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Alaska Department of Transportation & Public Facilities Maintenance Decision Support System

October 23, 2013



Winter Maintenance Challenges

- Poor travel conditions are one of the Nation's leading cause of weather-related deaths and injuries
- Controlling snow and ice buildup on roadways during winter weather events presents several challenges for winter maintenance personnel
 - need to make effective winter maintenance decisions (treatment types, timing, rates, and locations)
- Decisions based on knowledge of current pavement conditions, current and forecasted weather conditions

Current Method: Weather Guessing



40%

Mostly

Cloudy

High: 45 °F

Mostly

Cloudy

Low: 31 °F

Mostly

Cloudy

High: 54 °F

Chance

Rain

Low: 28 °F

Chance

Rain/Snow

Low: 27 °F

Partly

Cloudy

Low: 27 °F

Mostly

Cloudy

High: 42 °F

Mostly

Sunny

High: 46 °F

Chance Rain/Snow High: 43 °F

WEDNESDAY

ABOUT

En Español



Why Improve On This? (Why MDSS?)

- Customer demand for higher level of service and reliable, current information
- **Budget/staff constraints** in the face of high cost of labor, equipment and materials used for maintenance
- Difficulty in forecasting certain types of weather and complex pavement response to conditions and maintenance efforts
- Environmental concerns with anti-icing and de-icing



Maintenance Decision Support System

- MDSS is an automated tool for providing decision support to winter road maintenance managers.
- MDSS is a multi-layered, information system that provides forecasts, predictions, reports on observed weather and road conditions, and becomes a management support system that can be utilized year round



Alaska Enhanced MDSS

- Decision support tool → recommends course of action based on conditions/forecast
- Integrates fixed RWIS sites and mobile operations
- Algorithms customized for Alaska





Partners in MDSS

- NOAA/National Weather Service
- National Center for Atmospheric Research



 University of Alaska Fairbanks





MDSS Hardware



Mobile Observations

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MDSS Home Page External site - no login required!

http://www.ral.ucar.edu/projects/rdwx_mdss/emdss/?state=alaska









EMDSS Benefits

- Proactive approach
- **Capitalizes** on existing road and weather data sources and augments where data gaps exist
- Efficient allocation of resources
- Mobile operations yield real-time data and offer flexibility





Future Build Out



- Connected vehicle display on MDSS Site -1 hour historical
- Treatment recommendations for all weather sites Statewide
- Expand mobile observations
- Tablet and iPhone access (w/App)

