FHWA ROAD WEATHER MANAGEMENT PROGRAM UPDATE

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

September 2018

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

- **Weather-Savvy Roads - Every Day Counts (EDC-4) Initiative:** The RWMP is in the 4th quarter of the 2-yr EDC-4 initiative, continuing to work with more than 30 State DOT’s in implementing Pathfinder and Integrating Mobile Observations (IMO). A national Pathfinder Summit was held in Salt Lake City on June 26-27, and an IMO Peer Exchange was conducted with Iowa DOT on August 7-8. The RWMP also continues to provide general and tailored technical assistance (workshops, peer exchanges, webinars) and resources (i.e. fact sheets, case studies, videos) on both initiatives. The WSR Toolkit containing these resources can be found in https://go.usa.gov/xnSqy, including many new fact sheets, case studies, and videos.

- **Weather-Responsive Management Strategies (EDC-5) Initiative:** FHWA announced the 2019-2020 EDC-5 initiatives, which include Weather-Responsive Management Strategies to be led by the RWMP. The initiative focuses on using mobile and connected vehicle data for traffic and maintenance management (especially salt management strategies) during weather events. An Innovation Deployment Team has been created to support implementation of the strategies. Introductory webinars were held September 10th, recordings are available here: https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/edc5-orientation-webinars.cfm.

- **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 is using the tool. Version 5.0 is available at the USDOT Open Source Application Development Portal (www.itsforge.net).
  - The Integrated Mobile Observations (IMO) project in Michigan, Minnesota, and Nevada DOT wrapped up after a successful 3rd phase. Through the IMO solution of the EDC-4 Weather-Savvy Road Initiative, the RWMP is assisting 23 states with adopting the technologies and lessons learned from IMO and streamlining them into the State DOT’s standard operating procedures.
  - 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 Scout; further testing currently taking place in 2018.

- **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 now incorporates functionality of the PikAlert® System, and provides researchers 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 is imminent (we think, but aren’t optimistic).
  - 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)

- **Road Weather Management Regional Roundtables:** The RWMP promotes coordination across the States in six different regions. Webinars were held in Fall 2017 and Spring 2018 involving our regional stakeholders. The next roundtable webinars will be held in November. 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.

Publications can be accessed at https://rosap.ntl.bts.gov/, then do an advanced search on the title or pub #
• **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) Exploring the next generation snowplow visualization-assistance tool.
  - **World Road Association (PIARC):** The 2016-2019 Cycle is underway. Gabe Guevara and Steve Lund, MnDOT, are co-chairs of the B.2.1 working group of the Winter Service Technical Committee.
  - **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](https://www.nap.edu/catalog/24865/integrating-social-and-behavioral-sciences-within-the-weather-enterprise).

• **Weather-Responsive Traffic Management (WRTM):**
  - **National WRTM Stakeholder Meeting** – The 4th National Stakeholder Meeting on Weather Responsive Traffic Management was held in August 2017 in Raleigh, NC. Twenty-four States were represented at the meeting. The presentations and meeting summary report are available in the RWMP regional roundtable exchange portal. ([https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/default.aspx](https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/default.aspx))
  - **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. They are available and accessible from the NTL. The RWMP is currently working with Washington State DOT and Delaware DOT to implement and evaluate the guidelines.
  - **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. An article on this topic and the applications was published in the May/June issue of Public Roads [https://www.fhwa.dot.gov/publications/publicroads/17mayjun/04.cfm](https://www.fhwa.dot.gov/publications/publicroads/17mayjun/04.cfm)
  - **Analysis and Modeling of WRTM 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 State DOT’s is forthcoming.

• **Road Weather Management Performance Measures**
  - FHWA initiated the 2019 RWMP performance measures update. The 2017 performance measures report (FHWA-HOP-17-048) and flyer (FHWA-HOP-17-054) are available from the RWMP website. At least forty (40) State DOT’s have responded to prior surveys of existing road weather management practices and technologies currently being used throughout the country.
  - 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](http://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 already been deployed in 13 State DOT’s. Additional workshops are available, if interested in hosting in your State, contact Roemer Alfelor. An electronic CMF assessment tool is also available and can be accessed in: [http://www.ops.fhwa.dot.gov/tsmoframeworktool/tool/rwm/index.htm](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 Weather-Savvy Roads above for more details about implementation.

• **Training:** The ITS Professional Capacity Building Program no longer offers web-based training courses through the Consortium for ITS Training and Education (CITE) program. We are currently working with the JPO and National Highway Institute (NHI) in converting, updating and delivering our three RWM training courses.

• **Upcoming Events**
  - Automated Vehicles and Meteorology Summit, Washington, DC (October 23-24, 2018)

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