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. In the fall of 2016, a new initiative was launched entitled “Weather-Savvy Roads,” which includes Pathfinder and Integrating Mobile Observations (IMO). Twenty-six States have signed up to implement Weather-Savvy Roads (16 for Pathfinder and 23 for IMO) by December, 2018. FHWA will provide technical assistance and resources to these agencies implement their chosen innovations over the course of this period.

- **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 5.0 was recently completed; the code and documentation are available in the USDOT Open Source Application Development Portal [www.itsforge.net](http://www.itsforge.net).
  - The **Integrated Mobile Observations** (IMO) project in Michigan, Minnesota, and Nevada DOT is wrapping up after a successful 3rd phase. Through the IMO solution of the EDC-4 Weather-Savvy Road Initiative, the RWMP will be assisting interested states with adopting the technologies and lessons learned from IMO and streamlining them into the State DOT’s standard operating procedures (SOP).
  - 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 has been developed and is undergoing testing in the Kansas City region by Kansas City Scout.
  - 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. This Pilot is using the PikAlert® system.

- **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/](http://madis.noaa.gov/). In addition, to support broad road weather research needs, FHWA developed the Weather Data Environment [https://wxde.fhwa.dot.gov](https://wxde.fhwa.dot.gov). The WxDE now incorporates functionality of the PikAlert® System. It provides researchers access to a range of quality-checked road weather observations from both mobile and static platforms.

- **RWIS Environmental Sensor Stations (ESS)**
  - **NCTIP 1204 Updates:** NCTIP 1204 v4.0, the Environmental Sensor Station Interface Standard, is nearly complete. Balloting for adoption of the revised standard is expected by the end of 2017.
  - **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/fhwawRMX/default.aspx](https://collaboration.fhwa.dot.gov/dot/fhwawRMX/default.aspx) is a portal that supports these Roundtables and allows practitioners to share information, technologies and resources.

- **Coordination With Research Consortia and Other Entities:**
  - **R&D Strategic Initiatives:** Two projects are underway: (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 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.
  - **National Academies:** FHWA is co-funding a project to examine weather information and social science, resulting in a report about effective decision making surrounding weather events.

Documents with NTL ID numbers can be accessed at [http://ntlsearch.bts.gov](http://ntlsearch.bts.gov), then do an advanced search on "NTL Record ID," Title or pub #
• **Weather-Responsive Traffic Management (WRTM):**
  - **Guidelines for Deploying Connected Vehicle-Enabled Weather Responsive Traffic Management Strategies** – 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. The guidelines (FHWA-JPO-17-478) are now available and accessible from the NTL (#61004). We are currently working with Washington State DOT and soon with another State to implement and evaluate the guidelines.
  - **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. 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. A similar weather-responsive Active Traffic Management (ATM) System was developed and evaluated in Oregon. An article 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).
  - **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 evaluation reports (full and summary) are awaiting publication. 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**
  - The 2017 update to the 2015 Road Weather Management Performance Measures Report (FHWA-HOP-16-001) is almost complete. A 2017 survey was developed and distributed to State DOT’s, a total of 40 States responded. The results are being analyzed and combined with other RWMP performance measures for the 2017 update which will be published before the end of the year.
  - The Compendium of RWMP Benefit-Cost Analysis Studies (FHWA-HOP-14-033) was updated to include 10 additional case studies of RWM BCA. Five hypothetical Connected Vehicle RWM BCA studies were added to the revised Compendium, which is awaiting publication. Three technical briefs have been published (FHWA-HOP-16-004, FHWA-HOP-16-005, FHWA-HOP-16-092), the third brief is on CV-RWM BCA. RWM BCA workshops are also available to State DOT’s.
  - 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](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 9 State DOT’s. If interested in hosting a CMF workshop in your State, contact Roemer Alfelor at roemer.alfelor@dot.gov. 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 have been documented and published as an implementation guide. See Weather-Savvy Roads above for more details about implementation.

• **Training:** Three web-based training courses and a 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/cite-courses/certificate-programs/](http://www.citeconsortium.org/cite-courses/certificate-programs/)
  - **Principles and Tools for Road Weather Management** (anticipated next delivery: Fall 2017)

• **Upcoming Events**
  - SICOP and AASHTO Subcommittee on Maintenance, July 29 – August 3, 2017 (Providence, RI)
  - Weather-Responsive Traffic Management Stakeholder Meeting, August 29-30, 2017 (Raleigh, NC)
  - TRB and AMS Annual Meetings, January 7-11, 2018 (Washington, DC and Austin, TX, respectively)

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