

Aurora Program

minutes

Aurora Board Meeting February 27, 2014 – Conference Call/Web Meeting

Individuals Participating:

Travis Lutman, North Dakota DOT
Joe Doherty, New York State DOT
Dawn Gustafson, Michigan DOT
Ron Hall, Kansas DOT
Jimmy White, Virginia DOT
Steve Hancock, California DOT
Mike Adams, Wisconsin DOT
Tim Peters, Illinois DOT
Jeff Williams, Utah DOT
Max Perchanok, Ontario MOT
Abner Johnson, Ohio DOT
Thomas Lyden, Ohio DOT
Tina Greenfield, Iowa DOT
Linda Narigon, Iowa DOT
Lee Smithson, AASHTO
Sheldon Drobot, NCAR
Chris Albrecht, Iowa State University

Meeting Agenda:

- 1) Call to Order (Travis Lutman)
- 2) Past Minutes and Actions (Chris Albrecht)
- 3) March 17-20 Meeting in Boulder (Chris Albrecht)
- 4) New Program Membership (Chris Albrecht)
- 5) Ongoing Project Progress (Chris Albrecht and Champions)
- 6) 2014 Work Plan and Projects (Chris Albrecht)
- 7) Program Administration/Finances (Chris Albrecht)
- 8) Other Business (All)

1. Call to Order

Travis Lutman called the meeting to order just after 1pm (CST).

2. Past Minutes and Actions

Chris Albrecht first noted that all past minutes had been reviewed and approved by the board. For those new to Aurora, Chris reviewed a handout listing meetings and events over the last few years. He noted that, overall, Aurora has held about 80 events since 2009, or about 16 events per year which includes on-site meetings, administrative and project calls, board and other webinars, etc.

3. March 17-20 Meeting in Boulder

Chris then briefly reviewed the latest draft agenda for the next on-site meeting on March 17-20 in Boulder, Colorado. He also noted that there would be a tour of the Vaisala facility on Tuesday morning, then reviewed the expected attendance numbers and hotel accommodations, noting that the meetings would be held at the NCAR Mesa Lab. NCAR staff, as well as a few guest agencies, would be in attendance as well, he added.

4. New Program Membership

Next, Chris noted that California had recently joined Aurora for 2014 and 2015. In addition, he added, there would be potential new members in attendance at the Boulder meeting. Namely, Colorado, Wyoming, and British Columbia are all considering joining. He also noted that possible interest has recently been seen from Delaware, Nevada, and DC.

5. Ongoing Project Progress

Chris Albrecht then gave very brief updates on the status of ongoing research efforts. Project champions included specifics as needed. Details of progress for each project are as follows:

Project 2007-05 – Multiple-Use ITS Data Collection Sites: Chris Albrecht briefly reviewed this project, noting that the follow-up with survey responders was nearly complete and the report has been started.

Project 2009-01 – Summary and Comparison of Agency Experiences with Sensors: Chris and Dawn Gustafson noted that the spreadsheet was being passed around between members.

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

Project 2010-04 – RWIS Sensor Density: Max Perchanok noted that this effort was well underway, with completion planned for spring 2015.

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

Project 2011-05 – Funding Source Identification: Chris noted that this information would be on the Knowledge Base site.

Project 2012-01 – Validate the Accuracy of Pavement Condition Predictions from Various Sources: Max Perchanok noted that the RFP is being completed.

Project 2012-03 – Cameras and Operational Impacts of Remote Road Conditions: Chris noted that this effort was well underway with researchers from BYU.

Project 2012-04 – Communicating and Publicizing Road Weather and Operations Information, Phase 1: Chris note that this effort would focus on a literature/state-of-the-practice review for around \$15,000.

Project 2012-05 – Seasonal Weight Restrictions Demonstration, Phase 1: Max Perchanok noted that four proposals were received and rated by the project team, and the USDA-led proposal had been selected. He also mentioned that this effort was split into two phases, with the second being funded under FY2014 funds for \$200,000.

Project 2013-01 – Fourth Peer Exchange: Chris noted that this effort was essentially complete.

Project 2013-02 – Transition of Clarus to MADIS: Chris noted that this effort was also essentially complete.

Project 2013-03 – Improving Real-Time Traffic Speeds for Performance Measurement: Tina Greenfield noted that the project would be split into two separate funding phases. Phase 1 was to be contracted for \$117,000, with the second phase contracted under the new SPR number in FY2014 or later.

Project 2013-04 – Quantifying Salt Concentration on Pavement: Max and Chris briefly reviewed this effort, noting that he would plan to have the RFP ready soon. Linda Narigon also noted that this effort would be split between the original and new programs.

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 has used about \$22,000 to date.

6. 2014 Work Plan and Projects

Chris Albrecht noted that the board would be discussing research proposals prior to the Boulder meeting. He then reviewed the most recent list of potential ideas:

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.

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, he added. Ultimately, the goal of this research would be to improve the pavement forecast models.

Candidate B: Review of Alternate Power Supplies – This effort, which also 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.

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.

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. This research would 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.

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.

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.

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”.

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.

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. 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.

7. Program Administration/Finances

Chris then reviewed administrative details and finances for the program through FY2013, also referred to as ‘old’ Aurora, noting that the close-out of the old SP&R number would break after 2013. Starting with program income for the 1997 to 2013 period, he noted that membership payments totaled approximately \$4.6 million. More specifically, membership over these 17 years was broken down into three groups:

- SP&R Contributions of \$3,587,500
- Cash Contributions (to Minnesota DOT) of \$375,000
- In-Kind Contributions of \$660,000

Chris also noted the remaining sources of income for the program between 1997 and 2013. These sources included:

- FHWA Contribution for Project 1999-02 of \$2,500
- Miscellaneous Management Services and Billing Adjustments of \$27,754
- Clear Roads Knowledge Base and Peer Exchange Payments (from Minnesota DOT) of \$63,560

Overall, Chris concluded, Aurora received a total of \$4,716,314 in income between 1997 and 2013.

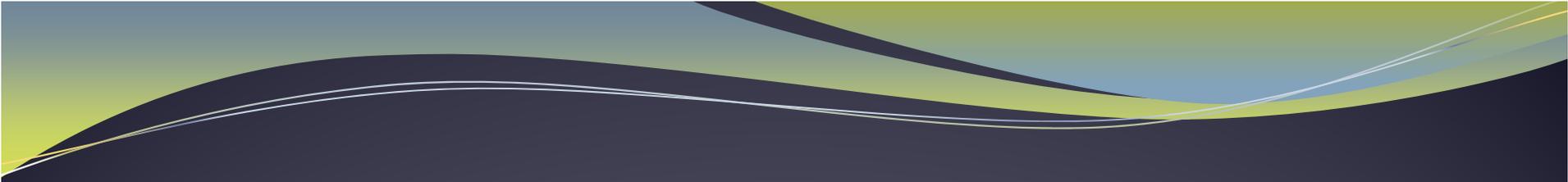
Next, Chris reviewed the latest estimated expenditures for the same 1997 through 2013 period. While most of the expenditures had been finalized and audited where necessary, he noted that a few of the figures/numbers (all since 2007) were still preliminary, due to some research projects remaining open to date. Chris also noted that there were a few changes to the expenditures since the last reporting of these numbers. These changes were due to his investigation of project payments and the final accounting materials supplied by the past administrative state, Minnesota DOT.

Overall, after a lengthy review and discussion and minor changes to assumptions for a few ongoing projects, it was shown that Aurora would most likely expend approximately \$4.4 million between 1997 and 2013, leaving approximately \$319,000 or more unspent from this period.

The board also agreed that these unspent funds could be used to pay at least one additional year of administrative services past 2013.

8. Other Business

No other business was discussed.



***- Aurora Program -
Board Web Meeting***

February 27, 2014

Today's Agenda:

- 1) Call to Order
- 2) Past Minutes and Actions
- 3) March 17-20 Meeting in Boulder
- 4) New Program Membership
- 5) Ongoing Project Progress
- 6) 2014 Work Plan and Projects
- 7) Program Administration/Finances
- 8) Other Business



1) Call to Order

Jason Norville

Aurora Program Chair

Pennsylvania Department of Transportation

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Travis Lutman

Aurora Program Vice Chair

North Dakota Department of Transportation

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Dawn Gustafson

Aurora Program Past Chair

Michigan Department of Transportation

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2) Past Minutes and Actions

Meetings and Events, 2009-2014:



2009

- ✓ **Aurora Special "Project 2005-03" Group**
Friday, February 6, 2009 (2:00 p.m. CST) – Conference Call
- ✓ **Aurora Special "Friends of Aurora" Event**
Tuesday, February 24, 2009 – Albuquerque, New Mexico, USA
- ✓ **Aurora Board**
Tuesday-Thursday, February 24-26, 2009 – Albuquerque, New Mexico, USA
- ✓ **Aurora Board**
Thursday, April 16, 2009 (2:00 p.m. CDT) – Conference Call
- ✓ **Aurora Administrative Group**
Thursday, May 28, 2009 (2:00 p.m. CDT) – Conference Call
- ✓ **Aurora Board**
Thursday, June 4, 2009 (2:00 p.m. CDT) – Web Meeting/Conference Call
- ✓ **Aurora Special "Project 2009-05" Group**
Wednesday, July 15, 2009 (3:00 p.m. CDT) – Conference Call
- ✓ **Aurora Administrative Group**
Thursday, July 30, 2009 (2:00 p.m. CDT) – Conference Call
- ✓ **Aurora Special "Project 2009-01" Group**
Tuesday, August 4, 2009 (2:00 p.m. CDT) – Conference Call
- ✓ **Aurora Special "Project 2009-04" Group**
Wednesday, August 5, 2009 (1:00 p.m. CDT) – Conference Call
- ✓ **Aurora Board**
Thursday, August 6, 2009 (2:00 p.m. CDT) – Web Meeting/Conference Call
- ✓ **Aurora Administrative Group**
Thursday, September 24, 2009 (2:00 p.m. CDT) – Conference Call
- ✓ **Aurora Board**
Tuesday-Wednesday, September 29-30, 2009 – Des Moines, Iowa, USA

80 events in 5 years

3) March Board Meeting

- March 17-20, 2014
- Boulder, Colorado ... National Center for Atmospheric Research (NCAR) Mesa Lab
- Meet with NCAR staff
- Guest agencies (Colorado, Wyoming, BC)
- Hotel (Best Western Plus)
- Travel Plans
- Vaisala Tour
- I-80 Coalition Discussion



4) New Membership

- ❖ ***California (joined for 2014)***
- ❖ ***Colorado, Wyoming, British Columbia (guests)***
- ❖ ***DC, Delaware, Nevada, etc.***



5) Ongoing Projects

16 ongoing projects

Aurora Program - Ongoing Project Status

February 7, 2014

FY 2007 through FY2009

- 2007-05: Multiple-Use ITS Data Collection Practices (\$15,000) = 60% complete
- 2009-01: Summary and Comparison of Agency Experience w/ Sensors (\$5,000) = 95% complete

FY 2010

- 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
- 2011-05: 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) = 95% complete
- 2013-02: Transition of Clarus to MADIS (\$5,000) = 20% complete
- 2013-03: Improving Estimation ... for Performance Measurement (\$130,000) = 5% complete
- 2013-04: Quantifying Salt Concentration on Pavement (\$150,000) = 5% complete



6) 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?

6) 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*?

6) 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~~

7) Program Admin/Finances

Item	Income	Expenditures	Comments
1997 Membership (FY1997 SP&R Payments)	\$100,000		Confirmed
1997 Project Expenditures (FY1997 Program)		\$60,812	Confirmed
1997 Management Services (Castle Rock)		\$47,094	Confirmed * (Newly Reported)
1997 Management Services (Castle Rock)		\$4,989	Confirmed
1997 Travel and Meeting Expenses		\$12,790	Confirmed
1997 Membership (FY1997 In-Kind Payments)	\$25,000		Confirmed
1997 Projects In-Kind (FY1997 Program)		\$25,000	Confirmed
1998 Membership (FY1998 SP&R Payments)	\$87,500		Confirmed
1998 Project Expenditures (FY1998 Program)		\$9,950	Confirmed
1998 Management Services (Castle Rock)		\$50,493	Confirmed
1998 Travel and Meeting Expenses		\$17,354	Confirmed
1999 Membership (FY1999 SP&R Payments)	\$125,000		Confirmed
1999 Membership (FY1999 Partnership Payments to MN)	\$50,000		Confirmed
1999 FHWA Contribution for Project 1999-02	\$2,500		Confirmed
1999 Project Expenditures (FY1999 Program)		\$12,831	Confirmed
1999 Management Services (Castle Rock)		\$9,800	Confirmed
1999 Management Services (Castle Rock)		\$63,032	Confirmed * (Newly Reported)
1999 Travel and Meeting Expenses		\$25,076	Confirmed
1999 Membership (FY1999 In-Kind Payments)	\$10,000		Confirmed
1999 Projects In-Kind (FY1999 Program)		\$10,000	Confirmed
2000 Membership (FY2000 SP&R Payments)	\$150,000		Confirmed
2000 Membership (FY2000 Partnership Payments to MN)	\$75,000		Confirmed
2000 Project Expenditures (FY2000 Program)		\$35,860	Confirmed
2000 Management Services (HRGreen)		\$34,769	Confirmed
2000 Travel and Meeting Expenses		\$16,617	Confirmed
2000 Membership (FY2000 In-Kind Payments)	\$50,000		Confirmed
2000 Projects In-Kind (FY2000 Program)		\$50,000	Confirmed
2001 Membership (FY2001 SP&R Payments)	\$150,000		Confirmed
2001 Membership (FY2001 Partnership Payments to MN)	\$75,000		Confirmed
2001 Project Expenditures (FY2001 Program)		\$219,630	Confirmed
2001 Management Services (HRGreen)		\$65,401	Confirmed
2001 Travel and Meeting Expenses		\$26,582	Confirmed
2001 Membership (FY2001 In-Kind Payments)	\$50,000		Confirmed
2001 Projects In-Kind (FY2001 Program)		\$50,000	Confirmed

7) Program Admin/Finances

2002 Membership (FY2002 SP&R Payments)	\$150,000		Confirmed
2002 Membership (FY2002 Partnership Payments to MN)	\$50,000		Confirmed
2002 Project Expenditures (FY2002 Program)		\$25,000	Confirmed
2002 Management Services (HRGreen)		\$69,909	Confirmed
2002 Travel and Meeting Expenses		\$19,040	Confirmed
2002 Membership (FY2002 In-Kind Payments)	\$75,000		Confirmed
2002 Projects In-Kind (FY2002 Program)		\$75,000	Confirmed
2003 Membership (FY2003 SP&R Payments)	\$175,000		Confirmed
2003 Membership (FY2003 Partnership Payments to MN)	\$50,000		Confirmed
2003 Project Expenditures (FY2003 Program)		\$100,000	Confirmed
2003 Management Services (HRGreen)		\$58,077	Confirmed
2003 Management Services (ISU)		\$15,199	Confirmed
2003 Travel and Meeting Expenses		\$24,868	Confirmed
2003 Travel and Meeting Expenses (Additional)		\$11,958	Confirmed * (Newly Reported)
2003 Membership (FY2003 In-Kind Payments)	\$75,000		Confirmed
2003 Projects In-Kind (FY2003 Program)		\$75,000	Confirmed
2004 Membership (FY2004 SP&R Payments)	\$175,000		Confirmed
2004 Membership (FY2004 Partnership Payments to MN)	\$75,000		Confirmed
2004 Project Expenditures (FY2004 Program)		\$245,137	Confirmed
2004 Management Services (ISU)		\$73,265	Confirmed
2004 Travel and Meeting Expenses		\$30,783	Confirmed
2004 Membership (FY2004 In-Kind Payments)	\$50,000		Confirmed
2004 Projects In-Kind (FY2004 Program)		\$50,000	Confirmed
2005 Membership (FY2005 SP&R Payments)	\$250,000		Confirmed
2005 Project Expenditures (FY2005 Program)		\$24,676	Confirmed * (No Purdue Payment)
2005 Management Services (ISU)		\$60,663	Confirmed
2005 Travel and Meeting Expenses		\$27,826	Confirmed
2005 Membership (FY2005 In-Kind Payments)	\$50,000		Confirmed
2005 Projects In-Kind (FY2005 Program)		\$50,000	Confirmed

7) Program Admin/Finances

2006 Membership (FY2006 SP&R Payments)	\$250,000		Confirmed
2006 Project Expenditures (FY2006 Program)		\$212,721	Confirmed
2006 Management Services (ISU)		\$50,608	Confirmed
2006 Travel and Meeting Expenses		\$27,329	Confirmed
2006 Membership (FY2006 In-Kind Payments)	\$75,000		Confirmed
2006 Projects In-Kind (FY2006 Program)		\$75,000	Confirmed
2007 Membership (FY2007 SP&R Payments)	\$250,000		Confirmed
2007 Project Expenditures (FY2007 Program)		\$134,426	Confirmed * (Estimated)
2007 Management Services (ISU)		\$61,496	Confirmed
2007 Travel and Meeting Expenses		\$26,212	Confirmed
2007 Membership (FY2007 In-Kind Payments)	\$50,000		Confirmed
2007 Projects In-Kind (FY2007 Program)		\$50,000	Confirmed
2008 Membership (FY2008 SP&R Payments)	\$325,000		Confirmed
2008 Project Expenditures (FY2008 Program)		\$25,000	Confirmed
2008 Management Services (ISU)		\$70,950	Confirmed
2008 Travel and Meeting Expenses		\$21,210	Confirmed
2008 Membership (FY2008 In-Kind Payments)	\$25,000		Confirmed
2008 Projects In-Kind (FY2008 Program)		\$25,000	Confirmed
2009 Membership (FY2009 SP&R Payments)	\$300,000		Confirmed
2009 Project Expenditures (FY2009 Program)		\$91,583	Confirmed * (Estimated)
2009 Management Services (ISU)		\$56,492	Confirmed
2009 Travel and Meeting Expenses		\$18,549	Confirmed
2009 Membership (FY2009 In-Kind Payments)	\$25,000		Confirmed
2009 Projects In-Kind (FY2009 Program)		\$25,000	Confirmed
2010 Membership (FY2010 SP&R Payments)	\$300,000		Confirmed
2010 Project Expenditures (FY2010 Program)		\$303,580	Confirmed * (Estimated)
2010 Management Services (ISU)		\$60,259	Confirmed
2010 Travel and Meeting Expenses		\$27,297	Confirmed
2010 Membership (FY2010 In-Kind Payments)	\$25,000		Confirmed
2010 Projects In-Kind (FY2010 Program)		\$25,000	Confirmed
2011 Membership (FY2011 SP&R Payments)	\$250,000		Confirmed
2011 Project Expenditures (FY2011 Program)		\$320,322	Confirmed * (Estimated)
2011 Management Services (ISU)		\$68,965	Confirmed
2011 Travel and Meeting Expenses		\$12,742	Confirmed
2011 Membership (FY2011 In-Kind Payments)	\$25,000		Confirmed
2011 Projects In-Kind (FY2011 Program)		\$25,000	Confirmed

7) Program Admin/Finances

2012 Membership (FY2012 SP&R Payments)	\$250,000		Confirmed
2012 Project Expenditures (FY2012 Program)		\$383,500	Confirmed * (Estimated)
2012 Management Services (ISU)		\$79,817	Confirmed
2012 Travel and Meeting Expenses		\$34,878	Confirmed
2012 Management Services Adjustment (Refund from MN)	\$27,263		Confirmed * (Newly Reported)
2012 Billing Adjustment (Refund from MN)	\$491		Confirmed * (Newly Reported)
2012 Membership (FY2012 In-Kind Payments)	\$25,000		Confirmed
2012 Projects In-Kind (FY2012 Program)		\$25,000	Confirmed
2013 Membership (FY2013 SP&R Payments)	\$300,000		Confirmed
2013 Project Expenditures (FY2013 Program)		\$353,115	Confirmed * (Estimated)
2013 Management Services (ISU)		\$78,637	Confirmed
2013 Travel and Meeting Expenses		\$22,861	Confirmed
2013 Payment for Peer Exchange and Wiki (Check from MN)	\$28,826		Confirmed * (Newly Reported)
2013 Payment for Peer Exchange (Check from MN)	\$34,734		Confirmed
2013 Membership (FY2013 In-Kind Payments)	\$25,000		Confirmed
2013 Projects In-Kind (FY2013 Program)		\$25,000	Confirmed
Total	\$4,716,314	\$4,702,030	
Current Available Balance		\$14,284	

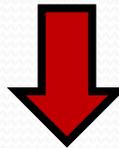


7) Program Admin/Finances

2006-08 - Low Cost Mobile RWIS (In-Kind)	\$50,000	\$50,000	\$0	Completed	Closed / Report Posted
2007-01 - RWIS Equipment Monitoring System, Phase 2	\$0	\$0	\$0	Discontinued	Closed
2007-02 - Cold Weather Testing of Halliday Road Grip	\$40,000	\$39,103	\$897	Completed	Closed / Summary Posted
2007-03 - Incorporation of MDSS into Winter Weather Forecasting	\$0	\$0	\$0	Discontinued	Closed
2007-04 - Development and Demonstration of a Freezing Drizzle Algorithm for ESS	\$85,000	\$80,323	\$4,677	Completed	Closed / Report Posted
2007-05 - Multiple-Use ITS Data Collection Sites, Phase1	\$15,000	\$15,000	\$0	Ongoing	Open
2008-01 - Development of a National Road Weather Testing Program	\$5,000	\$0	\$5,000	Completed	Closed / Results Posted
2008-02 - Evaluation of Utah DOT Weather Operations Program	\$25,000	\$25,000	\$0	Completed	Closed / Report and Summary Posted
2008-03 - MDSS Demonstration in Ontario (In-Kind)	\$75,000	\$75,000	\$0	Completed	Closed
2009-01 - Summary and Comparison of Agency Experience with Sensors	\$5,000	\$0	\$5,000	Ongoing	Open
2009-02 - 2009 National Winter Maintenance Peer Exchange	\$30,000	\$0	\$30,000	Completed	Closed / Results Posted
2009-03 - Knowledge Base for Road Weather and Winter Operations	\$20,000	\$8,650	\$11,350	Completed	Closed / Results Posted
2009-04 - Road Weather Education Enhancements and Dissemination	\$20,000	\$0	\$20,000	Completed	Closed / Results Posted
2009-05 - Further Development of PPAES	\$83,000	\$82,933	\$67	Completed	TBD
2009-06 - Salinity Sensor Improvements and Development	\$0	\$0	\$0	Discontinued	Closed
2009-07 - Review of Friction Detection Technologies	\$0	\$0	\$0	Discontinued	Closed
2010-01 - Enhancements to AI/RWIS CBT	\$50,000	\$50,000	\$0	Completed	Closed / Results Posted
2010-02 - Mobile Weather Data Collection Guidelines	\$5,000	\$0	\$5,000	Completed	TBD
2010-03 - Results Based Winter Road Maintenance Standards	\$155,000	\$154,000	\$1,000	Ongoing	Open
2010-04 - RWIS Sensor Density Study	\$100,000	\$99,580	\$420	Ongoing	Open
2010-05 - Determining RPU and Sensor Failure	\$0	\$0	\$0	Discontinued	Closed
2011-01 - 2011 National Winter Maintenance Peer Exchange	\$60,000	\$56,322	\$3,678	Completed	Closed / Results Posted
2011-02 - RWIS Training Tool	\$265,000	\$264,000	\$1,000	Ongoing	Open
2011-03 - Benefit/Cost Analysis and Instruction for Migrating to Open RWIS	\$0	\$0	\$0	Discontinued	Closed
2011-04 - Study of MDSS Costs	\$5,000	\$0	\$5,000	Completed	TBD
2011-05 - Funding Sources Identification	\$5,000	\$0	\$5,000	Ongoing	Open
2012-01 - Validate the Accuracy of Pavement Condition Predictions	\$100,000	\$95,000	\$5,000	Ongoing	Open
2012-02 - Winter Weather Severity Index, Phase 2	\$5,000	\$0	\$5,000	Completed	Closed / Results Posted
2012-03 - Cameras and Operational Impact of Remote Road Condition	\$25,000	\$24,500	\$500	Ongoing	Open
2012-04 - Communicating and Publicizing Road Weather and Operations Informal	\$30,000	\$15,000	\$15,000	Ongoing	Open
2012-05 - Seasonal Weight Restrictions Demonstration	\$250,000	\$249,000	\$1,000	Ongoing	Open
2013-01 - 2013 National Winter Maintenance Peer Exchange	\$65,000	\$61,708	\$3,292	Ongoing	Open
2013-02 - Transition of Clarus to MADIS	\$5,000	\$0	\$5,000	Ongoing	Open
2013-03 - Improving Estimation of Traffic Speeds for Measurement	\$130,000	\$117,457	\$12,543	Ongoing	Open
2013-04 - Quantifying Salt Concentration on Pavement	\$150,000	\$149,000	\$1,000	Ongoing	Open
2013-05 - Knowledge Base Content Management and Marketing	\$10,000	\$9,950	\$50	Ongoing	Open
2013-06 - Make Aurora Severity Index Available to All	\$30,000	\$15,000	\$15,000	Ongoing	Open
Totals to Date	\$3,515,000	\$3,143,143	\$371,857		

7) Program Admin/Finances

- *Overall ... \$3.7 million “spent” (of \$4.7 million)*



- *\$200,000 still under contract, but “unspent” from FY1997-FY2011*
- *FY2012-FY2013 Project Allocations*
 - *\$500,000 under contract, but “unspent”*
 - *\$300,000 not under contract*

8) Other Business

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

- Navigation:** Home, About, Projects, News, Participate, Resources, For Members.
- Header:** "working to advance road weather information systems technology" and the Aurora logo.
- Main Content Area:**
 - Ongoing/Completed:** A video player showing a road scene.
 - 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

Peer Exchange RWIS Basics for M Cold Road Deter Road

How can these organizations help you? How are other organizations helping you? The new online knowledge base sponsored by Aurora and Clear Road is a resource that provides a wealth of information to help you manage the complex, yet RWIS technologies on their own road programs or address road weather conditions on their local road network. And RWIS equipment and software solutions, which are fully ICDM compliant, can help you and your agencies improve winter RWIS data and information.

And you can help them by becoming a winter maintenance peer exchange member. You can help by:

 - Helping develop research projects to fund
 - Participating in the Snow and Ice Lessons Learned Exchange
 - Meet regularly via videoconference and in person to exchange best practices, new ideas, program information, etc.
 - Bring a team to the table to provide expertise
 - Identify winter maintenance problems that need cross-agency expertise

Does one of these programs sound like a good fit for your agency? For more information, see the program webinars at www.aurora-program.org.

Aurora membership

Full members program and into an effort for funding and support and share related resources. Membership is open to all public sector transportation-related agencies around the globe.

Members:

- Alaska Department of Transportation & Public Facilities
- Arizona Department of Transportation
- California Department of Transportation
- Michigan Department of Transportation
- Minnesota Department of Transportation
- New York State Department of Transportation
- North Dakota Department of Transportation
- Ohio Department of Transportation
- Pennsylvania Department of Transportation
- South Dakota Department of Transportation
- Texas Department of Transportation
- Utah Department of Transportation
- Virginia Department of Transportation
- Wisconsin Department of Transportation

Associate members:

- Federal Highway Administration - Road Weather Management Team
- National Oceanic and Atmospheric Administration - National Weather Service Forecast Systems Laboratory
- National Center for Intelligent Transportation Systems
- University of California
- University of Colorado
- University of Illinois
- University of Michigan
- University of Minnesota
- University of Wisconsin - Madison
- University of Wisconsin - Milwaukee
- Virginia Polytechnic Institute and State University

working to advance road weather information systems technology

to the common goal of saving lives, reducing the economic consequences of winter weather, and improving the safety, efficiency and cost-effectiveness of our roads and winter maintenance efforts.

Join Aurora and . . .

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

www.aurora-program.org

When you face winter road maintenance challenges, who can you turn to?

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

How can your quality get new snow operators up to speed on winter driving?

Where can you get technical information about winter 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 (SICOP), Aurora, and Clear Roads