Aurora Program - Ongoing Project Status

December 31, 2010

FY 2000 through FY 2006

- 2000-01: Benchmarking of RWIS Forecasts ($50,000 in-kind) = 70% complete
- 2003-04: Intelligent Image-Based Sensor - Phase III ($75,000 in-kind) = 95% complete
- 2005-01: Development of an RWIS Quality Assurance System ($0) = discontinued/combined with 2007-01
- 2006-01: Support of the Clarus Initiative ($25,000) = 70% complete
- 2006-08: Low Cost Mobile RWIS ($50,000 in-kind) = 95% complete

FY 2007

- 2007-01: RWIS Equipment Monitoring System - Phase II ($135,000) = 5% complete
- 2007-02: Cold Weather Testing of the Halliday Road Grip Unit ($40,000) = 90% complete
- 2007-03: Incorporation of MDSS into Forecasting - Phase I ($0) = discontinued
- 2007-04: Development of a Freezing Drizzle Algorithm ($85,000) = 70% complete
- 2007-05: Multiple-Use ITS Data Collection Sites ($15,000) = 10% complete

FY 2008

- 2008-01: National Road Weather Testing Program ($11,000) = 20% complete
- 2008-03: Next Generation RWIS for Canada ($75,000 in-kind)= 55% complete

FY 2009

- 2009-01: Evaluation and Inter-comparison of the Lufft R2S ($55,000) = 5% complete
- 2009-03: Knowledge Base for RWIS ($20,000) = 45% complete
- 2009-04: Road Weather Education Enhancements ($20,000) = 30% complete
- 2009-05: Further Development of PPAES ($83,000) = 15% complete
- 2009-06: Salinity Sensor Improvements and Development ($5,000) = 5% complete

FY 2010

- 2010-01: Enhancements of AI/RWIS CBT ($50,000) = 20% complete
- 2010-02: Mobile-Weather Data Collection Guidelines ($25,000) = 10% complete
- 2010-03: Development of Models for Standards ($120,000) = 35% complete
- 2010-04: RWIS Sensor Density Grid ($100,000) = 5% complete
- 2010-05: Determining RPU and Sensor Failure ($5,000) = 5% complete

FY 2011

- 2011-01: Third Peer Exchange ($30,000) = 5% complete
- 2011-02: RWIS Training Tool (200,000) = 5% complete
- 2011-03: Benefit/Costs and Instruction for Migrating to Open RWIS ($75,000) = 5% complete
- 2011-04: Study of MDSS Costs ($20,000) = 5% complete
- 2011-05: Funding Sources Identification ($5,000) = 5% complete

Project Status Report

November 28, 2010

Project: 2000-01: Benchmarking the Performance of RWIS Forecasts

Champion: Max Perchanok, Ontario Ministry of Transportation

Status:

- The hard drive was sent on November 10.
- Agencies that provided data, that was included on the hard drive, are as follows:
  - British Columbia, Alberta, Newfoundland, Nova Scotia, New Brunswick
  - Pennsylvania, Iowa, Alaska
  - Finland
- Ontario will be provided later this month

Approximate % Complete: 70 %

Barriers/Issues: None.

Recommendations: X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- The project is expected to be complete in early 2011.
- This is an in-kind project for Ontario Ministry of Transportation.
- Project Team: Max Perchanok (champion), Mike Adams, Scott Roeder, Bill Hoffman, Curt Pape, Jeff Tilley, Dave Lahn, Sheldon Drobot, Dan Huang

Project Status Report

September 30, 2010

Project: 2003-04: Intelligent Image-Based Winter Road Condition Sensor - Phase III

Champion: Dan Eriksson, Swedish Road Administration

Status:

- This project involves a third phase of the intelligent image-based winter sensor project. The first two phases have shown to be very promising. The third phase involved continuing research and movement of the test site to a new location to acquire more research data.
- Because of the lack of trained nets for the actual installation point, this first year has mainly had the task of retrieving pictures to be used for future training of the neural networks. Results from the two approximate nets have not been reliable.
- One could also note that the computer used for image classification has been exchanged one time during this year. The usage of industrial computers with operating systems such as Microsoft Windows 2000 has shown to be crucial for the system functionality. The field tests have shown that standard PC operating systems needs to be rebooted at least once per month in order to be kept running. For a wider future field usage, it would be better to implement the image classification analysis into the embedded system in the field stations.
- During 2004-2005, the pictures retrieved during the season 2003-2004 should be used to train new neural nets. It is not until then we know more precise what accuracy we could get from the field image classification system.
- Five classes of road conditions are possible to detect this winter 2005/2006. Dry, wet, snow, ice and tracks.
- We are in the planning process of putting out a second camera to verify that the neural network is operational in any location, not only in the test site.
- The critical second camera test site to verify that the neural network is operational in any location, not only in the test site, has been tested this last winter season and the result was not what we had expected. The accuracy on road classification from the field image classification system was far too low to be acceptable.
- The team was still waiting for a report detailing the research results.
- Chris Albrecht has repeatedly requested materials from Dan Eriksson.

Approximate % Complete: 95 %

Recommendations:
____ continue as planned
____ continue with modifications
_X_ discontinue

Additional Comments:

- This is an in-kind project for the Swedish Road Administration.
- Project Team: Dan Eriksson (champion), Max Perchanok, Dan Roosevelt

Project Status Report

September 22, 2010

Project: 2005-01: Development of a RWIS Quality Assurance Monitoring System

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Objective: Develop a system that is modular to allow installation with different host organizations and platforms, expandable for incorporating additional quality assurance modules, accessible via the web, and holds historical database of quality assurance reports for future reference.

Status:

- The project team determined there were two advantages to completing this project: 1) creating a graphical interface to provide rapid analysis for sensor performance issues, and 2) adding specific sensor parameters Aurora members are interested in and for which Clarus does not support.
- The final Proof of Concept meeting revealed a number of quality checks that need refining. Additionally there were stations that were mismatched to the metadata.
- Mixon-Hill has also developed an interface to display the Proof of Concept states quality checking flags for each observation. Not only is this web application very beneficial, but it provides some thought for how we might envision the Aurora project's web interface. The site offers subscription service to the output by contributor or geospatial coordinates.
- The Clarus quality checking feedback for the proof of concept states provides quality checking on more fields than originally described. The project team is reviewing the subscription service output provided at: http://www.clarus.mixonhill.com/observations/contributor.jsp to tailor this project to the anticipated Clarus System output. The Clarus interface is now available at http://www.clarus-system.com/
- A concept of operations was discussed at the project mini-meeting in Des Moines.
- This project is being discontinued and combined with project 2007-01,

Approximate % Complete: (DISCONTINUED)

Barriers/Issues: The final scope of work for the RFP.

Recommendations:
____ continue as planned
____ continue with modifications
__X__ discontinue

Additional Comments:

- This project was funded for $50,000 in FY 2005 and $50,000 in FY 2006. These funds will be combined with project 2007-01 funding.
- Project Team: Jack Stickel (champion), Dawn Gustafson, Curt Pape, Mike Adams, Ralph Patterson, Tina Greenfield, Joe Doherty

Project Status Report

September 29, 2010

Project: 2006-01: Support of the *Clarus* Initiative

Champion: Tina Greenfield, Iowa Department of Transportation

Background: *Clarus* is a FHWA initiative designed to collect, quality check, and make available via the Internet this nation's public investments in atmospheric and pavement observations which support surface transportation operations. The purpose of this project is to influence the *Clarus* initiative and assist with its early implementation through funding costs 1) for member participation in the *Clarus* project when the *Clarus* Initiative does not cover costs 2) associated with drafting and submitting a proposal to be the test location for the Multi-state Regional Demonstration.

Strategy/Approach: Once the system design is complete, it will be necessary to implement, integrate, and test *Clarus* in a Multi-state Regional Demonstration. This demonstration will be conducted at a selected location so that system components, core functions, and information management processes may be tested and improved. Aurora supports this initiative. Active participation in the design and demonstration phases will allow Aurora members to influence the product, gain knowledge of the details involved with implementation, and help promote this system.

Status:

- Proof-of-Concept test involved Aurora members UT, AK and MN.
- Iowa was awarded one of the Concept of Operations (ConOps) projects. IL, IN, and OH are Aurora members on this team. Aurora supported this application.
- Aurora agreed to fund other Aurora states participation in other ConOps projects.
- The study report for all three ConOps teams are at http://www.clarusinitiative.org/regional.htm.

Approximate % Complete: 70 %

Barriers/Issues: None.

Recommendations: X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $50,000 in FY 2006. The project funding was reduced to $25,000 at the September 2010 board meeting.
- Project Team: Tina Greenfield (champion), Jack Stickel, Kirk Carpenter, Dean Kernan, Mike Adams, Scott Roeder, Sheldon Drobot

Project Status Report

September 22, 2010

Project: 2006-08: Low Cost Mobile RWIS

Champion: Claude Lapointe, Quebec Ministry of Transportation

Purpose: The objective is to build low cost mobile RWIS station with an open architecture to mix different sensors of different constructors. The project will involve the use of sensors on a vehicle and the use of an in-vehicle display and cell phone-based communications.

Status:

- Final project materials have been provided
- InTrans/CWIMS staff is editing them for a final review by the board.

Approximate % Complete: 95 %

Barriers/Issues: None.

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This is an in-kind project for the Quebec Ministry of Transportation.
- Project Team: Claude Lapointe (champion), Curt Pape, Kirk Carpenter, Dan Roosevelt, Dennis Burkheimer, Rudy Persaud

Project Status Report

September 29, 2010

Project: 2007-01: RWIS Equipment Monitoring System - Phase II

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Objective: Expand the *RWIS Equipment Monitoring* System developed for Project 2002-02 in four areas:

- Include in-commission rate reports with the percent of time the site was fully operational or degraded by no data received, incomplete data, or incorrect/suspicious data.
- Implement the specific changes to the RWIS Data and Reporting System proposed by the Aurora member states.
- Evaluate how site performance by sensor can be added to the application.
- Complete a Concept of Operations, system architecture, implementation plan, and deployment (assuming sufficient funding) for ingesting Clarus System quality checking output online.

Status:

- The proposal will incorporate the Clarus System quality checking output for objective #4.
- A detailed analysis of the Clarus System quality checking output will be completed in May. A draft scope of work will follow.
- This project will be combined with Project 2005-01.

Approximate % Complete: 5 %

Barriers/Issues: Final Scope of Work for RFP

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $25,000 in FY 2007.
- This project was funded for an additional $10,000 funding under FY 2008.
- This project has been combined with Project 2005-01 and its funding of $100,000.
- The total project budget is $135,000 as of the September 2010 board meeting.
- Project Team: Jack Stickel (champion), Dawn Gustafson, Curt Pape, Mike Adams, Ralph Patterson, Tina Greenfield, Joe Doherty

Project Status Report

September 22, 2010

Project: 2007-02: Cold Weather Testing of the Halliday Road Grip Unit

Champion: Diana Clonch, Ohio Department of Transportation

Status:

- Jeff Tilley is preparing a final report for presentation at the TRB show next June in Indianapolis.
- Jeff Tilley will forward a copy to Aurora when it is completed.
- Ohio DOT brought the RT3 unit back from North Dakota last week.
- A presentation on results will be made at the 4th National Conference on Surface Transportation Weather in Indianapolis.
- A project mini-meeting was held in Toronto in September 2008.
- Jeff Tilley would try to send a final report to Scott Roeder prior to the Albuquerque meeting.
- Participating states gave their comments on the draft final report, and additional technical comments were anticipated after Max Perchanok's revisions.
- Max submitted comments to Jeff Tilley early in April 2009 and a portion of these requested changes would be made by early June. Some comments were beyond the scope and would need to be addressed so the two planned a call.
- Waiting to hear back from UND.
- UND had expressed some security concerns with sharing the extra data collected on this project. It was agreed that Jeff Tilley would gather this data and forward it on to Chris Albrecht where it could be accessible upon request.
- Max noted that Quebec did a friction report and that the two devices should be compared.
- The draft report is being finished.
- A mini-meeting is scheduled for Des Moines on September 21, 2010.

Approximate % Complete: 90 %

Barriers/Issues: None.

Recommendations:
- [X] continue as planned
- [ ] continue with modifications
- [ ] discontinue

Additional Comments:

- This project was funded for $40,000 in FY 2007.
- An in-kind contribution from Ontario MOT is also a part of this effort.
- Project Team: Scott Roeder (champion), Mike Kisse, Dan Roosevelt, Max Perchanok, Tina Greenfield, Bill Hoffman

Project Status Report

September 29, 2010

Project: 2007-03: Incorporation of MDSS into Winter Weather Forecasting - Phase I

Champion: Tina Greenfield, Iowa Department of Transportation

Purpose: To research, through a concept evaluation, the ability of the Pooled Fund MDSS to integrate weather forecast information from a separate forecast provider, and to provide guidance to states and forecast companies on the requirements of this type of MDSS procurement. Also, test and document the process for integrating the Federal MDSS.

Status:

- In April the project team switched the area of focus for this Phase 1 project to attempt to integrate the Federal Prototype instead. The Pooled Fund integration will be planned for the Phase 2 project.
- After discussing procedures and responsibilities with NCAR and Utah another change of plan was suggested to have both NCAR and a private computer/software engineering company deploy the MDSS at Utah.
- A scope of work and budget was submitted by NCAR in July 2007.
- A contract was submitted to NCAR after a long approval process, but the wording was found to be unacceptable. The contract went through several revisions and reviews by NCAR/UCAR and DOT attorneys but to date is not resolved.
- It currently appears that no agreement can be made.
- A project mini-meeting was held in Toronto in September 2008.
- The project was on hold until it can be re-scoped or contracted in a different way.
- At least two agencies are hiring out the implementation of the Federal Prototype MDSS.
- Discussion of closing this project took place at the board meeting on September 22, 2010, where it was discontinued and its funding was rolled back into the Aurora general fund.

Approximate % Complete: (DISCONTINUED)

Barriers/Issues: None.

Recommendations:

____ continue as planned
__X__ continue with modifications
__X__ discontinue

Additional Comments:

- This project was funded for $50,000 in FY 2007.
- This project was funded for an additional $30,000 in FY 2008.
- Overall project funding was reduced to $30,000, with $50,000 being rolled back to the general program fund. The final $30,000 in funding was rolled into the general fund in September 2010.
- Project Team: Tina Greenfield (champion), Ralph Patterson, Kirk Carpenter, Max Perchanok

Project Status Report

November 30, 2010

Project: 2007-04: Development and Demonstration of a Freezing Drizzle Algorithm for ESS

Champion: Max Perchanok, Ontario Ministry of Transportation

Status:

- The purpose of this project is to test/optimize the Rosement freezing precipitation sensor for detecting freezing drizzle (freezing drizzle is defined as very light freezing rain) in roadside situations.
- The approach is to operate the sensor in conjunction with various 'ground truth' sensors (mainly Geonor heated rain gauge) and to develop statistical measures of its accuracy under different ambient conditions (temperature, storm type, season) and with or without filtering the data using other sensors.
- Phase 1 was completed in October 2008. This remaining work is Phase 2.
- Geonor quality control was completed in October, review of Geonor and NCAR data are now underway.
- The report will include analysis of the corrected data from both seasons stratified into 2 or 3 synoptic types, and will compare results from the stand-alone Rosemont with results obtained when the Rosemont data are pre-classified using Geonor precipitation rate data.
- The report will include a chapter on calibration of the Rosemont including both theoretical and practical aspects.

Approximate % Complete: 70 % (Phase 2)

Barriers/Issues: None. Work was delayed in Sep/Oct waiting for contract extension and is now underway with delivery expected by end of 2010.

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $15,000 in FY 2007 and $70,000 in FY 2008.
- Project Team: Max Perchanok (champion), Curt Pape, Mike Adams

Project Status Report

September 29, 2010

Project: 2007-05: Multiple-Use ITS Data Collection Sites

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Status:

- The overall objective of this project remains the same – use RWIS sites for different types of data collection. The goals, however, have been slowly evolving over the past two years. The current project goal is to integrate non-intrusive traffic data collection devices into a RWIS site. There is a realization that each DOT has unique IT infrastructure, power, communication, traffic data needs, and contractual relationships. There needs to be different, specific solutions to meet these challenges. Therefore, the two goals for project are:
  - Document existing DOT programs for non-intrusive traffic data collection among AURORA states. This would include Utah, New York, and Iowa.
  - Develop a software solution for full Wavetronix integration for the SSI Linux RPU (LX-RPU). A prototype would be deployed for an AURORA state (Alaska); other AURORA states would be eligible to follow on at a reduced cost. Alaska DOT has a quote for the LX-RPU integration and is ready to go to work.
- The non-intrusive RWIS traffic integration from other states could be documented as part of Aurora Project 2009-03 "*Knowledge Base for RWIS"*.
- Other options for this project would include air quality monitoring for: Ozone O3, Nitrogen Dioxide O2, Carbon Monoxide CO, Volatile Organic Compounds VOC, Carbon Dixoide CO2, Sulpher Dioxide SO2, Hydrogen Sulphide H2S, Particulate PM10, PM2.5
- A concept of operations is pending.

Approximate % Complete: 10 %

Barriers/Issues: Final scope of work for RFP

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $35,000 in FY 2007. This amount was reduced to $15,000 at the September 2010 board meeting, with the other $20,000 being rolled into the general fund.
- Project Team: Jack Stickel (champion), Tina Greenfield, Joe Doherty, Ralph Patterson, Curt Pape, Dawn Gustafson

Project Status Report

September 22, 2010

Project: 2008-01: Development of a National Road Weather Testing Program

Champion: Tina Greenfield, Iowa Department of Transportation

Objective: The purpose of this project is to fund Aurora to market the idea of a national testing facility to various audiences and sources of support. A national facility can help states and agencies find appropriate and well-suited providers for transportation weather research.

Status:

- This project began in FY 2008.
- This project was first mentioned at the National Winter Maintenance Peer Exchange in Ohio in August of 2007. Other winter maintenance testing needs were also brought up in the Peer Exchange round-table discussions. These needs were assigned to AASHTO/SICOP at the December, 2007 meeting.
- After hearing support for a national facility from Clear Roads members, Tina helped arrange a conference call between champion members from Clear Roads, AASHTO, SICOP, PNS, and Aurora to discuss possible cooperation and coordination on our "national facility" projects. This group decided cooperation was beneficial and began working on a draft document describing the facility.
- The idea of a single facility morphed into the idea of a consortium or board of experts which can help requestors of research find appropriate facilities.
- Clear Roads has committed funding. The group was waiting to hear back about additional funding from PNS.
- A Scope of Work has been drafted.
- Chris Albrecht forwarded materials concerning a testing facility database to the project team.

Approximate % Complete: 20 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $1,000 in FY 2008.
- This project was funded for an additional $10,000 in FY 2009.
- Project Team: Tina Greenfield (champion), Jack Stickel, Max Perchanok, Lee Smithson

Project Status Report

November 30, 2010

Project: 2008-03: MDSS Demonstration in Ontario

Champion: Max Perchanok, Ontario Ministry of Transportation

Objective: The purpose of this project is to review available MDSS systems and their functionality in comparison with conventional RWIS, to identify those that best support winter operations planning, performance monitoring and contract administration in Ontario, and to implement them on a limited scope, demonstration basis.

Status:

- An MDSS demonstration and evaluation is planned for 2 sites in Ontario this winter in partnership with an AMC contractor.
  - Installation of AVL on contractor trucks to obtain detailed road temperature and spreader data.
  - Implementation of a treatment advisory function in hindcast mode using AVL and RWIS archival data from storms in winter 2010-11, to compare service level and salt use from actual treatments with those from recommended treatments. Work to be completed and reported in spring 2011 as a benefit/cost study.
- Seasonal Load Advisory
  - Comparison of forecast with actual restriction dates showed benefits of Lakehead/MnDoT approach over UWaterloo index approach.
  - Web site will be revised in December 2010, replacing Waterloo prediction approach with Lakehead prediction approach..
  - Relationship of frost depth to pavement modulus (strength) is progressing as new measurements come in.
  - TempW finitie-element heat-flow models was prepared and borehole data were obtained from most sites to help calibrate prediction models to geotech conditions at each load restriction site.
- Highway Frost Potential mapping
  - Not currently planned aside from MDSS
- Highway Planning and Design applications.(Weather Data Interface)
  - Precip sensors installed at most sites
  - Year-round data polling is in place
  - Planning is underway to define data and statistical summary needs for Construction, and Planning & Design

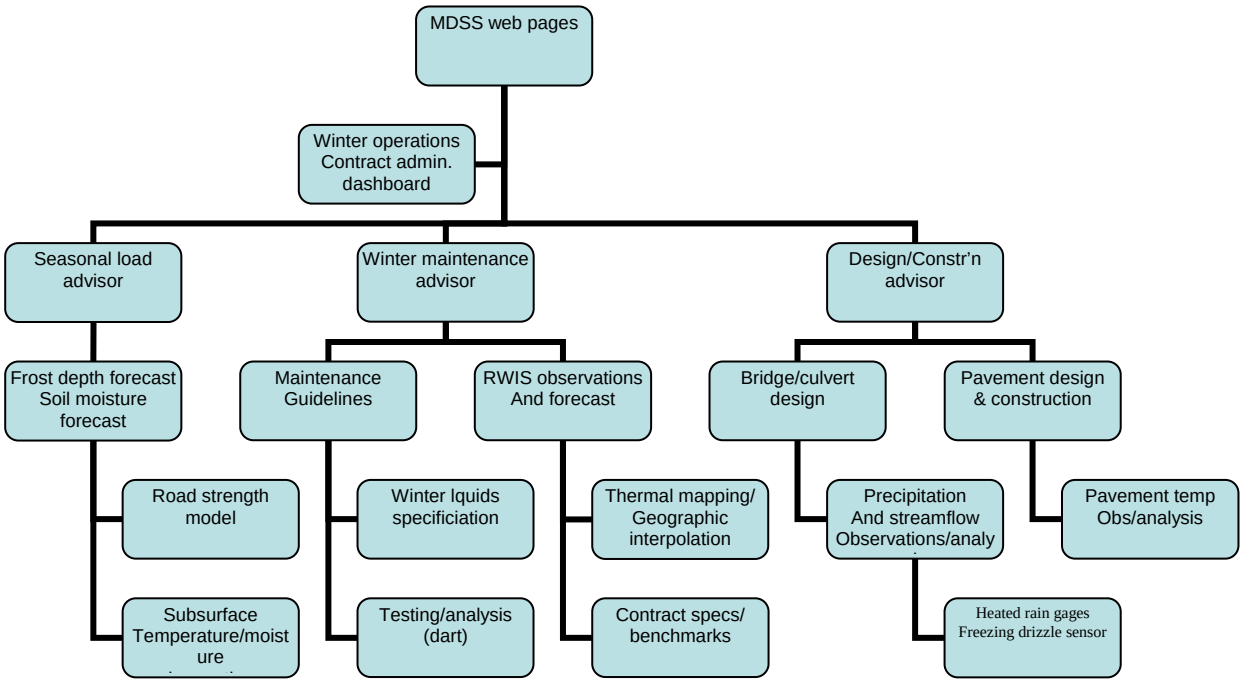
Approximate % Complete: 55 %

Barriers/Issues: None.

Recommendations: X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- Funding of $75,000 in-kind will cover Ontario's membership for FY 2008 through FY 2010.
- Project Team: Max Perchanok (champion), Ralph Patterson, Curt Pape, Dawn Gustafson, Sheldon Drobot



Project Status Report

September 22, 2010

Project: 2009-01: Evaluation and Inter-comparison of the Lufft R2S Sensor

Champion: Ralph Patterson, Utah Department of Transportation

Objective: The purpose of this project is to fund Aurora to market the idea of a national testing facility to perform an evaluation (including cross-comparison with other pre-existing precipitation sensors) of the R2S's capabilities and utilities over a full annual cycle (thus providing information on its utility to distinguish between very light drizzle and fog/mist droplets, as well as various frozen precipitation types).

Status:

- This project will begin in FY 2009.
- A scope is being reviewed.
- Minnesota and New York are in the process of conducting tests.
- The group planned to give multiple awards for completion of sensor analysis.
- It was considered that the approach change to comparison of outputs from multiple sensors.
- The project is on hold:
  - Awaiting feedback from Curt's efforts on a similar project currently in progress.
  - Development of a multi-award contract to be sent out to agencies, universities, and private companies who are interested and capable to bid Aurora projects focused on instrumentation testing and analysis.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $55,000 in FY 2009
- Project Team: Ralph Patterson (champion), Curt Pape, Jack Stickel, Dean Kernan, Joe Doherty

Project Status Report

September 22, 2010

Project: 2009-03: Knowledge Base for RWIS Programs and Environmental Data Loggers

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Objective: The objective of this project is to develop a web-enabled knowledge base (wiki-like) that allows sharing and retrieval of road weather information, with specific emphasis on data loggers. The application will have a search capability, various levels of administrative update control, be easy to update, and include capabilities for adding/replacing material. The knowledge base might have links to web-based information, stand alone articles, user manuals, and frequently asked questions. The data logger knowledge base may contain:

- commonly user sensor configurations, setup, and operation
- Site setup and environmental considerations
- Data logger programs
- Troubleshooting information
- Best practices

Status:

- A conference call was held with CTRE support staff and the project team to discuss options for completing the project.
- CTRE has the capability to produce the knowledge base, and a budget and scope were prepared and sent to Jack Stickel.
- The team held another call to discuss further the desired capabilities for the site, and Jack will prepare a draft Concept of Operations that was distributed for the group to review.
- Another conference call is pending on September 16, 2010.

Approximate % Complete: 45 %

Barriers/Issues: None

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $20,000 in FY 2009
- Project Team: Jack Stickel (champion), Ralph Patterson, Bill Hoffman, Max Perchanok, Curt Pape, Jeff Tilley

Project Status Report

September 22, 2010

Project: 2009-04: Road Weather Education Enhancements and Dissemination

Champion: Dawn Gustafson, Michigan Department of Transportation

Objective: The objective of this project is to develop methods and/or materials to disseminate existing road weather and RWIS educational materials. This project idea stemmed from the 2007 peer exchange, and it was considered to present this topic for discussion again at the 2009 peer exchange for additional input into the project's focus.

Status:

- Questions that need answers
  1. What materials need to be covered by this umbrella?
  2. What materials are out there, but are difficult to access?
  3. What educational materials are lacking and need to be developed?
- Mike Adams had shared that the Wisconsin DOT library would be able to perform a literature search and assist in developing and distributing a survey for the group free of charge, so the group agreed to proceed through them for Phase I. The literature search completed by Wisconsin DOT. In general, most information obtained showed heavy use of AASHTO AI/RWIS training. Does this provide what is needed? Can we set up some guidance as to what training would be helpful for AI or RWIS (individually)?
- Project mini meeting was held in Salt Lake City. Another is scheduled for Des Moines.
- To date, it has been decided that:
  - A training section will be included under the 'wiki'
  - Include all materials such as power points, hand outs, etc. Each must be dated
  - After materials are collected, answer - "What gaps still exist?"
  - Review TCCC website and Peer Exchange information
  - Each survey respondent will be contacted to see if they are willing to share training materials.

Approximate % Complete: 30 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $20,000 in FY 2009
- Project Team: Dawn Gustafson (champion), Max Perchanok, Ralph Patterson, Jeff Tilley, Mike Adams, Bill Hoffman

Project Status Report

September 22, 2010

Project: 2009-05: Further Development of Pavement Precipitation Accumulation Estimation System

Champion: Ralph Patterson, Utah Department of Transportation

Objective: The two primary objectives of this project are the utilization of RWIS data within PPAES and the blending of PPAES products produced using different observation platforms.

Status:

- The contract between Iowa DOT and UND is in place.
- PPAES is now moving, and a UND student is working on the project and has progressed with the initial data fusion design and coding.

Approximate % Complete: 15 %

Barriers/Issues: None

Recommendations: X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $83,000 in FY 2009
- Project Team: Ralph Patterson (champion), Jack Stickel, Dean Kernan, Bill Hoffman

Project Status Report

September 22, 2010

Project: 2009-06: Salinity Sensor Improvements and Development

Champion: Tina Greenfield, Iowa Department of Transportation

Objective: The objective of this project is to survey state transportation agencies to gauge interest in purchasing and utilizing on-vehicle chemical sensors, and if so, how many and at what price. Clear Roads would be a likely partner on such an effort.

Status:

- This project began in FY 2009.
- Clear Roads did not approve the project.
- It was considered that this project be done with a pooled fund-type scope
- CTRE could complete a survey baring in mind the following questions:
  1. What are the needs?
  2. How will this be used?
  3. What amount of payment would be reasonable?
  4. What quantity would be needed?
- Recent discussions have pointed to the vendor community as the primary force behind this idea.
- Tina Greenfield talked to Monty Mills from PNS, and he said they've not done any work on salinity sensing. He talked to Paul Brown, and both think that industry needs to take the lead.
- The project team considered ideas for this project, but ultimately decided that the vendor community has to address this. Aurora is not well suited for sensor development, but we have mentioned it at the last two Friends of Aurora vendor conferences and will hold it up as an unmet need as far as we are concerned.
- The direction of this project will be discussed in Des Moines on September 22, 2010.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $50,000 in FY 2009
- Funding was reduced to $5,000 at the April 2010 board meeting.
- Project Team: Tina Greenfield (champion), Max Perchanok, Dean Kernan, Mike Kisse, Jeff Tilley

Project Status Report

September 22, 2010

Project: 2010-01: Enhancements of AI/RWIS CBT

Champion: Tina Greenfield, Iowa Department of Transportation

Status:

- This was the #1 Ranked Peer Exchange Project from 2009.
- A conference call was held in March to discuss this project.
- Lee Smithson and Tina Greenfield are working to get more money funded for the project.
- The team is in the scoping phase for splitting the AI/RWIS CBT and we've held some meetings with GanTek and the other stakeholders about this. The hang-up is money right now. We have a number of changes in mind, but not the funds to do them yet according to the quotes from GanTek.
- Lee Smithson, Steve Lund, and Bill Hoffman presented a resolution (asking permission) at the Summer AASHTO SCOM Meeting this past July in Savannah, to have AASHTO ask State DOT's to Contribute $3,750 for this CBT enhancement. They should get an answer from AASHTO within the next couple of months.

Approximate % Complete: 20 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $50,000 in FY 2010
- Project Team: Tina Greenfield (champion), Dawn Gustafson, Dean Kernan, Mike Adams, Max Perchanok, Jeff Tilley, Bill Hoffman
- Partners include Clear Roads and AASHTO representatives as well.

Project Status Report

September 23, 2010

Project: 2010-02: Mobile-Weather Data Collection Guidelines

Champion: Bill Hoffman, Nevada Department of Transportation

Status:

- Bill Hoffman has suggested teaming up with the AASHTO equipment group.
- This project is just underway.
- This project is a sister project 2010-04.
- The first step will likely be a synthesis.
- Paul Brown, Clear Roads Chair, will be hosting a vendor workshop at the Clear Roads Winter Meeting in Virginia to discuss how the Vendors will begin working with DOTs on Open Architecture and Open Data Platforms. We should get some very good information on how best to create guidelines for Mobile Weather Data Guidelines.

Approximate % Complete: 10 %

Barriers/Issues: None

Recommendations:

X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $25,000 in FY 2010
- Project Team: Bill Hoffman (champion), Max Perchanok, Dean Kernan, Curt Pape, Gabe Guevera, Li Fu, Jeff Tilley, Sheldon Drobot

Project Status Report

November 30, 2010

Project: 2010-03: Results Based Winter Road Maintenance Standards

Champion: Max Perchanok, Ontario Ministry of Transportation

Status:

- Three-year agreement is in place for MTO funding, and graduate students are at work.
- Major components:
  - Evaluation and Intercomparison of road surface condition monitoring and prediction tools, and their sampling regimes
  - Modeling of safety and mobility in relation to road surface condition
  - Development of tools to analyze and evaluate the relation between alternative winter maintenance performance standards, and outcomes of safety and mobility.
- Progress in previous 4 months:
  - Development of a cost-benefit framework for the project
  - Development of Road Surface Index and conversion of MTO road report archive to RSI format.
  - Completion of RSI-based analysis on sample Class IV and V highways
  - Expanded weather-road condition-traffic-accident database to 34 Class I and II highways across Ontario
- Change in personnel for mobility component (new grad student)
- Progress in past 4 months:
  - Planning field work and developing instrumentation for winter 2010-11
    - Intercalibration of Haliday, Pon-Cat, Coralba, DSC111, video measurements
    - Calibration of measurement technology to visual RSI and BP reports
  - Initial review of WSI; to account for winter severity in setting performance measures
    - Snow removal performance (RSI or road conditions)
    - Salt management performance (annual salt application)
    - AURORA and MTO-BP index
  - Short term RSI prediction model
  - Working on simple, empirical cost-benefit model prior to developing predictive model.

Approximate % Complete: 35 %

Barriers/Issues:

- Final agreement has not been received from Iowa DOT.
- Lack of web access to Pelmorex RWIS and RCWIS archives has restricted the development and testing of models relating RSI to road safety and mobility to the 4 original sites. Resolution expected by end of 2010 for 34 new sites.

Recommendations:

X continue as planned

____ continue with modifications

____ discontinue

Additional Comments:

- This project was funded for $120,000 in FY 2010
- This report is based on informal discussions with the project analysts. An on-site project review is scheduled for December 3 that will provide more detailed information.
- Project Team: Max Perchanok (Champion), Bill Hoffman, Dawn Gustafson, Joe Doherty, Sheldon Drobot, Neil Hawkins

Project Status Report

September 22, 2010

Project: 2010-04: RWIS Sensor Density Grid

Champion: Bill Hoffman, Nevada Department of Transportation

Status:

- This project is new for FY 2010.
- The team is planning a kickoff meeting.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $100,000 in FY 2010
- Project Team: Kirk Carpenter (champion), Jack Stickel, Ralph Patterson, Dawn Gustafson, Max Perchanok, Sheldon Drobot, Mike Adams, Jason Norville, Dean Kernan, Tina Greenfield

Project Status Report

September 22, 2010

Project: 2010-05: Determining RPU and Sensor Failure

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Status:

- This project is new for FY 2010.
- The team is scheduling a meeting to coordinate the approach.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $5,000 in FY 2010
- Project Team: Jack Stickel (champion), Ralph Patterson, Tina Greenfield, Jason Norville, Sheldon Drobot

Project Status Report

October 29, 2010

Project: 2011-01: Third Peer Exchange

Champion: Tina Greenfield, Iowa Department of Transportation

Background: Aurora has been actively researching a number of surface transportation weather projects; while Clear Roads is researching materials, equipment, and practices related to winter maintenance operations. Unfortunately, information and research results sometimes do not reach end users in all states or at different agency levels. The winter maintenance community needs to be more aware of the research conducted by Aurora and Clear Roads and other research organizations and take a more active role in requesting research to meet winter operational needs. Therefore, the objective of this project is to conduct a National winter maintenance meeting for Aurora, Clear Roads, SICOP, PNS and the FHWA to share research results from the Peer Exchanges held in 2007 and 2009, get updates from each snow-belt state, and discuss other issues related to winter snow removal operations. Each state would send two representatives to the meeting that are most actively involved with the areas covered by Aurora, Clear Roads, PNS, SICOP and FHWA efforts.

Status:

- This project is new for FY 2011.
- Lee Smithson is scheduling a meeting to coordinate the approach.
- The event will likely be held in September 2011.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $30,000 in FY 2011.
- Aurora, Clear Roads, PNS, SICOP and FHWA would be equal partners in developing the agenda for the multi-day meeting.
- Project Team: Tina Greenfield (champion), Bill Hoffman, Dawn Gustafson, Dean Kernan

Project Status Report

October 29, 2010

Project: 2011-02: RWIS Training Tool

Champion: Tina Greenfield, Iowa Department of Transportation

Background: It is often the case across states and even within states that winter maintenance supervisors or foremen do not have a consistent understanding of RWIS and weather information in real-world decision making. Training may be administered but it is difficult to determine how much is retained, whether understanding was reached, and which parts of the training were successfully integrated into decision making practice. Therefore it is difficult to assess supervisor/foremen competency and it is difficult to tailor training to their needs. This is especially a problem when hiring new staff or hiring contractors because there are few tools to evaluate their ability to perform as required. This project involves the creation of a supervisor evaluation tool which can measure a supervisor's ability to incorporate RWIS and risk management into their decision making process.

Status:

- This project is new for FY 2011.
- This project is estimated to last 3 years.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $200,000 in FY 2011.
- Project Team: Tina Greenfield (champion), Dean Kernan, Bill Hoffman, Max Perchanok, Sheldon Drobot

Project Status Report

October 29, 2010

Project: 2011-03: Benefit/Costs and Instruction for Migrating to Open RWIS

Champion: Tina Greenfield, Iowa Department of Transportation

Background: The objective of this project is to create a do-it-yourself guide for RWIS sensors, servers, data bases, web displays, etc. This project concept could possibly be added as an extension to the 2009-03 Wiki database project.

Status:

- This project is new for FY 2011.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
X continue as planned
____ continue with modifications
____ discontinue

Additional Comments:

- This project was funded for $75,000 in FY 2011.
- Project Team: Tina Greenfield (champion), Ralph Patterson, Bill Hoffman, Dawn Gustafson, Jack Stickel

Project Status Report

October 29, 2010

Project: 2011-04: Study of MDSS Costs

Champion: Mike Adams, Wisconsin Department of Transportation

Background: This project concept was presented as a concern at the 2009 Peer Exchange and ranked at #9 among those ideas. The objective of this effort is to determine the upfront costs vs. long-term benefits for implementing MDSS systems. Also, determine necessary equipment, how to best equip the trucks, and quantify secondary benefits of equipping the fleet for MDSS. Initially this project will require a survey of the states. Aurora will team up with Clear Roads and MDSS Pooled Fund to realize this project's goals.

Status:

- This project is new for FY 2011.
- This project was funded for $20,000.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $20,000 in FY 2011.
- Project Team: Mike Adams (champion), Mike Kisse, Jason Norville, Sheldon Drobot

Project Status Report

October 29, 2010

Project: 2011-05: Funding Sources Identification

Champion: Jack Stickel, Alaska Department of Transportation and Public Facilities

Background: Road weather management programs and Road Weather Information Systems (RWIS) can tap into various federal funding sources. This includes standard funding allocations and grant allocations. These sources are not well known to all agencies. This project will compile potential funding sources and approaches that state department of transportation agencies can tap to fund the road weather management program. This would include funding partnerships, grants, standard allocations, and shared cost opportunities.

Status:

- This project is new for FY 2011.
- This project was funded for $5,000.
- This will involve surveying the Aurora member agencies on the funding sources they use, how to tap into them, and the processes they use to secure the funding
- The resulting document would be posted on the Knowledge Base web site.

Approximate % Complete: 5 %

Barriers/Issues: None

Recommendations:
- X continue as planned
- ____ continue with modifications
- ____ discontinue

Additional Comments:

- This project was funded for $5,000 in FY 2011.
- Project Team: Jack Stickel (champion), Joe Doherty, Bill Hoffman