



Weather-responsive traffic management (WRTM) strategies increase the effectiveness of traffic operations during adverse road weather conditions, and weather-responsive maintenance management (WRMM) strategies help reduce costs associated with winter maintenance.

Over the last 10 years, vehicle crashes have averaged more than 5.7 million per year. Twenty-one percent of those crashes—nearly 1.21 million—occurred under adverse weather conditions. On average, nearly 6,000 people are killed and over 445,000 are injured in weather-related crashes each year. Likewise, the delays associated with weather can be profound, resulting in significant losses in efficiency.

WRTM strategies provide relevant and timely information to agencies on the need for appropriate traffic intervention methods to mitigate the impacts of weather-related road and traffic conditions. The result is improved mobility, reduced delays, and safer travel during inclement weather. WRMM strategies are also used by agencies to improve mobility and safety in adverse weather, as well as reduce the negative environmental impacts and costs associated with road salt use.

WEATHER-RESPONSIVE TRAFFIC AND MAINTENANCE MANAGEMENT

The FHWA Road Weather Management Program develops and deploys road weather management strategies that help agencies respond to adverse weather conditions by providing traffic advisories and warnings to travelers and controlling the flow of traffic on the highways during inclement weather. A recent focus of the program is using mobile observations and connected vehicle data to support traffic and

maintenance management. The program developed and published the [Guidelines for Deploying Connected Vehicle-Enabled Weather Responsive Traffic Management Strategies](#).

Adopting weather-responsive traffic and maintenance management strategies that use road weather data from [Integrating Mobile Observations \(IMO\)](#) and connected vehicle technologies, combined with informed decisions stemming from [Pathfinder](#), will enable State and local agencies to be proactive and manage the system before negative impacts occur. In addition, more accurate and location-specific road weather condition data will allow appropriate traffic management strategies to be deployed where they are needed and will reduce costs associated with winter maintenance, including salt and chemical applications.

Integrating Mobile Observations involves instrumenting transportation agency vehicles with road weather sensors and other automated data collection technologies to acquire location specific data to support decision-making.

Pathfinder is a collaborative effort among transportation agencies, their local National Weather Service forecast offices, and private weather service providers to provide clear, consistent, and impact-based messages for the public during weather events.



Weather-responsive maintenance management strategies allow Minnesota DOT to monitor and control the amount of salt used to treat the roads. Source: Minnesota DOT



Traveler information systems can improve safety during adverse weather conditions.

BENEFITS

- ▶ **Safer Roads.** Agencies can use traffic management and traveler information systems to reduce delays and crashes resulting from adverse weather.
- ▶ **Informed Travelers.** Agencies can provide weather impact statements that enable drivers to make better decisions regarding whether, when, and where to travel.
- ▶ **Environmental Sustainability.** The negative environmental impacts of road salt use by many agencies can be reduced as the right quantities of chlorides and other chemicals are only applied where they are warranted.

STATE OF THE PRACTICE

States and local agencies that have readily adopted Pathfinder and IMO are leading the deployment of WRTM and WRMM. States that have already implemented or are implementing WRTM strategies using mobile observations from vehicles include

Wyoming, Michigan, South Dakota, Washington, and Delaware. States that have implemented winter maintenance/anti-icing strategies using IMO data include Minnesota, Michigan, and Nevada. In addition, several local agencies, such as the City of West Des Moines, Iowa, have made extensive investments in vehicle-based technologies for more efficient and effective traffic and maintenance management.

RESOURCES

FHWA EDC-5 Weather-Responsive Management Strategies https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/weather_strategies.cfm

FHWA Road Weather Management Program <http://www.ops.fhwa.dot.gov/weather>

Front Photo Sources:

Michigan DOT Plow and Salt Spreader, and Michigan DOT VMS / Source: Michigan DOT

Wyoming DOT – Wind Warning System / Source: National Weather Service



U.S. Department of Transportation
Federal Highway Administration

For additional information, please contact:

Roemer Alfelor
FHWA Office of Operations
(202) 366-9242
Roemer.Alfelor@dot.gov