

FHWA ROAD WEATHER MANAGEMENT PROGRAM UPDATE

<http://www.ops.fhwa.dot.gov/weather/index.asp>

July 2019

The Road Weather Management Program (RWMP) focuses on stakeholder coordination, applied research and technology transfer, performance measurement, training and education. The following information summarizes our current efforts.

- **Weather-Responsive Management Strategies (EDC-5) Initiative:** The RWMP is currently deploying the 2019-2020 EDC-5 *Weather-Responsive Management Strategies (WRMS)* initiative, which focuses on using mobile and connected vehicle data for traffic and maintenance management (including salt management strategies) during weather events. Twenty three (23) States signed up to implement WRMS. Deployment support activities and products by FHWA will be similar to EDC-4 WSR. A technical support contractor is currently assisting FHWA and the WRMS Innovation Deployment Team in conducting these activities and developing the products. For more information about WRMS, see https://www.youtube.com/watch?v=jYrrw9s6T_U&feature=youtu.be or visit the EDC website https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/weather_strategies.cfm
- **Weather-Savvy Roads - Every Day Counts (EDC-4) Initiative:** More than 30 State DOT's implemented *Pathfinder* and/or *Integrating Mobile Observations (IMO)* under EDC-4 WSR initiative. The RWMP continues to provide/offer general and tailored technical assistance (workshops, peer exchanges, webinars) and resources (fact sheets, case studies) to transportation agencies interested in deploying and evaluating Pathfinder. Support for IMO-related efforts are provided under EDC-5 (see above). The WSR Toolkit contains many resources for both solutions, and can be found here: <https://go.usa.gov/xnSqy>.
- **Road Weather Management and the Connected Vehicle:** The RWMP and the ITS JPO continue to develop solutions that use connected vehicles to address road weather problems:
 - The *Vehicle Data Translator (VDT- aka Pikalert[®] System)* processes vehicle probe data and turns it into useable weather and road condition observations. The CV Pilot in Wyoming as well as the States of Nevada and Alaska are using the tool. Version 5.0 is available at the USDOT Open Source Application Development Portal (www.itsforge.net) under 'Road Weather Management'.
 - The *Integrated Mobile Observations (IMO)* project continues to influence transportation agencies in the country. Through the EDC-4 WSR initiative, the RWMP assisted 23 states with adopting IMO technologies and streamlining them into the State DOT's standard operating procedures. The EDC-5 WRMS Initiative builds upon the EDC-4 IMO implementations.
 - The project to develop an *Integrated Model for Road Condition Prediction (IMRCP)* continues. The model is a comprehensive travel conditions prediction tool that incorporates transportation and non-transportation data, deterministic and probabilistic data, and measured and reported data. The prototype of the tool was tested last fall in the Kansas City region by Kansas City TOC; further testing currently taking place through 2019.
- **Road Weather Observations:** FHWA continues to work with the National Oceanic and Atmospheric Administration (NOAA) to transition the *Clarus* functions to NOAA, as part of the Meteorological Assimilation Data Ingest System (MADIS), <http://madis.noaa.gov/>. To support broad road weather research needs, FHWA developed the Weather Data Environment (<https://wxde.fhwa.dot.gov>). The WxDE incorporates functionality of the *PikAlert[®] System*, and provides researchers and practitioners access to a range of quality-checked road weather observations from both mobile and static platforms.
- **RWIS Environmental Sensor Stations (ESS)**
 - **NTCIP 1204 Updates:** NTCIP 1204 v4.0, the Environmental Sensor Station Interface Standard, is nearly complete. Favorable balloting took place; adoption appears imminent.
 - **SAE J2945/3:** Work is underway to develop the probe weather-related parameter communication standards. ConOps and Requirements documents have been developed, and the Design Document is being prepared.
 - **ESS Siting Guidelines (Version 2.0)** is available electronically: ([FHWA-JPO-09-012](https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/weather_strategies.cfm))
- **Road Weather Management Regional Roundtables:** The Fall Roundtable Webinars are planned for October 2019 (dates TBD). Hosted by the RWMP twice a year for the past several years, the webinars promote coordination across the States in six different regions. The Road Weather Management Exchange portal

(<https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/default.aspx>) contains materials from the roundtable webinars and allows practitioners to share information, technologies and resources.

- **Coordination With Research Consortia and Other Entities:**
 - **R&D Strategic Initiatives:** The RWMP is currently working with the FHWA Turner-Fairbank Highway Research Center in McLean, VA on two projects: (1) Developing guidance on traveler information messages for non-recurring events, and (2) Development of Cooperative Automation Capabilities for TSMO strategies including Road Weather Management
 - **World Road Association (PIARC):** The 2016-2019 Cycle ends in October. The RWMP provides technical support to the working group of the PIARC Winter Service Technical Committee (B.2.1)
 - **National Academies:** The Board on Atmospheric Sciences and Climate published a report titled “Integrating Social and Behavioral Sciences with the Weather Enterprise.” The report examines weather information and social science, and includes a chapter specifically about road weather. The report is downloadable from <https://www.nap.edu/catalog/24865/integrating-social-and-behavioral-sciences-within-the-weather-enterprise>.
- **Weather-Responsive Traffic Management (WRTM):**
 - **Guidelines for Deploying Connected Vehicle-Enabled Weather Responsive Traffic Management Strategies** – The guidelines ([FHWA-JPO-17-478](#)) help transportation agencies utilize road weather connected vehicle data to support WRTM. It is available and accessible from the NTL. The RWMP worked with Delaware and Washington State DOT’s to implement and evaluate the guidelines ([FHWA-JPO-18-648](#))
 - **Mobile Data for WRTM Strategies:** The RWMP published 3 reports on the application of mobile data for WRTM in transportation agencies: (1) Wyoming: [FHWA-JPO-16-266](#), (2) South Dakota [FHWA-JPO-16-269](#), and (3) Michigan [FHWA-JPO-16-323](#).
 - **Analysis and Modeling of WRM Strategies:** The RWMP developed, tested, and evaluated analysis, modeling and simulation (AMS) procedures for road weather connected vehicle strategies. The project evaluation report ([FHWA-JPO-16-387](#)) and summary report ([FHWA-JPO-16-388](#)) are available from the NTL. Implementation of the AMS tools in transportation agencies is currently underway.
- **Road Weather Management Performance Measures**
 - The RWMP is currently conducting the 2019 performance measures update. A survey of State transportation agencies’ existing practices and tools was recently completed and the results will be published this summer.
 - The Compendium of RWM Benefit-Cost Analysis Studies ([FHWA-HOP-16-093](#)) contains 27 case studies of actual and hypothetical RWM investments/projects including connected vehicle applications.
 - A Prototype Road Weather Performance Management tool that uses Connected Vehicle data was tested in Minnesota. The prototype tool code and documentation are available in the Open Source Applications Development Portal (www.itsforge.net).
- **Strengthening the Road Weather Management Capabilities of Transportation Agencies.**
 - The Road Weather Management *Capability Maturity Framework (CMF)*, which helps agencies evaluate their capabilities in managing the transportation system during road weather events, has been deployed in 15 State DOT’s. Additional workshops are scheduled North Dakota, Nebraska and Connecticut. If interested in conducting an assessment in your State, contact the RWMP. An electronic CMF assessment tool is also available and can be accessed in: <http://www.ops.fhwa.dot.gov/tsmoframeworktool/tool/rwm/index.htm>.
 - The *Pathfinder* project ensures that road users receive consistent and non-conflicting information about weather and road conditions. Information-sharing models between State DOTs, their private sector weather providers and the National Weather Service can be found in the Pathfinder implementation guide ([FHWA-HOP-16-086](#)). See EDC-4 Weather-Savvy Roads above for more details about implementation.
- **Training:** The RWMP is working with the ITS-JPO Professional Capacity Building in converting, updating and delivering the 3 RWM web-based CITE courses to NHI. The RWIS Equipment and Operations course is now available from the NHI catalogue, free to the public. The WRTM course will be available soon.
- **Upcoming Events**
 - Webinar: Using Mobile and Crowdsourced Data for Weather Responsive Mgmt. Strategies, July 18, 2019
 - AASHTO Committee on Maintenance Annual Meeting. July 13-18, 2019. Grand Rapids, MI.
 - 2019 Road Weather Management Stakeholder Meeting, August 27-29, 2019. Phoenix, AZ