

Weather-Responsive Management Strategies

Maximizing data use to enhance traffic operations and maintenance decisions

Adverse weather conditions are a factor in one out of five crashes on U.S. roads. Each year, nearly 6,000 people are killed and more than 445,000 are injured in weather-related crashes. Inclement weather also contributes to traffic delays, freight costs, and environmental impacts from road salt use.

In Every Day Counts round five (EDC-5), the Federal Highway Administration is encouraging State and local transportation agencies to adopt **weather-responsive management strategies** to increase the effectiveness of traffic operations and maintenance when the weather turns bad. The initiative focuses on maximizing the use of mobile and connected-vehicle data about road weather to support operations and maintenance decisions.

“The EDC-5 initiative builds on what we achieved in EDC round four in the **weather-savvy roads** initiative by looking at how to make better use of data and do a more effective job of managing the highway system under adverse weather conditions,” said Paul Pisano, an EDC-5 team leader and head of FHWA’s Road Weather and Work Zone Management Team.

The initiative promotes two types of weather-responsive approaches. Traffic management strategies such as motorist advisory systems, signal timing, and variable speed limits can help agencies improve safety and keep traffic and freight moving. Maintenance management strategies such as plowing, debris removal, and water drainage maintenance also enhance safety and mobility, while anti-icing and deicing techniques can reduce the cost and negative environmental effects of chemical use.

“Agencies can choose to implement one or both strategies,” said Roemer Alfelor, an EDC-5 team



Michigan’s Mi Drive website lets travelers know where plows are working so they can choose the safest trip alternatives during inclement weather.

Michigan Department of Transportation

leader and FHWA transportation specialist. “And these strategies apply to all weather conditions, not just winter weather.”

Michigan’s Traveler Information System

One agency using weather-responsive management strategies is the Michigan Department of Transportation (MDOT), an early adopter of **integrating mobile operations** (IMO) technology to collect data using agency fleet vehicles. MDOT’s Weather-Responsive Traveler Information System (Wx-TINFO) brings together environmental and weather-related data from fixed and IMO sources.

The data are used for purposes such as motorist advisories and warnings on roadside dynamic message signs and the **Mi Drive** traveler information website, which has features such as images

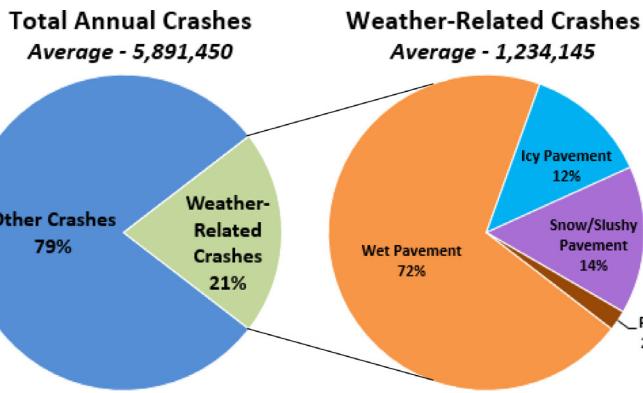
from snowplow cameras so travelers can track where they are. "We've had a lot of good feedback from the public on that," said Steve Cook, MDOT operations and maintenance engineer.

By providing the traveling public with timely information, Wx-TINFO increases awareness of the safest trip alternatives and helps motorists make better decisions during inclement weather conditions, Cook said. "It also provides the ability to utilize an alert system to advise maintenance staff of necessary winter maintenance locations, including unsafe pavement and roadway conditions, and enhances response times," he said.

Local-Level Technology Investment

The city of West Des Moines, IA, is among the local agencies that invest in technologies for more effective traffic and maintenance management. "We can't grow our infrastructure fast enough to keep up with the growth of traffic on our roadways, so we've had to turn to other methods and a lot of that is technology," said Brett Hodne, the city's public services director.

West Des Moines uses road weather sensors to collect data such as road friction, pavement and air temperatures, and snow and ice depth, as well as cameras to record road conditions. That enables the city to monitor road conditions and adjust traffic signals based on traffic incidents



Weather-responsive management strategies apply to all weather conditions.

National Highway Traffic Safety Administration crash data

or slowdowns. "Having the ability to monitor and adjust on the fly has been big," Hodne said.

Hodne cited automated vehicle location (AVL) technology as "a huge step in deicer chemical management for West Des Moines." Tying the city's AVL system into its plows and spreader controllers allowed the city to capture the amount of material spread in real time and develop strategies to help operators apply chemicals more efficiently. This led to a 30 percent reduction in deicer chemical use while maintaining the same level of service on roads. "AVL has been a tremendous tool for us to manage our salt strategy," Hodne said.

MORE INFORMATION

- ▶ Watch the [orientation webinar](#) on weather-responsive management strategies.
- ▶ See FHWA's Road Weather Management [web page](#) for best practices, publications, and training.
- 📄 Read "[Guidelines for Deploying Connected Vehicle-Enabled Weather Responsive Traffic Management Strategies](#)."
- ▶ See the [IMO toolkit](#).
- {@} Contact [Roemer Alfelor](#) of the FHWA Office of Operations for information and technical assistance.



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