Maintenance & Operations
Decision Support System (MODSS)

Program Overview

2007 MDSS Annual Meeting
Session 7

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FHWA Road Weather Management
Introducing MODSS

• MODSS = Maintenance & Operations Decision Support System
• Leverages lessons learned & software developed for MDSS
• Expands DSS functionality beyond snow & ice control to other areas of transportation maintenance & operations
MODSS Vision

- MODSS will become the parent program for customized decision support modules such as MDSS

- Customized forecasts, rules of practice, and recommendations will flow from the parent to the individual modules

- Changes made at the parent level to the weather forecast modules will benefit every DSS
Winter Maintenance Decision Support System (MDSS)

Environmental Sensor Stations (ESS)

Vehicle-based Observations (VII)

Supplemental Wx Obs (ASOS, Radar, Satellite)

Numerical Weather Forecast Data

Surface Transportation Weather Management System (Clarus)

Traffic Monitoring Systems Cameras, Loops

Traffic Analysis Tools

Standard Operating Procedures (e.g. Rules of Practice)

Maintenance & Operations Decision Support System (MODSS)

Winter Maintenance Decision Support System (MDSS)

Maintenance Beyond Snow & Ice Control Decision Support System

Traffic Management Decision Support System

Construction Management Decision Support System

Other Surface Transportation Decision Support Systems

Strategies & Guidance to aid Surface Transportation Decision-Makers
Successful Formula

• Premise: No one knows more about the work they do then the folks who are actually doing it
• State DOT representatives were invited to participate in stakeholder meetings last winter to gather requirements for:
  - Maintenance beyond snow & ice control
  - Traffic Management
• Concept of Operations document was developed Summer 2007
MODSS User Workshop Stakeholders
Maintenance Beyond Snow & Ice Control

Feb 2007, Boulder, CO
MODSS User Workshop Stakeholders
Traffic Management

March 2007, Boulder, CO
MODSS: Maintenance Activities

Weather Observations & Forecasts
- Air Temperature
- Pavement Temperature
- Wind Speed/Gusts
- Wind Direction
- Rain Chances
- Rain Amount
- Lightning Location
- Relative Humidity

Maintenance Applications
- Chip Sealing
- Patching
- Striping
- Seal Coating
- Pesticide Application & Spraying
- Mowing
- Sweeping/Cleaning
MODSS: Maintenance Activities

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Maintenance Applications
- Ditch/Culvert Maintenance
- Bridge & Deck Repairs
- Setting Signs
- Tree Trimming
- Small Wedge/Level Paving
- Special Events
MODSS: Traffic Mgmt Today

Outcomes from the initial stakeholder meetings:

• Weather is typically not integrated with traffic operations
• Many rely on watching maintenance personnel actions/reactions to weather changes
• Use loop detectors/cameras to monitor traffic volumes and weather conditions
• Most do not have plans for or the capability to modify signal timing in response to weather
• Many are only **reactive** to weather (e.g. only using DMS for cautionary phrases)
MODSS: Traffic Mgmt Future

- Integrate weather, pavement, traffic & road condition data with decision support
- Weather-responsive traffic signal timing
- Variable speed limits based upon prevailing road weather conditions
- Enhanced road weather information for travelers
- More Proactive traffic management with respect to weather