



CALTRANS DIVISION OF RESEARCH,
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

Research Notes

Rural

MAY 2026

Project Title: Road Weather Information System (RWIS) Research

Task Number: 4519

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TPF-5(543) Aurora Program (FY25-FY29)

Aurora Road Weather Information System (RWIS) Pooled Fund Study (PFS).

WHAT IS THE NEED?

Caltrans has more than 100 Road Weather Information System (RWIS) stations across the state. These stations help warn drivers about fog, ice, and strong winds, and they provide real time road information through tools like QuickMap. However, as weather events become more unpredictable and more severe, the current system needs better tools to accurately show what is happening on the roads and help maintenance crews respond quickly. Research is needed to improve how RWIS stations collect, share, and use weather and road condition data. Better technology will help Caltrans make faster, safer decisions during storms, plan winter maintenance more efficiently, and give travelers clearer, more reliable information before they hit the road.

WHAT ARE WE DOING?

The Aurora program is a partnership of highway agencies that began in 1996. These agencies collaborate on the research, development, and deployment of RWIS. The program's shared work helps improve the efficiency, safety, and reliability of surface transportation.

Aurora's initiatives are funded by member agencies and focus on research that meets their operational needs. Member agencies meet twice each year to set research priorities, review progress on active projects, and discuss solutions to common field challenges. Newly selected initiatives are led by "champion" agencies and managed by committees of Aurora members. All work is supported through the pooled fund research structure, which allows agencies to combine resources for shared benefit.

Aurora also maintains strong partnerships with national organizations. These include the American Association of State Highway and Transportation Officials and its Snow and Ice Pooled Fund Cooperative Program. The program coordinates



DRISI provides solutions and knowledge that improves California's transportation system.

with the American Meteorological Society, the National Severe Storm Laboratory, ITS America, Clear Roads, and the National Center for Atmospheric Research. These partnerships help ensure that RWIS research is informed by the latest scientific understanding and operational best practices.

In addition, Aurora works closely with private sector technology providers and university research groups. This collaboration supports the exchange of technical knowledge and field experience across agencies. It also helps transfer effective RWIS practices and innovations developed by one member agency to others throughout the program."

WHAT IS OUR GOAL?

The program's mission is to support cooperative research, evaluation, and deployment of innovative technologies that improve road weather monitoring and forecasting. It also aims to advance how these technologies are used in highway design, construction, maintenance, and operations. In addition, the program serves as an international advocate for expanding the use of road weather tools and methods.

To achieve this mission, the program focuses on six primary goals:

- To improve how road weather information is delivered to transportation providers and the traveling public. This helps reduce weather related incidents and improves safety, mobility, and reliability in both urban and rural areas.
- To increase the efficiency of maintenance operations, especially in challenging weather conditions.
- To support the development of technologies that integrate smoothly across systems, helping maintenance and operations teams share and use road weather information effectively.
- To create initiatives that help public agencies deploy RWIS technologies and methods more easily.

- To encourage stronger cooperation and information sharing between transportation agencies and partner organizations.
- To promote the development of new and expanded uses for RWIS technologies so agencies can better manage weather related roadway challenges.

WHAT IS THE BENEFIT?

- Caltrans involvement allows input on national standards, development, and implementation (device and communication). Direct benefit to Caltrans: This participation ensures California's operational needs and technical requirements are built into national winter maintenance standards and technologies before they are finalized, reducing future retrofit costs and improving statewide system compatibility.
- Caltrans will learn best practices from other states. Direct benefit to Caltrans: Access to proven strategies, tools, and lessons learned accelerates Caltrans' ability to improve winter operations, shorten testing cycles, and adopt methods that enhance safety and efficiency across California's diverse climates.
- Caltrans will be able to influence which studies are conducted, making California's priorities known. Direct benefit to Caltrans: By helping shape the research agenda, Caltrans ensures that studies address California specific challenges—such as mountain passes, microclimates, and high traffic corridors—resulting in solutions that are directly applicable and immediately valuable to the state.

WHAT IS THE PROGRESS TO DATE?

Recently Completed Research:

This highlight showcases how transportation agencies are teaming up to improve winter roadway operations. The piece illustrates collaborative efforts to refine winter maintenance strategies, share best practices, and integrate new

technologies to keep roads safer and more reliable during severe weather conditions.

Collaboration at Work: Research Highlight - Working Together to Advance Winter Maintenance

[https://publications.iowa.gov/55832/1/Collaboration at Work Highlight Wroking together to %20Advance Winter Maintenance.pdf](https://publications.iowa.gov/55832/1/Collaboration%20at%20Work%20Highlight%20Working%20to%20Advance%20Winter%20Maintenance.pdf)

This entry presents an ongoing investigation into the Pikaalert system, a decision support tool designed to help agencies anticipate and respond to hazardous winter weather. The research explores how real time road weather data, forecasts, and hazard alerts can support more efficient maintenance planning and improve safety across multi state corridors.

Collaboration at Work: Research In Progress - New Aurora Research Tests the Pikaalert Road Weather Decision Support System

[https://publications.iowa.gov/55830/1/Collaboration at Work Research In Progress New Aurora Research Tests the Pikaalert Road Weather Decision Support System.pdf](https://publications.iowa.gov/55830/1/Collaboration%20at%20Work%20Research%20In%20Progress%20New%20Aurora%20Research%20Tests%20the%20Pikaalert%20Road%20Weather%20Decision%20Support%20System.pdf)

This research focuses on advancing tools that help agencies evaluate roadway conditions after major storms. By developing better methods to assess residual risks such as flash freezing, debris, and localized flooding, the effort aims to enhance post storm decision making and restore safe travel conditions more quickly.

Collaboration at Work: Research in Progress - Improving Road Safety with Post-Storm Assessment Tools

[https://publications.iowa.gov/55821/1/Collaboration at Work Research in Progress Improving Road Safety with Post Storm Assessment Tools.pdf](https://publications.iowa.gov/55821/1/Collaboration%20at%20Work%20Research%20in%20Progress%20Improving%20Road%20Safety%20with%20Post%20Storm%20Assessment%20Tools.pdf)

IMAGES

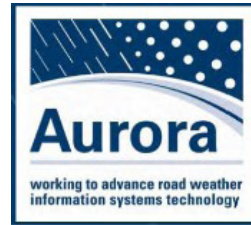


Image 1: AURORA Logo (Source: Iowa State University, Aurora Pooled Fund Study)