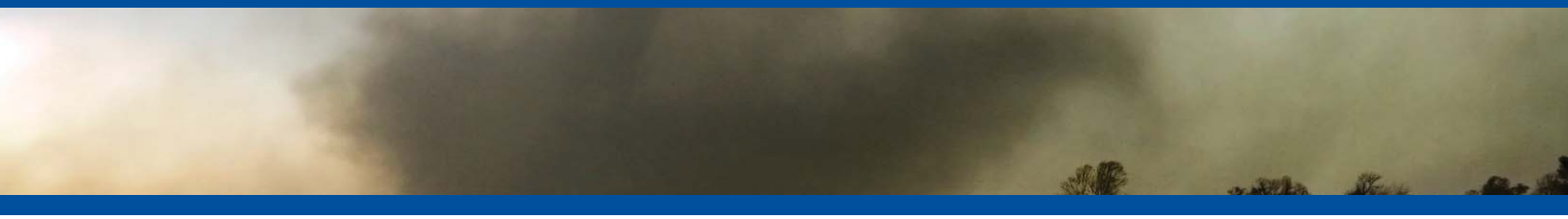
Weather Integration in TMC Operations

A Self-Evaluation and Planning Guide



A Transportation Management Center (TMC) usually serves as the hub of a transportation system and the focal point for communicating traffic information to motorists and the general public. It is also the place where agencies can coordinate their responses to transportation situations, including those involving weather, which can have a negative impact on traffic flow.

The Federal Highway Administration's (FHWA) Road Weather Management Program (RWMP) developed the *Self-Evaluation and Planning Guide* (FHWA-JPO-08-057) to help TMCs identify their weather information needs and develop a plan to better integrate weather in their daily operations. The development of the Guide is one of the recommendations identified in an earlier FHWA study titled *Integration of Emergency and Weather Elements into Transportation Management Centers* (FHWA-HOP-06-090).

Photo courtesy of Minnesota Department of Transportation

The mobility and safety of the nation's transportation system depend on timely, accurate, and localized weather information.

What is Weather Integration?

TMCs can effectively integrate weather information by:

- Collecting, aggregating, analyzing, monitoring, and sharing traffic and road weather data collected from Environmental Sensor Stations (ESS) and other weather observing systems;
- Installing high-speed communications;
- Subscribing to road weather forecast services;
- Increasing technical and procedural connectivity; and
- Using systems that support joint decision-making.

Weather Integration Benefits

The mobility and safety of the nation's transportation system depend on timely, accurate, and localized weather information. Weather integration allows TMCs to anticipate and minimize the impact of weather events. This information, for instance, can be used to better manage roadways through management strategies such as weather-responsive traffic signal timing and variable speed messaging.

Access to current and forecast road weather conditions allows TMCs to implement other management strategies, including weather-responsive advisory, control, and treatment functions.

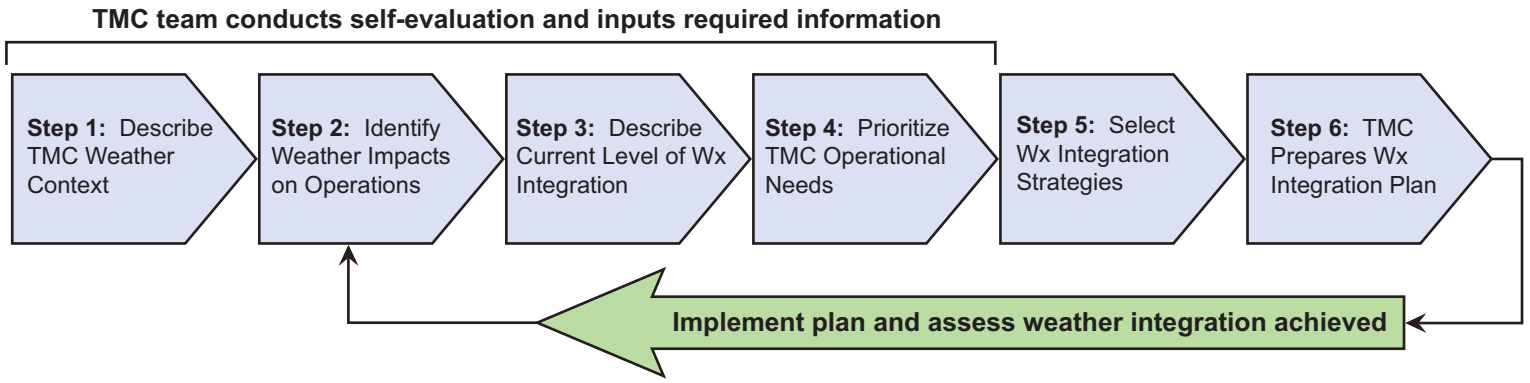
Photo courtesy of U.S. DOT Road Weather Management Program

Integration also enables decision making to be broadened to include different groups within the TMC, such as maintenance, construction, and safety personnel as well as outside agencies. This allows decisions to be made proactively and in concert with various stakeholders, thereby increasing overall system effectiveness.

The Self-Evaluation and Planning Guide

Integrating weather information and technologies into TMC operations involves a number of approaches with varying costs and effectiveness. The *Self-Evaluation and Planning Guide,* which is available as a manual and an electronic database, simplifies the process by identifying an appropriate set of integration strategies along with planning and implementation requirements.

The Weather Integration Self-Evaluation Tool



What the Guide Provides

The Guide encourages participation from all traffic operations stakeholders including TMC managers and operators, road maintenance personnel, law enforcement, and emergency response teams. By using this collaborative approach, the Guide can help TMCs:

- Identify the major weather events that affect operations;
- Assess critical weather impacts in their jurisdiction;
- Identify existing level of weather integration in the TMC;
- Prioritize TMC operational needs for responding to weather events;
- Implement strategies for integrating weather information (ranging from basic to more sophisticated strategies and technologies) that best meet their operational needs; and
- Gather additional information to assist in developing a weather integration plan.

Prior to publishing the Guide, the RWMP conducted pilot tests at two TMCs and made revisions based on those experiences. The final report (FHWA-JPO-08-058) summarizes the development of the Guide and these real-word evaluations.

The Regional TMC of Caltrans District 3 in Sacramento decided to assess their weather integration needs separately for the valley and mountain road systems, given the wide variation in weather and organizational structure for these different geographic areas. As a result, the Regional TMC developed a weather integration plan that focuses on implementing an automated alert notification system to aid operators in responding to emerging weather events.

Photo courtesy of U.S. DOT Road Weather Management Program

The Statewide Traffic Operations Center in Milwaukee, Wisconsin also conducted a self-evaluation and provided constructive feedback that resulted in significant improvements to the Guide.

Interested in Participating?

The RWMP is now working with TMCs that are interested in conducting self-evaluation and planning for enhanced weather integration. A marketing plan and a deployment plan have been developed to promote the guide and to aid in selecting the TMCs that will benefit from weather integration self-evaluation. For additional information about the Guide or if interested in conducting the self-evaluation, please contact Roemer Alfelor at the number and e-mail below. The report and the Guide can also be downloaded from the FHWA web site listed below.

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