

Aurora Program

minutes

Aurora Board Meeting November 14, 2013 – Conference Call/Web Meeting

Individuals Participating:

Jason Norville, Pennsylvania DOT
Travis Lutman, North Dakota DOT
Joe Doherty, New York State DOT
Dawn Gustafson, Michigan DOT
Mike Adams, Wisconsin DOT
Curt Pape, Minnesota DOT
Tim Peters, Illinois DOT
Jack Stickel, Alaska DOT&PF
Max Perchanok, Ontario MOT
Maury Meredith, Ohio DOT
Thomas Lyden, Ohio DOT
Tina Greenfield, Iowa DOT
Jerry Roche, FHWA
Roemer Alfelor, FHWA
Sheldon Drobot, NCAR
Tae Kwon, University of Waterloo
Chris Albrecht, Iowa State University

Meeting Agenda:

- 1) Call to Order (Jason Norville)
- 2) Program Administration/Management/Accounting (Chris Albrecht)
- 3) FY2014 Work Plan and Project Ideas (Chris Albrecht)
- 4) March Meeting in Boulder (Chris Albrecht)
- 5) Project 2010-04 Presentation (Tae Kwon)
- 6) Ongoing Project Progress (Chris Albrecht)
- 7) Other Business (All)

1. Call to Order

Program Chair Jason Norville called the meeting to order just after 1pm (CST).

2. Program Administration/Management/Accounting

Chris Albrecht then noted that the Aurora administrative contract had expended \$85,782 to date, adding that this was on target for the yearly cost projection.

3. FY2014 Work Plan and Project Ideas

Chris Albrecht then reviewed the most recent list of potential FY2014 research ideas. The latest proposed ideas were:

Candidate A: Review and Application of Pavement Forecast Models – This potential project, which originated with the 2013 National Winter Maintenance Peer Exchange, would look at past experience of various agencies with using the available pavement forecast models or virtual RWIS (Metro, SnowTherm, FAST, etc.). The application of the spring load restrictions model, which Aurora has already undertaken, is also a possible approach. Tina Greenfield, Max Perchanok, and Joe Doherty volunteered to further develop this proposal with Chris Albrecht. Max also noted that this effort could look at 2 or 3 mathematical or atmospheric forecast models and should consider differences in the pavement type and structure/typical sections (asphalt vs. concrete, thickness, sub-base type or thickness, elevation, bridges, etc.). Specifically, research could take available pavement forecast models and review them head to head to see what works best. Ultimately, the goal of this research would be to improve the pavement forecast models.

Candidate B: Review of Alternate Power Supplies – This effort, which originated with the 2013 National Winter Maintenance Peer Exchange, would involve a small-scale state-of-the-practice review of available “off the grid” power options for RWIS operating in remote areas. These options would include fuel cells, thermo-electric generators, solar, wind, etc. It was also noted that the overall life-cycle cost, including maintenance and overall life span, would need to be considered. Jack Stickel volunteered to further develop this research proposal with Chris Albrecht.

Candidate C: Verification of Alternative Precipitation Measurement Sensors – This proposed effort would look at what types of precipitation sensors are available and their capabilities (rate-based, presence, water equivalent, or type). The group agreed that this effort would be a small-scale technology review of about \$25,000, with possible field testing later. Jack Stickel, Max Perchanok, and Jeff Williams volunteered to further develop this proposal with Chris. This idea also originated with discussions at the 2013 National Winter Maintenance Peer Exchange.

Candidate D: Maximizing the Use of Mobile Sensors on Various Vehicle Types – This proposal involves evaluating the use of the available (Vaisala, Boschung, etc.) mobile weather sensors in regards to vehicle type and placement. Overall, the precision, accuracy, survivability, placement, etc. will be noted, and this research should determine if it is possible to accurately measure various weather parameters from a snow plow or patrol truck. Dawn Gustafson also noted that an effort getting underway this winter in Michigan could be a good basis for this proposal. Dawn, Mike Adams, Tina Greenfield, Max Perchanok, and Sheldon Drobot volunteered to further develop this proposal. This idea also originated with discussions at the 2013 peer exchange.

Candidate E: Quality Checking of AVL Data – This proposed project, which originated with discussions at the 2013 National Winter Maintenance Peer Exchange, would focus on ways to quality check AVL data to ensure useable data is obtained. The effort could involve a survey of agencies utilizing AVL and see what their experiences are in regards to communication, sensors, data error, etc. The use of past data sets, rather than new data collection, would also be possible in this analysis. This idea also originated with discussions at the 2013 peer exchange.

Dawn Gustafson, Mike Adams, Curt Pape, Max Perchanok, and Jimmy White volunteered to further develop this proposal. Chris also noted that Clear Roads would need to be kept in the loop on this project, if funded.

Candidate F: Best Practices in Data Storage – This likely small effort would review the past and current best practices by state in storing and archiving RWIS data. Jason Norville, Jack Stickel, Neal Hawkins, and Curt Pape volunteered to further develop this proposal.

Candidate G: Investigating Trends and Practices of Non-Traditional RWIS – This idea involves looking at the current trends, practices, and instrumentation options in the emerging use of non-traditional (compact, low-power, etc.) RWIS “Lite”. Dawn Gustafson, Max Perchanok, Jack Stickel, and Max Perchanok volunteered to work with Chris Albrecht to further develop this proposal. The deliverable for this project would include laying out a vision for the use of RWIS Lite, options available, and current practices in places like Utah and Wyoming.

Candidate H: Further Integration of the Knowledge Base and SICOP List – This effort would address integration of the functions found in the SICOP List Serve with the existing Knowledge Base for Road Weather and Winter Maintenance. Chris Albrecht noted that he would be hosting a web meeting on November 18 to discuss transition of the Knowledge Base site to a new format and the list-serve issue. In addition, Lee Smithson volunteered to further develop this proposal with Chris.

Candidate I: MDSS Products and Procurement Guidance – This project would provide additional funding (of about \$20,000) for the scope of Aurora Project 2012-01. This additional funding would be used to survey various agencies on what MDSS products (Meridian, FHWA Schneider, Vaisala, Boschung, etc.) they have used and what the perceived capabilities of each are. Tina Greenfield, Max Perchanok, and Joe Doherty volunteered to further develop this proposal. The deliverable for this effort would produce a matrix of features of each product that could be used in procurement of the services/products. This idea also originated with discussions at the 2013 National Winter Maintenance Peer Exchange.

In addition, the second needs statement developed during the peer exchange, which addressed the patent issues with plow truck communications, was considered. After a long discussion, the board agreed that the topic would be better suited for the Clear Roads group. Chris noted that he would notify Clear Roads of the needs statement and the Aurora recommendation.

Finally, after a short review of several ideas, Chris Albrecht noted a few other possible topics he will ask the board to consider developing. These ideas were:

- Revisiting / synthesis of winter road condition terminology
- State of the art and future needs of road weather information for surface transportation
- Integrating RWIS with other roadside data collection requirements
- Improved and lower-cost mobile weather observations?
- Using social media in winter operations

4. March Meeting in Boulder

Chris briefly reviewed the planned major activities and participants for the next on-site board meeting, which will be held in Boulder, Colorado during the week of March 17-21, 2014. He noted that NCAR staff had reserved space for the meetings at the Mesa Lab in Boulder. He added that a broader meeting with NCAR researchers, that would include representatives from the National Weather Service and guest agencies, was also being planned. He also noted that several other states would be invited to participate in a discussion of the I-80 Corridor Coalition efforts. Colorado, Nebraska, Nevada, Wyoming, and California were noted. It was also suggested that Chris invite a representative from Idaho to the Boulder event. Chris noted that he would do so.

5. Project 2010-04 Presentation

Next, Tae Kwon from the University of Waterloo then gave a brief update on progress of Project 2010-04, which involves identifying optimal RWIS sensor density and locations. Tae covered the location of “good” sites based on Heuristics and intuition, the benefit/costs analysis approach used, and detail of the Minnesota case study.

6. Ongoing Project Progress

Project champions then gave updates on the status of ongoing research efforts. Details of progress are as follows:

Project 2007-05 – Multiple-Use ITS Data Collection Sites: Chris Albrecht briefly reviewed this project, noting that the survey had been distributed and the 25+ responses were discussed in detail on a recent project conference call. He also noted that he had begun to contact survey responders for details on their noted case studies, which would be the basis for the final project report.

Project 2009-01 – Summary and Comparison of Agency Experiences with Sensors: Dawn Gustafson noted that she had revised the spreadsheet and sent it to Joe Doherty to update it with NYSDOT’s sensor experience. Joe noted that he would pass it along when completed.

Project 2010-02 – Mobile-Weather Data Collection Guidelines: Chris noted that this project was approved as complete by the board in November, pending the posting of the report.

Project 2010-03 – Results-Based Winter Road Research: Max Perchanok noted that this effort had been extended to May 2014.

Project 2010-04 – RWIS Sensor Density: This effort was discussed under the previous agenda item.

Project 2011-02 – RWIS Training Tool: Tina Greenfield noted that this effort was under contract with Iteris and moving ahead as planned.

Project 2011-04 – Study of MDSS Costs: Chris Albrecht noted that the board voted in November to accept the final report as the final project deliverable.

Project 2011-05 – Funding Source Identification: No update was provided for this research effort.

Project 2012-01 – Validate the Accuracy of Pavement Condition Predictions from Various Sources: Max Perchanok reviewed the background to this effort. He noted that elements from the 2013 peer exchange ideas would be incorporated into the pending RFP.

Project 2012-03 – Cameras and Operational Impacts of Remote Road Conditions: No update was provided for this effort.

Project 2012-04 – Communicating and Publicizing Road Weather and Operations Information: No update was provided.

Project 2012-05 – Seasonal Weight Restrictions Demonstration: Max Perchanok noted that four proposals were received and rated by the project team, and the USDA-led proposal had been selected.

Project 2013-01 – Fourth Peer Exchange: No update was provided for this effort.

Project 2013-02 – Transition of Clarus to MADIS: Jack Stickel noted that the transition had been running smoothly to date, with no problems foreseen.

Project 2013-03 – Improving Real-Time Traffic Speeds for Performance Measurement: Tina Greenfield briefly reviewed the status of this effort. She noted that the project would be split into two separate funding phases. The second phase, she noted, would be contracted under the new SPR number starting in FY2014.

Project 2013-04 – Quantifying Salt Concentration on Pavement: Max Perchanok briefly reviewed the rough scope of this effort, noting that he would plan to have the RFP ready soon.

Project 2013-05 – Knowledge Base Content Management: Chris Albrecht noted that he and Neal Hawkins had been working with Tom Lindsley on the new site format and content management system and had been transferring content to a new site.

Project 2013-06 – Make Aurora Severity Index Available to Other Agencies: Tina Greenfield noted that this effort was still in the contracting process between negotiated on by Iowa DOT and AccuWeather.

7. Other Business

Chris Albrecht suggested that the board hold a web meeting in early February prior to the on-site meeting in Boulder. The board agreed, and Chris noted that he would schedule one.

No other business was discussed.



- Aurora Program - Board Web Meeting

November 14, 2013

Today's Agenda:

- 1) Call to Order
- 2) Review and Approval of Past Meeting Minutes
- 3) Program Administration/Management/Accounting
- 4) FY2014 Work Plan and Project Ideas
- 5) March Meeting in Boulder
- 6) Project 2010-04 Presentation
- 7) Ongoing Project Progress
- 8) Other Business



1) Call to Order

Jason Norville

Aurora Program Chair

Pennsylvania Department of Transportation

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Aurora Program Vice Chair

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Dawn Gustafson

Aurora Program Past Chair

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2) Review Past Minutes

Aurora Program

August 8, 2013

Individuals Participating:

Jason Norville, Pennsylvania DOT
Travis Lutman, North Dakota DOT
Dawn Gustafson, Michigan DOT
Mike Adams, Wisconsin DOT
Joe Doherty, New York State DOT
Tim Peters, Illinois DOT
Ron Hall, Kansas DOT
Jeff Williams, Utah DOT
Curt Pape, Minnesota DOT
Max Perchanok, Ontario MOT
Tina Greenfield, Iowa DOT
Linda Narigon, Iowa DOT
Roemer Alfelor, FHWA
Lee Smithson, AASHTO
Sheldon Drobot, NCAR
Chris Albrecht, Iowa State University

Meeting Agenda:

Aurora Program

minutes

Aurora Board Meeting

September 9-12, 2013 – Vancouver, Washington, USA

DRAFT #1

Individuals Participating in the Meeting:

Jason Norville, Pennsylvania DOT
Travis Lutman, North Dakota DOT
Jimmy White, Virginia DOT
Curt Pape, Minnesota DOT
Ron Hall, Kansas DOT
Tina Greenfield, Iowa DOT
Mike Adams, Wisconsin DOT
Jack Stickel, Alaska DOT&PF
Joe Doherty, New York State DOT
Max Perchanok, Ontario MOT
Mike Chapman, NCAR
Gabe Guevera, FHWA
Neal Hawkins, Iowa State University
Chris Albrecht, Iowa State University

I. Open and General Items

Jason Norville began the meeting by asking fellow board members to review the agenda. The

Any comments?

4) FY2014 Plan and Program

Candidate A: Take available *pavement forecast models* and review them head to head to see what works best ... Do roadway typical sections significantly affect pavement forecast? (asphalt vs. concrete, thickness, sub-base, elevation, bridges, etc.)?

Candidate B: What is available for *power supplies* and what type of maintenance is needed? What is the life span?

Candidate C: *Verification of Alternative Precipitation Measurement Sensors* ... types available and their capabilities (rate-based, presence, water equivalent, or type)?

Candidate D: Evaluate *mobile sensors* (weather telematics, Vaisala, Boschung, etc.) precision, accuracy, survivability, placement, etc. ... Is it possible to measure this from a snow plow or patrol truck?

4) FY2014 Plan and Program

Candidate E: Ways to quality *check AVL data* to insure usable data is obtained ... survey agencies utilizing AVL and see what their outcomes are. (communications, sensors, data error, etc.)

Candidate F: What are the best practices in *data storage* and in *archiving* of RWIS data?

Candidate G: What are the current trends, practices, and options for the use of non-traditional, low-power, or compact *RWIS Lite*?

Candidate H: Integrating SICOP List and Knowledge Base into a *Hub*?

4) FY2014 Plan and Program

Other Ideas:

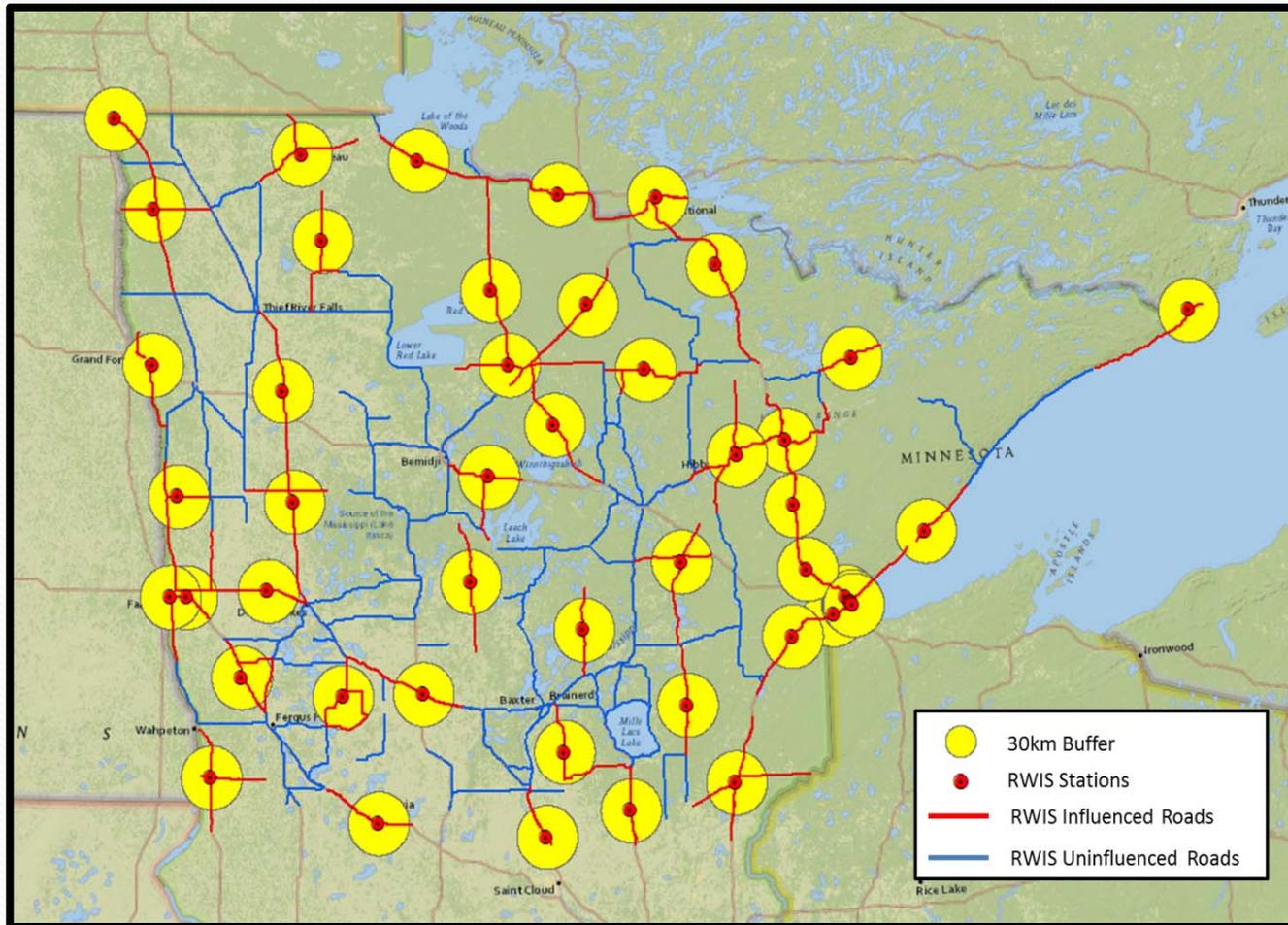
- State-of-the-practice in **remote sensing**?
- Using **MDSS** in Complex Terrain
- Revisiting / Synthesis of **winter road condition terminology**
- State of the art and future needs of **Road Weather Information for Surface Transportation**
- **Integrating RWIS** with Other Roadside Data Collection Requirements
- Correlating **freezing precipitation to pavement conditions**
- Using **MDSS in Complex Terrain**
- Improved and lower-cost **mobile weather** observations?
- Using **social media** in Winter Operations
- ~~Synthesis of Best Practices for Pass Operations~~
- ~~Road Icing Sensor and Warning~~

5) March Board Meeting

- March 18-20, 2014
- Boulder, Colorado ... National Center for Atmospheric Research (NCAR) Mesa Lab
- Meet with NCAR staff
- Invite guest agencies (Colorado, Nevada, Wyoming, etc.)



6) Project 2010-04



7) Ongoing Projects

18 ongoing projects

Aurora Program - Ongoing Project Status

October 11, 2013

FY 2007 through FY2009

- 2007-05: Multiple-Use ITS Data Collection Practices (\$15,000) = 45% complete
- 2009-01: Summary and Comparison of Agency Experience w/ Sensors (\$5,000) = 85% complete

FY 2010

- 2010-02: Mobile Weather Data Collection Guidelines (\$5,000) = 90% complete
- 2010-03: Results-Based Winter Road Maintenance Standards (\$155,000) = 85% complete
- 2010-04: RWIS Sensor Density and Location (\$100,000) = 50% complete

FY 2011

- 2011-02: RWIS Training Tool (\$265,000) = 15% complete
- 2011-04: Study of MDSS Costs (\$5,000) = 95% complete
- 2011-05: Funding Sources Identification (\$5,000) = 10% complete

FY 2012

- 2012-01: Validate the Accuracy of Pavement Condition Predictions (\$100,000) = 5% complete
- 2012-03: Cameras and Operational Impact of Remote ... Monitoring (\$25,000) = 25% complete
- 2012-04: Communicating and Publicizing Information (\$30,000) = 5% complete
- 2012-05: Seasonal Weight Restrictions Demonstration (\$250,000) = 5% complete

FY 2013

- 2013-01: 2013 National Winter Maintenance Peer Exchange (\$35,000) = 85% complete

8) Other Business

The screenshot displays the Aurora program website with the following content:

- Navigation Menu:** Home, About, Projects, News, Participate, Resources, For Members.
- Main Banner:** "working to advance road weather information systems technology" with the Aurora logo.
- Project Filter:** Ongoing, Completed.
- Upcoming Events:**
 - Thursday, May 19, 2011 at 12:00 pm (CDT) - Aurora Board Web Meeting
 - Thursday, June 30, 2011 at 2:00 pm (CDT) - Aurora Administrative Conference Call
 - Thursday, July 7, 2011 at 12:00 pm (CDT) - Aurora Board Web Meeting
 - Monday, September 19, 2011 in Bozeman, Montana - Aurora Board Meeting
 - Tuesday through Thursday, September 20-22, 2011 in Bozeman, Montana - National Winter Maintenance Peer Exchange
- Who We Are:**

Aurora is an international partnership of public agencies who work together to perform joint research activities in the area of road weather information systems (RWIS). This website is designed to introduce the program, the partners, and our collaborative research projects.

Why Join Aurora?

 - to help set the agenda for collaborative research, development, and deployment of road and weather information systems (RWIS).
 - to multiply your agency's financial resources to address its most pressing RWIS-related challenges.
 - to develop relationships with national and international, public and private leaders in RWIS equipment, decision support systems, standards, and training.

Board Chair: Joe Doherty, New York State DOT

Members: Indiana DOT
- Ongoing Projects:**
 - 2011 National Winter Maintenance Peer Exchange:**

How can these organizations help you?

 - Share or collaboratively they may be interested in using as one of your primary challenges. For example, Clear Road might want to investigate the relative costs and effectiveness of "environmentally friendly" deicing chemicals. SICCOP might want to conduct an additional operational testing trial to determine what alternatives are being used around the world.

And you can help them:
 - By becoming a research beneficiary
 - Help decide which research projects to fund
 - Participate on the Snow and Ice Lossers
 - Participate in National Winter Maintenance Peer Exchange
 - Meet regularly via videoconferencing and in person to exchange their practices, new ideas, program success stories, etc.
 - Bring others in the field to good for greater impact.
 - Identify winter maintenance problems that need more expert analysis.

Does one or more of these programs sound like a good fit for your agency? For more information, see the program websites or contact the program managers.
- When you face winter road maintenance challenges, who can you turn to?**

Want to be better prepared when a holiday storm suddenly covers roads with black ice?

How can your quality get new from operators up to speed on anti-icing?

Where can you get second, third, or fourth opinions about critical road weather information systems (RWIS) equipment, decision support systems, standards, and training?

For help in these situations and more, turn to these programs:

Snow and Ice Cooperative Program (SICCOP), Aurora, and Clear Roads