1.0 Definition

The Maintenance Decision Support System (MDSS) combines small-scale weather forecasts with information about the roadway and previous treatments applied to produce winter maintenance treatment recommendations for winter maintenance service providers.

1.1 MDSS/AVL-GPS Background

MDSS enables the storm manager to view hourly weather forecasts and gives recommendations for treatment up to 48 hours before a storm event. MDSS works independently from Automatic Vehicle Location – Global Positioning System (AVL-GPS). However, when used in combination, AVL-GPS provides real time treatment information into MDSS and allows the system to give improved treatment recommendations throughout the event. The same forecasting system is used year-round to aid in summer activities also. This technology is also referenced in HMM 6-20-52.

1.2 Business Need

Benefits of MDSS include but are not limited to:

- Consistent high level of service for winter maintenance and traveler safety
- Cost savings for materials (salt, liquid, sand, etc.)
- Improved treatment recommendations
- Improved forecasting capabilities
- Improved incident management
- Improved operator safety
- Improved communications
- Improved accountability
- Automated reporting capabilities
- Improved winter crash analysis
- New operational mapping
- Real-time storm management
- Summer asset observations

As owner and operator of state highways, it is the responsibility of the Wisconsin Department of Transportation (WisDOT) to utilize the most efficient and effective means for making system and operational management decisions involving vehicle equipment and data collection devices. Service provider trucks used for state maintained highways shall be displayed in MDSS through an AVL-GPS vendor in order to qualify for the Winter Readiness reimbursement as outlined in HMM 02-20-70.

The winter maintenance service provider requires weather forecast services and treatment recommendations to efficiently plan winter activities. These products are needed to increase the effectiveness of anti-icing and de-icing programs, and to better manage manpower and materials during the winter season.

The following information will be required:

MDSS forecasts for the next 48 hours, delivered hourly or more frequently. MDSS forecasts will include the following items:

- Temperature
- Dew point
- Wind direction and speed
- Times of any expected precipitation
- Snowfall amounts

- Frost forecast for the current morning and the following morning
- Hourly pavement temperature forecast for the next 48 hours.
- Pavement treatment recommendations.
- Winter storm warning service using either cell phone or pager notification.

1.3 Responsibilities

This state financed program is managed by the Bureau of Highway Maintenance (BHM). The winter maintenance engineer acts as program manager and coordinates with regions and service providers on program responsibilities.

1. Bureau of Highway Maintenance (BHM)

- Research MDSS services provided by vendors
- When required, issue requests for proposals (RFP's) for MDSS services.
- Coordinate weather forecast services requirements with the regions and winter maintenance service providers by understanding the needs of each agency.
- Prepare statewide MDSS services contract and any required annual addendums.
- Issue purchase orders for all statewide MDSS services and include fees for these services in the BHM annual spending plan.
- Provide the regions and winter maintenance service providers information regarding the format and transmission method for the MDSS services.
- Provide the regions and winter maintenance service providers training on how to best utilize MDSS services.
- Work closely with the MDSS contractor to examine and solve any issues with the system or data that arise.
- Attend all meetings of the MDSS Pooled Fund Technical Panel and discuss any issues that have arisen with MDSS in Wisconsin.
- Coordinate with the Bureau Of Traffic Operations (BTO) annually on the MDSS road condition data being exported to the State's 511 Traveler Information System.
    - Monitor this system during the winter months to find any irregularities between modeled and actual conditions.
    - Annually, prior to October 15, provide BTO a GIS shapefile of all MDSS plow routes

2. Regions

- Utilize MDSS when making operational and tactical decisions.
- Monitor the use of MDSS by the winter maintenance service providers.
- Promptly notify BHM of any problems with MDSS.
- Provide on-the-spot assistance on MDSS matters to the winter maintenance service providers.
- Attend training provided and arranged by BHM.

3. Winter Maintenance Service Providers

- Use MDSS as required to enhance winter operations decision making. Evaluate MDSS treatment recommendations and use them when possible.
- Immediately notify BHM of any problems with MDSS. This includes, but is not limited to, poor weather forecasts or treatment recommendations and problems with the MDSS website.
- Attend training provided and arranged by BHM.
- Use the MDSS winter storm warning service contracted for by BHM.