Overview of Winter Operations Research Groups
Aurora, Clear Roads, PNS, SICOP

Aurora is an international partnership of public agencies who work together to perform collaborative research activities, development, advocacy, and deployment in the area of road weather information systems (RWIS).

Iowa Dot (Administrator)
Ontario MT
Quebec MT
Swedish NRA
Alaska DOT
Ohio DOT
Pennsylvania DOT
North Dakota DOT

Utah DOT
Virginia DOT
Minnesota DOT
Wisconsin DOT
New York DOT
Illinois DOT
Michigan DOT
Indiana DOT
Nevada DOT

Affiliates/Partners:
National Center for Atmospheric Research (NCAR)
Meteorological Service of Canada
Swedish Meteorological and Hydrological Institute
Penn State University
University of North Dakota
University of Minnesota
Purdue University
Massachusetts Institute of Technology
Iowa State University
Ohio University
University of Waterloo
University of Gotenburg
Ongoing Projects:
- 2011 National Winter Maintenance Peer Exchange
- Benchmarking the Performance of RWIS Forecasts
- Benefit/Cost Analysis and Instruction for Migrating to Open RWIS
- Co-Funding Winter Road Research
- Cold Weather Testing of the Halliday Road Grip Unit
- Determining RPU and Sensor Failure
- Development and Demonstration of a Freezing Drizzle Algorithm for ESS
- Development of a National Road Weather Testing Program

What is Clear Roads?
- Pooled fund project #TPF-5(218)
- Began in 2004
- 20 current members: CO, IA, IL, IN, MA, ME, MI, MD, MN, ND, NE, NH, NY, OH, PA, UT, VA, WA, WI, WY
- Focus on winter operations research with practical applications, field testing and usable results
- New projects funded every year. Members contribute $25k annually. 100% SPR funds can be used

Completed Research
- Identifying the Parameters for Effective Implementation of Liquid-only Plow Routes
- Synthesis of Best Practices for Eliminating Fogging and Icing on Winter Maintenance Vehicles
- Calibration Accuracy of Manual and Ground-Speed-Control Spreaders
- Determining Effectiveness of Deicing Materials and Procedures
- Developing and Evaluating Safe Winter Driving Messages
- Development of Standardized Test Procedures for Evaluating Deicing Chemicals
- Development of Interface Specifications for Mobile Data Platforms on DOT Vehicles
- Development of Standardized Test Procedures for Carbide Insert Snowplow Blade Wear
  - Correlating Lab Testing and Field Performance for Deicing and Anti-icing Chemicals (Phase I)

Research in Progress
Developing a Training Video for Field Testing Deicing Materials
- A step-by-step instructional video that demonstrates the three levels of field testing that can be performed to determine the effectiveness of a deicing chemical.
- A DVD that will be distributed to state DOTs for use in training their maintenance staff on basic field testing.

Research Starting in 2011
- Understanding the True Costs of Snow and Ice Control Operations
- Mapping Weather Severity Zones
- Cost-benefit Analysis Toolkit Phase 2
- Determining the Toxicity of Deicing Materials
- Environmental Factors Causing Fatigue in Snowplow Operators
- Snow Removal at Extreme Temperatures – Phase 1
- Improved Snowplow Design and Material Used In Construction on Both Front and Underbody Plows
- Development of a Totally Automated Spreading System – Phase 1

Partnership Projects
National Winter Maintenance Peer Exchange
Collaboration with the Aurora pooled fund, Snow and Ice Pooled Fund Cooperative Program, FHWA, and the Pacific Northwest Snowfighters.

National Winter Safety Campaign
A national multimedia campaign designed to educate drivers about the importance of driving safely in winter conditions.

Computer-Based Training
Developing computer-based training modules that help train snow plow drivers, maintenance crews and others.

Snowplow Design
Conduct research on optimum snowplow design.
Technology Transfer Leadership

Winter Maintenance E-Newsletter
A bi-monthly e-newsletter that highlights applications of winter maintenance research and technology and the latest transportation research reports by state DOTs, universities, TRB and FHWA.

Product Experience Feedback
An informal survey that allows states to share experiences with new or existing products.

Clear Roads Web Site
www.clearroads.org
Details about Clear Roads
• How to get involved
• Goals and results of research projects
• Meeting minutes and project proposals
Resources for winter highway operations
• Quarterly winter maintenance e-newsletter (Research & news from around the country)
• Downloadable Winter Driver Safety Campaign materials
• Product experience survey and results
• Synthesis reports on winter maintenance topics
• Listing of TRB papers related to winter operations

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www.clearroads.org
www.pooledfund.org

Transportation agencies within the states of Washington, Oregon, Montana, Colorado and Idaho and the provinces of British Columbia formed a committee several years ago to develop specifications for chemicals related to snow and ice control.

By consolidating resources and purchasing power of the member agencies, the association leverages the quality and cost of these products. The association encourages the development of contracts that specify, only products on the PNS Qualified Product List can be bid.

The mission of the PNS is to provide specifications for the highest quality products balancing quality of environment with providing the safest possible transportation system and maximum mobility for the traveling public during snow and ice conditions, within reasonable budgetary, product performance and environmental constraints.

The association is comprised of technical experts in the fields of chemistry, environment, maintenance operations and management, insurance law and claims, public affairs and purchasing. The association has been privileged to work with the foremost pioneers in deicing technology.
What is SICOP?

SICOP is the Snow and Ice Pooled Fund Cooperative Program. It was developed by AASHTO (The American Association of State Highway and Transportation Officials).

"In order to experiment with snow and ice technology and systems not now in use in this nation," to determine their suitability to the United States and to help introduce the use of those with the most promise, the AASHTO Board of Directors endorses the concept of establishing a voluntary AASHTO Snow and Ice Pooled Fund.

SICOP is under the oversight of the Winter Maintenance Technical Service Program (WMTSP). The task of the WMTSP is to promulgate the Winter Maintenance Program (WMP). Recognizing that an effective winter maintenance program encompasses all streets, roads and highways.

Mission:

A principal mission of the Winter Maintenance Program (WMP) will be to ensure that the requisite testing and evaluation of potentially implementable international or domestic winter maintenance technologies are performed.

The results of these efforts are presented and disseminated in such a manner that modern winter maintenance technologies are easily understood and integrated into individual state and municipal operational programs.

Beyond this principal mission, the WMP should work toward establishing a sustainable systems approach to snow and ice control in the United States—one involving the vehicle, the driver, the equipment, the materials and practices, and the receiving environment for managing roadway and bridge snow and ice.
Goals:
The goals of the proposed WMP are to (1) sustain or improve levels of winter maintenance service with significant benefit/cost improvements, (2) provide an enhanced level of sustainability and environmental protection, and (3) place technology in service on operational maintenance sections within two winter seasons. Another highlight of WMP is that it brought all levels of government together to cooperatively work on these projects. The concept of funding was also unique in that all funding will be via a pooled funding mechanism.

Guiding Principles
Four guiding principles for SICOP are:
1) Discovering technology not now in general use.
2) Evaluating it.
3) Disseminating it in easily understood manner.
4) Taking a sustainable systems approach.

Accomplishments:
Computer Based Training Winter Maintenance.
AASHTO Guide for Snow & Ice Control.
NCHRP 20-7 Task 287 A Research Plan for Winter Maintenance.
And many more you will find them on the website.

2011 Peer Exchange @ (WTI) Bozeman Montana.
September 19-21, 2011
http://www.westerntransportationinstitute.org/professionaldevelopment/peer-exchange/default.aspx