

### 3. EXECUTIVE SUMMARY

This report documents a recent study of the use of Montana's Road Weather Information Systems (RWIS) Network. The Montana Department of Transportation (MDT) uses RWIS sensors to evaluate weather conditions as an input for winter maintenance decisions. This report also looks at prototype weather decision support systems for Montana and development of a surface transportation and weather decision support tool and strategic plan for improved highway operations in Montana.

This study looked at how the current network of sensors is being used, what improvements could be made to the network, and if there is a need to incorporate an extensive decision support tool into the current network.

Participants in the study included headquarters and field level MDT maintenance personnel, the Western Transportation Institute (WTI), and Meyer, Mohaddes Associates (MMA). The study consisted of the following steps:

1. Conduct a survey of RWIS network users.
2. Compile and analyze survey results.
3. Evaluate survey results and develop understanding of requirements.
4. Develop list of potential activities aimed at addressing requirements.
5. Conduct a meeting to discuss results, requirements and potential future activities.
6. Document the process and results.

The survey results indicated that the RWIS network is being used; however, a greater level of confidence in the information being provided is needed and the ease with which the systems can be used needs improvement. In addition, the network may be improved with additional RWIS locations, several site relocations, and expanded RWIS site capabilities for individual RWIS sites and the network overall. In particular, MDT's network will also be increased through training of winter maintenance decision-makers regarding use of the systems and how to apply the information being provided.

Another issue discussed during the study was the use of anti-icing chemicals. Participants indicated that there is a need for a more standardized approach to the use of these chemicals and a need for training in their application. The concept of a standardized approach for the use of anti-icing chemicals leads to the idea of guidance regarding the appropriate response to a variety of winter weather conditions. A system that provides such guidance, a decision support system, could be used to implement and automate a guidance policy on winter maintenance. The flexibility granted to winter maintenance decision-makers can be built into such a system to be compatible with the policy itself.

Expanding and rearranging the RWIS network, educating personnel on the use of RWIS information and anti-icing chemicals, and implementation of a decision support system all, either individually or in any combination, represent significant commitments by MDT. These specific commitments will require a comprehensive approach toward systems integration, which is the key to optimizing the benefits of any compliments of ITS deployments. Commitment of this magnitude and the requirements for effective systems integration call for effective planning and design that incorporates input from the full range of system users; while this planning itself

represents a significant commitment, it is worthwhile when viewed with the potential gains in efficiency and accuracy from the RWIS network enhancements in mind.