

USDOT ROAD WEATHER MANAGEMENT PROGRAM UPDATE

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

October 2016

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:** Every 2 years, FHWA, through the EDC initiative, works with State DOT's, local governments, private industry and other stakeholders to identify innovative technologies and practices that merit widespread deployment. This year, a new initiative was launched entitled "Weather-Savvy Roads," which includes Pathfinder and Integrated Mobile Observations. An Innovation Deployment Team consisting of FHWA, NWS, and State DOT members was organized, and two webinars were held to promote the initiative. Seven regional summits (see *Upcoming Events* on next page) will be held to discuss and identify opportunities for implementing these technologies. FHWA will provide technical assistance and resources to help agencies implement their chosen innovations, and will also monitor the national state-of-the-practice for supporting "Weather-Savvy Roads."
- **Road Weather Management and the Connected Vehicle:** The Road Weather Management Team 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. Version 4.5 was recently completed; the code and documentation are available in the USDOT Open Source Application Development Portal (www.itsforge.net). Version 5.0 is expected for release in December.
 - FHWA continues to work with Michigan, Minnesota, and Nevada DOT on the *Integrated Mobile Observations (IMO)* project to incorporate data from their fleets into the *PikAlert*[®] System and the *Weather Data Environment*. The data are being used as input to various Road Weather Management applications.
 - 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. A survey of existing predictive models was conducted. The Concept of Operations, Requirements, and Design Documents were produced and shared with stakeholders. The tool prototype will be built next and deployed for testing in the Kansas City region.
 - One of the CV Pilot Deployment Phase-II projects was awarded to Wyoming DOT to develop and implement Road Weather Connected Vehicle applications along the I-80 corridor in Wyoming.
- **Road Weather Observations:** FHWA is still working 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 RWM research needs, FHWA developed the Weather Data Environment (<https://wxde.fhwa.dot.gov/>), which is currently on version 3.0 and being improved on a continuous basis. The WxDE, which now incorporates functionality of the *PikAlert*[®] System, is part of the ITS program's Research Data Exchange. It 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. Balloting for adoption of the revised standard is expected in December, 2016.
 - **ESS Siting Guidelines (Version 2.0)** is available electronically: ([FHWA-JPO-09-012, NTL ID 30705](#))
- **Road Weather Management Regional Roundtables:** The RWMP created the Regional Roundtables to help promote coordination across the States in six different regions. The Road Weather Management Exchange (<https://collaboration.fhwa.dot.gov/dot/fhwa/RWMX/default.aspx>) is a portal that supports these Roundtables and allows practitioners to share information, technologies and resources. The next roundtable meetings are scheduled on Oct, 11, 12 and 13 and will focus on State DOT activities related to the Weather-Savvy Roads Initiative.
- **Coordination With Research Consortia and Other entities:**
 - **R&D Strategic Initiative:** 2 projects are underway: Exploring the next generation snowplow visualization-assistance tool and developing guidance on traveler information messages for non-recurring events.
 - **Clear Roads:** The next phase of the Plug-and-Play project is underway.

- **World Road Association (PIARC):** The 2016-2019 Cycle kicked off with a meeting in France. Gabe and Steve Lund, MnDOT are co-chairs of a working group on the Winter Service Technical Committee, and are coordinating efforts for the XVth International Winter Road Congress to be held in Gdansk, Poland in 2018.
- **Weather-Responsive Traffic Management (WRTM):**
 - **Guidelines for Deploying Connected Vehicle-Enabled Weather Responsive Traffic Management –** This project focuses on advanced technologies and practices for collecting and using road weather observations including Connected Vehicle data for WRTM, and developing and implementing guidelines for transportation agencies. A draft guidelines document was developed and will be finalized this month.
 - **Mobile Data for WRTM Strategies:** The RWMP completed 3 WRTM projects in Wyoming, South Dakota and Michigan to develop advanced WRTM strategies that utilize road weather data from mobile observations. Existing traveler information and traffic management systems were enhanced by information received from vehicles and integrated with other weather and traffic data. Final Reports and Flyers were published as follows: Wyoming: [FHWA-JPO-16-266](#) and [271](#), South Dakota [FHWA-JPO-16-269](#) and [325](#), Michigan [FHWA-JPO-16-323](#) and [324](#). Similar work supporting a weather-responsive Active Traffic Management (ATM) System was developed and evaluated in Oregon.
 - **Developments in WRTM Strategies:** The research project to develop, test and evaluate analysis, modeling and simulation procedures for road weather connected vehicle DMA and ATDM strategies using Chicago as testbed was completed. The report will be available before the end of the year. Several documents are available to help agencies implement WRTM strategies including Developments in Weather Responsive Traffic Management Strategies ([FHWA-JPO-11-086](#), [NTL 42965](#)). We also published guidelines for disseminating advisory and control information pertaining to weather ([FHWA-JPO-12-046](#), [NTL 45623](#)).
- **Road Weather Management Performance Measures**
 - A new task was initiated to update the 2015 Road Weather Management Performance Measures Report to reflect 2016-2017 performance. The existing measures are now being evaluated to match current RWMP goals and activities. The 2015 Report can be found on the RWMP website ([FHWA-HOP-16-001](#)).
 - The Compendium of RWM Benefit-Cost Analysis Studies ([FHWA-HOP-14-033](#)) is currently being updated to include 10 additional case studies of RWM BCA. Five hypothetical Connected Vehicle RWM BCA studies are being added. A couple of technical briefs have been published recently ([FHWA-HOP-16-005](#) and [FHWA-HOP-16-004](#)) and a third brief on CV-RWM BCA will be published soon.
 - The project to develop and demonstrate a Prototype Road Weather Performance Management tool that uses Connected Vehicle data has been completed. The prototype tool was tested in Minnesota. The tool uses mobile traffic and road-weather observations in evaluating how well transportation agencies are performing weather-related traffic management and maintenance activities. The prototype tool code and documentation have been posted in the Open Source Applications Development Portal (www.itsforge.net).
- **Strengthening the Road Weather Management Capabilities of Transportation Agencies.**
 - A *Capability Maturity Framework (CMF)* for Road Weather Management was developed, validated and implemented in 3 State DOT's. The CMF helps agencies evaluate their capabilities in Road Weather Management, and identify strategies to raise those capability levels. Agencies interested in conducting the CMF workshops should contact the RWMP. An electronic CMF tool 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 have been documented. Five states have captured their day-to-day practices, which was turned into guidance on ideal coordination and collaboration.
- **Training:** Web-based training courses and Road Weather Management Certificate are offered through the Consortium for ITS Training and Education (CITE) program at University of Maryland:
 - RWM Certificate Program: <http://www.citeconsortium.org/certprograms.html#RW>
 - Weather Responsive Traffic Management (next delivery: October 14, 2016) <http://www.citeconsortium.org/courses/WRTM.html>
- **Upcoming Events**
 - EDC-4 Summit Meetings: Oct.18-19 (Baltimore), Oct. 25-26 (Minneapolis), Nov. 2-3 (Albany), Nov. 29-30 (Portland), Dec. 1-2 (Sacramento), Dec. 6-7 (Austin), Dec 14-15 (Orlando)