Weather-Responsive Traffic Management: An Overview

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Session 1
1st National Workshop on WRTM
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Weather Impacts on Highway System

- **Safety**
  - Approx 1.5 million weather-related crashes/year resulting in 7K+ fatalities

- **Mobility**
  - About 25% of non-recurring delays on freeways is due to weather, total system delay is 1 billion hrs/yr.

- **Productivity**
  - Weather affects about 1/3 of the national GDP

- **Environment**
  - Chemical anti-icing and deicing account for roughly 1/3 of expenditures for snow and ice control
FHWA Road Weather Management

Traffic Management Goals:

- Better understand the impacts of weather (i.e., snow, rain, fog, wind, heat, etc.) on traffic flow and operations

- Develop, promote and implement strategies and tools to mitigate those impacts
WRTM Success Measures

- 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.
Road Weather Management Program Elements

- Partnership and Collaboration
- Research, Development and Deployment
- Customer Service, Training and Outreach
- Program Monitoring and Evaluation
WRTM Framework

Safety, Mobility and Performance Evaluation

WRTM STRATEGIES

Advisory Control Treatment

Traffic Analysis and Modeling

Behavioral/Human Factors Analysis

Traffic and Weather Data Collection and Integration
WRTM Strategies
(Sessions 2 & 3)

- Advisory
  - Warning Systems
  - Traveler Info. Systems

- Control
  - Signal Timing
  - Ramp Metering
  - Variable Speed Limit
  - Road/Lane Closure

- Treatment
  - Maintenance
  - Obstruction Removal
Traffic Analysis and Modeling (Session 4)

- Macroscopic Studies of 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)
  - Testing and Evaluation of Weather-Sensitive TrEPS models
- Developing Weather Module in Traffic Analysis Tools
- SHRP2, L8 – Incorporating Non-Recurring Congestion in the Highway Capacity Manual
Traffic/Weather Data Collection and Integration (Session 5)

- 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
  - Application of Mobile Data for WRTM Studies

- Baselining Current Road Weather Information

- Clarus Initiative
Behavioral/Human Factors Analysis
(Sessions 2, 3 and 4)

- Human Factors Analysis of Road Weather Advisory and Control Information
- Enhanced Road Weather Content for Traveler Advisories (Clarus Regional Demo)
Performance Measures for WRTM Strategies (Session 6)

- No. or % of agencies using RW info for traffic management
- No. or % of travelers using RW info for decision-making
- No. of road weather stations used by agencies
- Percent of time roadway meets capacity and safety level of standards during adverse weather
- Reduction in agency costs (labor, equipment, materials)
- Reduction in user/traveler costs (delay, crashes, emissions)
Workshop Handouts

- Agenda and List of Participants
- WRTM Brochure
- Flyers: TMC Weather Integration and Road Weather Message Design Guidelines
- Road Weather Bulletin
- Concepts of Operations for WRTM Strategies
- RWMP Update (September 2011)
- Clarus Regional Demonstrations and Research Projects
- Road Weather and Connected Vehicles Flyer
- Evaluation/Suggestion Form
Road Weather Management
Anytime, Anywhere Road Weather Information

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