traveler Advisories (Clarus Regional Demo)
Performance Evaluation/Monitoring

- Operations Efficiency Index (OEI) – Indicators of RWM/WRTM Deployment in 40 largest Metropolitan Areas
- Travel time reliability measures (SHRP-2)
- 1201 Real-Time Traveler Info System Rule Compliance
- RWMP Performance Measures (i.e. user costs, agency costs).
- Active Traffic Demand Management (ATDM) – HCM Performance Analysis of Operational Improvements
1st National Workshop on WRTM

- October 6-7, 2011, Portland OR
- Jointly with the TMC Pooled Fund Program
- 26 State DOT’s, 2 cities, 1 turnpike authority
- Objectives: Discuss existing practices, identify needs, and create a stakeholder group
- Plans to conduct workshop every 2 years
WRTM Workshop Recommendations

- Refine/Implement Concepts of Operations for WRTM Strategies
- Compile WRTM best practices and available tools/materials
- Conduct a series of webinars and tech transfer activities
- Provide guidance on the 1201 Rule
- Include private sector and academia in stakeholder group
- Create a peer exchange group
- Coordinate research activities with relevant pooled fund efforts and coalitions
- Continue to develop and deploy guidelines for consistent Road Weather Messages
- Coordinate with other Operations programs such as ICM, ATDM, Freight, etc.
- Apply performance/effectiveness measures, monitor and compile evaluation results
WRTM Webinar Series

- Active Traffic Management and Weather  
  *(March 20, 2012)*

- Using Social Media During Weather Events  
  *(April 19, 2012, 1:00 -2:30 Eastern)*

- Weather Responsive Traffic Signal Management  
  *(May 2012, specific date TBD)*

- Other Topics TBD
Road Weather Management
Anytime, Anywhere Road Weather Information

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