

Aurora Program

minutes

Aurora Board Meeting June 26, 2014 – Conference Call/Web Meeting

Individuals Participating:

Jason Norville, Pennsylvania DOT
Travis Lutman, North Dakota DOT
Mike Adams, Wisconsin DOT
Thomas Lyden, Ohio DOT
Ron Hall, Kansas DOT
Curt Pape, Minnesota DOT
Joe Doherty, New York State DOT
Steve Hancock, California DOT
Jeff Williams, Utah DOT
Tim Peters, Illinois DOT
Jack Stickel, Alaska DOT&PF
Dave Wieder, Colorado DOT
David Reeves, Colorado DOT
Roemer Alfelor, FHWA
Max Grogg, FHWA
Chris Albrecht, Iowa State University – InTrans

Meeting Agenda:

- 1) Call to Order (Jason Norville)
- 2) Past Minutes and Actions (Chris Albrecht)
- 3) “Old” Program Administration and Financials (Chris Albrecht)
- 4) “New” Program Administration and Financials (Chris Albrecht)
- 5) “New” Program Membership and 2014 Work Plan (Chris Albrecht)
- 6) October Board Meeting in Ithaca, New York (Chris Albrecht)
- 7) Ongoing Project Progress Updates (Chris Albrecht and Champions)
- 8) 2015 Work Plan and Proposed Projects (Chris Albrecht)
- 9) August/September Board Web Meeting Date and Time (All)
- 10) Other Business (All)

1. Call to Order

Jason Norville called the meeting to order just after 1pm (CDT).

2. Past Minutes and Actions

Chris Albrecht briefly reviewed past minutes from the February and March board meetings. After a short discussion, the board voted to approve the minutes from both meetings. Chris noted that he would post the minutes as soon as possible.

3. "Old" Program Administration and Financials

First, Chris Albrecht reviewed the latest administrative contract expenditures through May 31, 2014. He noted that approximately \$51,000 had been used to date, which included all board meeting and travel expenses.

Chris then briefly reviewed the program's overall finances for FY1997 through FY2013. He reminded the board that the close-out of the "old Aurora" SP&R number would break after 2013. All membership payments for that period had been accounted for, he added, for a total of \$4,622,500.

As for program expenses, Chris noted that the program was on track to have a surplus of about \$200,000 after the 2014 administrative contract costs and all research contracts are paid. Chris also noted that there were a few minor changes to the expenditures since the last reporting due to research project payments. After more discussion, the board unanimously agreed that these unspent funds could be used to pay an additional year of administrative services, namely 2015. Also, as discussed in Boulder during the previous on-site meeting, the board agreed that a few increases on ongoing project funding would be considered. Chris noted that he would coordinate these requests during the project update portion of the meeting.

4. "New" Program Administration and Financials

Next, Chris Albrecht reviewed the status of funding for Aurora under the new TPF number. He noted that \$725,000 had already been committed through the TPF website from the existing US partners. Chris also noted that the board had already approved Ontario's in-kind membership contributions through FY2017.

5. "New" Program Membership and 2014 Work Plan

Chris also noted that California DOT was the new member for FY2014, and added that the Colorado DOT would start contributing to Aurora as a member starting in FY2015.

As for the 2014 work plan, Chris briefly noted that the FY2014 projects had been approved by the board recently. He asked that the board review the work plan, which he provided, and comment to him by July 3, 2014.

6. October Board Meeting in Ithaca, New York

Chris Albrecht also reviewed the latest plans and draft agenda for the next board on-site meeting. He noted that the meeting would take place in Ithaca, New York on October 7-9, 2014. He added that, as part the week's activities, would be meetings with several local entities, including Cornell University and Innovative Dynamics Inc. After a short discussion of the draft agenda with the board, Chris asked the board members to make travel arrangements as soon as possible through Iowa State University.

7. 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 Practices: Chris Albrecht noted that the final project report would be completed and ready for project team review by June 30. Chris also noted that this effort would not require any additional funding needed past the \$15,000 original allocation/budget.

Project 2009-01 – Summary and Comparison of Agency Experiences with Sensors: Next, Chris Albrecht briefly reviewed this project, noting that Ron Hall was currently updating the project spreadsheet with Kansas DOT's experiences with environmental sensors. Chris also noted that the project was approximately 95% complete and would not be using the \$5,000 in allocated funds. He also expected that this project would be closed out by the end of 2014.

Project 2010-03 – Results-Based Winter Road Maintenance Standards: Max Perchanok briefly reviewed progress on this effort being conducted by the University of Waterloo, noting that it was now approximately 98% complete. He also noted that the Waterloo research team has regularly updated the entire board on its progress. Chris Albrecht also noted that the \$155,000 project is scheduled for completion by the end of September 2014. A short discussion followed, wherein Max Perchanok noted that he may have some additional work that could be accomplished under an extension of this contract. Chris noted that he would work with Max on this.

Project 2010-04 – RWIS Sensor Density and Location: Max Perchanok then noted that this research project was about 55% complete to date. Max also noted that this effort should be completed in by the end of March 2015.

Project 2011-02 – RWIS Training Tool: Tina Greenfield reported on this research effort, noting that the project was well underway and progressing well at about 25% complete to date. She added that the estimated project completion date was June 30, 2016. Chris Albrecht also noted that the project allocation/budget was \$265,000, with only a relatively small portion of that being spent and billed so far.

Project 2011-05 – Funding Source Identification: Jack Stickel and Chris Albrecht reviewed the scope of this project. Chris Albrecht noted that he had set up a new knowledge base page that covers the goals of this effort. Chris added that this effort did not use any of the allocated \$5,000 in funding. After a short discussion, the board voted to close out this project and consider it complete.

Project 2012-01 – Validate the Accuracy of Pavement Condition Predictions from Various Sources, Phase 1: Max Perchanok briefly reviewed the background to this effort, noting that the project was still in the RFP stage. He also noted that \$100,000 had originally been allocated for this overall effort, but that this project number, Project 2012-01, should now cover only the first phase, which he estimated to cost around \$30,000. Max noted that the \$105,000 second phase would be completed under the new TPF program number.

Project 2012-03 – Cameras and Operational Impacts of Remote Road Conditions: Travis Lutman and Jeff Williams noted that the research team from BYU had essentially completed this project, with the draft final report sent out a few days prior for project team final review. Chris also noted that no additional funding would be needed past the \$25,000 original allocation/budget.

Project 2012-04 – Communicating and Publicizing Road Weather and Operations Information: Chris Albrecht noted that he was drafting a scope of for the initial literature review for this effort. Due to the close-out of the “old” Aurora Program, Chris noted that this effort was divided into two phases, with \$15,000 allocated to a literature search or state-of-the-practice review that could serve as a basis for further research.

Project 2012-05 – Seasonal Weight Restrictions Demonstration, Phase 1: Chris Albrecht and Max Perchanok reviewed the background on this project. A proposal led by the USDA was selected to undertake this project, but there had been some difficulty in the contracting process so far, Max noted. In addition, Max stated that Maureen Kestler from USDA and their sub-consultant had noted a need for unanticipated additional funding to utilize the Meridian model in the initial stages. This amount would be around \$30,000, Max noted. After a lengthy discussion on the use of the Meridian model, the board approved an increase in the funding for this first phase from \$50,000 to \$80,000. Chris also noted that this effort was split into two phases to accommodate the “old” Aurora close-out, with now \$80,000 allocated for a first phase and another \$200,000 allocated under FY2014.

Project 2013-01 – Fourth Peer Exchange: Chris Albrecht noted that final payment to the Iowa DOT was received from Minnesota DOT on behalf of Clear Roads. After a short discussion by the board, they agreed to vote to close this effort and consider it complete.

Project 2013-02 – Transition of Clarus to MADIS: Jack Stickel briefly reviewed the overall intent of this effort, noting that the project was almost complete and would likely not be using the \$5,000 in allocated funds. He also expected that this project would be closed out by the end of September 2014.

Project 2013-03 – Improving Real-Time Traffic Speeds for Performance Measurement: Tina Greenfield briefly reviewed this effort. She noted that a sole-source contract with Iowa State University's Statistics Department for \$117,457 was now underway. Chris Albrecht noted that the project could likely involve a second phase of additional work, but that no funds have been approved or allocated to date. He also noted that future funding and work would be contingent on results of this initial effort, which should be completed by the end of March 2015.

Project 2013-04 – Quantifying Salt Concentration on Pavement, Phase 1: Max Perchanok briefly reviewed the scope of this effort, noting that the RFP to cover a literature search and technology review had been advertised. Chris also noted that the allocation for this first phase was \$35,000, with a second phase funded for an additional \$115,000 under the new TPF number as Project 2014-02.

Project 2013-05 – Knowledge Base Content Management: Chris Albrecht noted that the initial focus of this project, updating the knowledge base site with a new format, had been undertaken and completed by InTrans under the administrative contract. Chris also noted that once the old content is all moved to the new site, ongoing maintenance and marketing will still be needed. He added that the \$10,000 project allocation alone would likely not be enough to keep the site active for the next few years, but that he would put together a plan to utilize this money in the interim.

Project 2013-06 – Make Aurora Severity Index Available to Other Agencies: Tina Greenfield reviewed progress on this effort, noting that the project was now under contract with Accuweather. To date, she added, \$23,193 had been expended. She also noted that this effort should be completed by the end of December 2014.

Project 2014-01 – Seasonal Weight Restrictions Demonstration, Phase 2: Chris Albrecht noted that \$200,000 had been allocated for this second phase under FY2014, as was noted earlier.

Project 2014-02 – Quantifying Salt Concentration on Pavement, Phase 2: Chris also re-iterated that this second phase was funded for an additional \$115,000 under the new TPF number as Project 2014-02.

Project 2014-03 – Validate the Accuracy of Pavement Condition Predictions from Various Sources, Phase 2: Chris noted that the \$105,000 second phase would be completed under the new TPF program number.

8. 2015 Work Plan and Proposed Projects

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

Candidate A: Review and Application of Pavement Forecast Models – This idea 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.

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: Snow Liquid Water Equivalent for PWD Sensors: The key objectives of this research would be to 1) assess the PWD12 performance for measuring LWE under various precipitation type and temperature scenarios: dry snow, wet snow, mixed precipitation, and light precipitation, 2) provide an analysis on the observed differences between the base-elevation and mid-elevation LWE and how the differences could impact the avalanche hazard assessment, and 3) develop recommendations on alternate sensors, i.e., snow depth sensor, or operational changes in determining LWE using the PWD suite of sensors.

Chris also noted that the board would likely consider funding the 2015 winter maintenance peer exchange, as well as some other potential ideas.

9. August/September Board Web Meeting Date and Time

The board set the next web meeting for August 28, 2014.

10. Other Business

No other business was discussed.



- Aurora Program - Board Web Meeting

June 26, 2014



Today's Agenda:

- 1) Call to Order
- 2) Past Minutes and Actions
- 3) “Old” Program Administration and Financials
- 4) “New” Program Administration and Financials
- 5) “New” Program Membership and 2014 Work Plan
- 6) October Board Meeting in Ithaca, New York
- 7) Ongoing Project Progress Updates
- 8) 2015 Work Plan and Proposed Projects
- 9) August/September Board Web Meeting Date and Time
- 10) Other Business

1) Call to Order

Jason Norville

Aurora Program Chair

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working to advance road weather
information systems technology

2) Past Minutes and Actions

Aurora P

Individuals Participating:

Jason Norville, Pennsylvania DOT
Travis Lutman, North Dakota DOT
Dawn Gustafson, Michigan DOT
Mike Adams, Wisconsin DOT
Joe Doherty, New York 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, NCAP
Chris Albrecht, Iowa DOT

Meeting Agenda:

Aurora Program

minutes

Aurora Board Meeting
March 17-20, 2014 – Boulder, Colorado, USA

DRAFT#1

Individuals Participating in the Meeting:

Jason Norville, Pennsylvania DOT
Tina Greenfield, Iowa DOT
Max Perchanok, Ontario MOT
Jack Stickel, Alaska DOT&PF
Travis Lutman, North Dakota DOT
Jeff Williams, Utah DOT
Thomas Lyden, Ohio DOT
Dawn Gustafson, Michigan DOT
Jimmy White, Virginia DOT
Curt Pape, Minnesota DOT
Ron Hall, Kansas DOT
Mike Adams, Wisconsin DOT
Steve Hancock, California DOT
Simon Walker, British Columbia MOT
Kathy Ahlenius, Wyoming DOT
David Reeves, Colorado DOT

3) “Old” Program Admin/Finance

Year 10		474-77-41		January 1, 2013 - December 31, 2013	
				Total	
	ISU Labor		\$47,465.65		
	ISU Travel		\$4,546.74		
	ISU Other		\$26,624.50		
	Board Meetings		\$6,630.52	CTRE	\$71,626.00
	Board Travel		\$16,230.45	Board Meetings/Travel	\$34,020.00
	Total		\$101,497.86		\$105,646.00
Year 11		474-77-41		January 1, 2014 - December 31, 2014	
				Total	
	ISU Labor		\$22,190.04		
	ISU Travel		\$1,138.93		
	ISU Other		\$13,484.07		
	Board Meetings		\$4,865.57	Brief Summary of Year 11 (through 5/31/2014)	
	Board Travel		\$9,390.44		
	Total		\$51,069.05	Budget	Actual
				CTRE	\$73,432.00
				Board Meetings/Travel	\$34,020.00
					\$36,813.04
					\$14,256.01
				\$107,452.00	\$51,069.05

About \$319,000 balance at end of 2013

3) “Old” Program Admin/Finance

<u>Item</u>	<u>Income</u>	<u>Expenditures</u>	<u>Comments</u>
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

3) “Old” Program Admin/Finance

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

3) “Old” Program Admin/Finance

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

3) “Old” Program Admin/Finance

2012 Membership (FY2012 SP&R Payments)	\$250,000	\$383,500	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	\$353,115	Confirmed
2013 Project Expenditures (FY2013 Program)		\$78,637	Confirmed * (Estimated)
2013 Management Services (ISU)		\$22,861	Confirmed
2013 Travel and Meeting Expenses			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	



3) “Old” Program Admin/Finance

2000-06 - 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 Maintenace 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		

3) “Old” Program Admin/Finance

- *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”*
 - ***\$319,000 not under contract***

4) “New” Program Admin/Finance

Commitments by Organization:

Agency	Year	Commitments
Alaska Department of Transportation and Public Facilities	2014	\$25,000.00
Alaska Department of Transportation and Public Facilities	2015	\$25,000.00
California Department of Transportation	2014	\$25,000.00
California Department of Transportation	2015	\$25,000.00
Illinois Department of Transportation	2014	\$25,000.00
Iowa Department of Transportation	2014	\$25,000.00
Iowa Department of Transportation	2015	\$25,000.00
Iowa Department of Transportation	2016	\$25,000.00
Iowa Department of Transportation	2017	\$25,000.00
Iowa Department of Transportation	2018	\$25,000.00
Kansas Department of Transportation	2014	\$25,000.00
Michigan Department of Transportation	2014	\$25,000.00
Michigan Department of Transportation	2015	\$25,000.00
Michigan Department of Transportation	2016	\$25,000.00
Minnesota Department of Transportation	2014	\$25,000.00
Minnesota Department of Transportation	2015	\$25,000.00
New York State Department of Transportation	2014	\$25,000.00
New York State Department of Transportation	2015	\$25,000.00
North Dakota Department of Transportation	2014	\$25,000.00
Ohio Department of Transportation	2014	\$25,000.00
Ohio Department of Transportation	2015	\$25,000.00
Ohio Department of Transportation	2016	\$25,000.00
Pennsylvania Department of Transportation	2014	\$25,000.00
Pennsylvania Department of Transportation	2015	\$25,000.00
Utah Department of Transportation	2014	\$25,000.00
Utah Department of Transportation	2015	\$25,000.00
Virginia Department of Transportation	2014	\$25,000.00
Virginia Department of Transportation	2015	\$25,000.00
Wisconsin Department of Transportation	2014	\$25,000.00

\$725,000

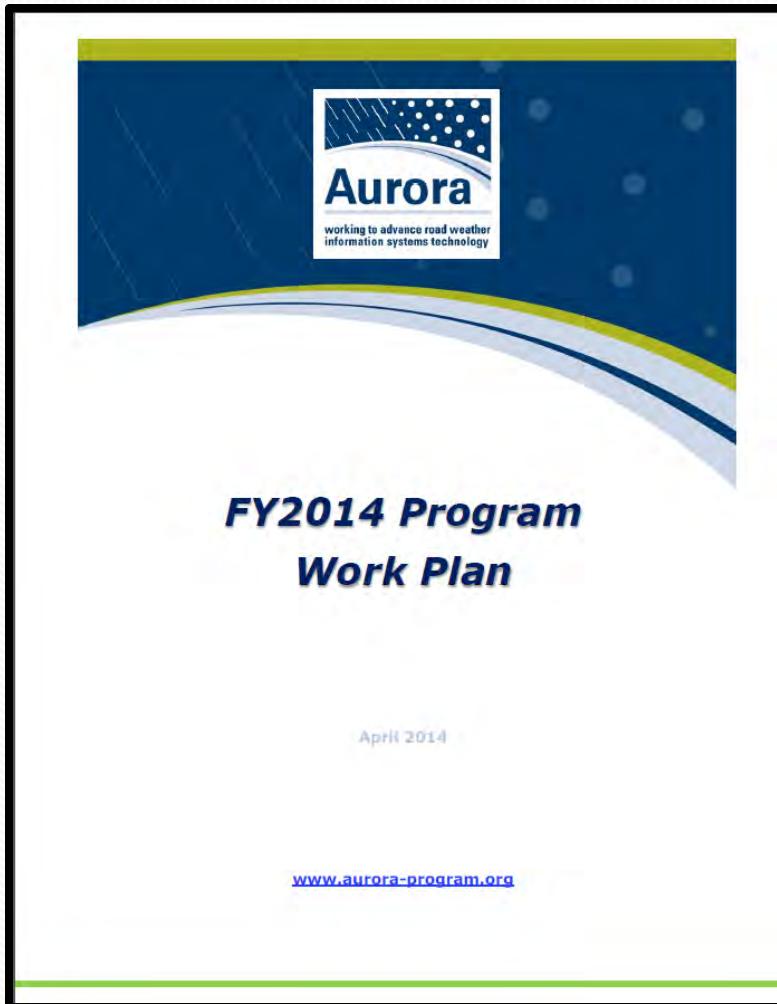
- 1) Alaska ... '14, '15**
- 2) California ... '14, '15**
- 3) Illinois ... '14**
- 4) Iowa ... '14, '15, '16, '17, '18**
- 5) Kansas ... '14**
- 6) Michigan ... '14, '15, '16**
- 7) Minnesota ... '14, '15**
- 8) New York ... '14, '15**
- 9) North Dakota ... '14**
- 10) Ohio ... '14, '15, '16**
- 11) Ontario ... '14, '15, '16 ***
- 12) Pennsylvania ... '14, '15**
- 13) Utah ... '14, '15**
- 14) Virginia ... '14, '15**
- 15) Wisconsin ... '14**
- 16) Colorado ... ?**

5) “New” Program Membership

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



5) 2014 Work Plan



- ❖ *Review*
- ❖ *Comment*
- ❖ *Approve*

... by July 3

6) October Board Meeting

October 7-9, 2014

- Ithaca, New York ... Hotel to be determined
- Innovative Dynamics Inc.
- Cornell University Environmental & Atmospheric Sciences
- U of Albany
- Guest agencies (?)
- **Travel Plans!**
- Other ...



7) Ongoing Projects

19 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

8) FY2015 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?

8) FY2015 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**?

Candidate I: Snow Liquid Water Equivalent for Forward Scatter **PWD** Series Sensors?

8) FY2015 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***~~



9) August/September Web Meeting

- ✓ *August 4-8*
- ✓ *August 11-15*
- ✓ *August 18-22*
- ✓ *August 25-29*
- ✓ *September 1-5*
- ✓ *September 8-12*
- ✓ *September 15-19*
- ✓ *September 22-26*

10) Other Business

Aurora

working to advance road weather information systems technology

Home About Projects News Participate Resources For Members

Ongoing Completed

Upcoming Events Who We Are Ongoing Projects

• 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

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

Transportation & Public Facilities

Aurora membership

Federal members propose and solicit projects for funding and conduct and advise members. Members strive to open all public sector transportation management agencies to participation in S21201.

Associate members provide additional resources and services for innovation management are generally research-oriented nonprofits interested as conveners that can facilitate discussions among member organizations.

Members

Alaska Department of Transportation & Public Facilities
Alabama Department of Transportation
Arizona Department of Transportation
Arkansas Department of Transportation
California Department of Transportation
Florida Department of Transportation
Illinois Department of Transportation
Indiana Department of Transportation
Iowa Department of Transportation
Michigan Department of Transportation
Minnesota Department of Transportation
Mississippi Department of Transportation
Missouri Department of Transportation
Nebraska Department of Transportation
New Mexico Department of Transportation
North Carolina Department of Transportation
Oregon Department of Transportation
Utah Department of Transportation
Vermont Agency of Transportation
Wisconsin Department of Transportation

Associate members

Federal Highway Administration - Road Weather Management Team
Federal Highway Administration - National Weather Service
Federal Systems Laboratory
Geotab Inc.
International Society for Photogrammetry, Remote Sensing, and Spatial Information Sciences
Metropolitan Severe Weather Institute
National Weather Service - Portland
University of Colorado
Massachusetts Institute of Technology
University of Colorado
Pennsylvania State University
University of Minnesota
University of North Dakota
University of Wisconsin
University of Wisconsin - Madison
University of Wisconsin - Milwaukee
University of Wisconsin - Stevens Point
Virginia Polytechnic Institute and State University

In the current era of long right ledges, the extensive information sharing opportunities provided by Aurora help cities and road agencies reduce their RWIS and winter maintenance budgets.

Join Aurora and ...

multiply your agency's financial resources to address its most pressing RWIS-related challenges

work with the nation's collaborative research, development, and deployment of road and weather information systems (RWIS)

develop relationships with cutting-edge international, public and private leaders in RWIS equipment, decision support systems, standards, and training

www.aurora-program.org

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

Where can you get needed, timely information about effective and efficient snowplow operations to meet your environmental objectives?

How can you quickly get snow plow operators up to speed on anti-icing?

For more information about these programs and more, contact the program websites or contact the program managers.

Want to learn more about the Snow and Ice Cooperative Program (SICOP), Aurora, and Clear Roads?

Information in this brochure are from a joint-hired learning project on anti-icing and road weather information systems, sponsored by the Federal Highway Administration and the National Institute of Standards and Technology (NIST). Lead partners: NIST, FHWA, and the University of Minnesota. This document is a product of the SICOP, Aurora, and Clear Roads Learning Project.

NIST, Aurora, and Clear Roads Learning Project Team: University of Minnesota, University of Wisconsin-Madison, University of Colorado, Penn State, Virginia Tech, and the University of Colorado.

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