



**MINUTES**

**Clear Roads 2023 Technical Advisory Committee Meeting**  
 Pooled Fund Project TPF-5(479)

**Tuesday, September 19 to Thursday, September 21, 2023**  
 Salt Lake City Marriott University Park  
 480 Wakara Way, Salt Lake City, UT 84108

**Attendees (In-person)**

Marcus Zimmerman, Alaska	Tom Peters, Minnesota	Dan Varilek, South Dakota
Kevin Duby, Arizona	Paul Denkler, Missouri	Matt Heinze, Texas
Aidan Neely, Connecticut	Doug McBroom, Montana	Jessica Andrews, Utah
Alastair Probert, Delaware	Jasmine Dondlinger, Nebraska	Todd Law, Vermont
Steve Spoor, Idaho	Andy Lawrence, Nevada	AJ Younes, Virginia
Craig Bargfrede, Iowa	David Gray, New Hampshire	James Morin, Washington
Clay Adams, Kansas	Joe Thompson, New York	Jeff Pifer, West Virginia
Randi Feltner, Kentucky	Aaron Murra, North Dakota	Emil Juni, Wisconsin
Brian Burne, Maine	Dean Alatsis, Ohio	Cliff Spoonemore, Wyoming
Sandi Sauter, Maryland	Barry White, Oklahoma	Chris Romo, Wyoming
Mark Goldstein, Massachusetts	Patti Caswell, Oregon	Kevin Hensley, APWA
Justin Droste, Michigan	Dan Whetzel, Pennsylvania	Jeremy McGuffey, FHWA
Joe Huneke, Minnesota	Matt Ouellette, Rhode Island	Greg Waidley, CTC & Assoc.

**September 19, 2023**

**Introductions and Meeting Objectives**

- Welcome and opening remarks (Ryan Ferrin, Statewide Maintenance Engineer, Utah DOT)
- Member update / Introductions
  - New representatives
    - Colorado – Mike Chapman has replaced Jamie Yount.
    - Nevada – Andy Lawrence has replaced John Angel.
    - North Dakota – Aaron Murra has replaced Brad Darr.
    - Ohio – Dean Alatsis has replaced Scott Lucas.
  - Representatives standing in for permanent TAC members.
    - Maine – Brian Burne standing in for Chris Landy.
    - Maryland – Sandi Sauter standing in for Scott Simons.
    - Nebraska – Jasmine Dondlinger standing in for Mike Mattison.
    - Oklahoma – Barry White standing in for Alex Calvillo.
  - Members not able to attend in-person.
    - California – Gerald Kracher
    - Illinois – Laura Shanley
    - Indiana – Nick Evans (also a New Representative)
    - New Jersey – Chris Feinthel (also a New State)
    - AASHTO – Rick Nelson
    - NPRA – Bård Nonstad

## Proposal Discussions

The TAC reviewed and evaluated proposals for the following projects. Names which are underlined indicate project champion(s).

### 1. 23-01: Development of a Public Service Announcement Library

- **Presenter:** David Gray, New Hampshire
- **Proposals:**
  - Background Stories
  - Goff Public
  - Western Transportation Institute, Montana State University
- **Project Subcommittee:** David Gray, Steve Spoor, Dan Varilek, Emil Juni, Kevin Duby, Jeff Pifer, Randi Feltner, Chris Romo, Tom Peters
- **Next Steps:** MnDOT will coordinate a project selection committee meeting in October. Then subcommittee members will score the technical proposals and a research team will be awarded.

### 2. 23-02: Quantifying the Economic Value of Snow and Ice Operational Success

- **Presenter:** Mark Goldstein, Massachusetts
- **Proposals:**
  - AECOM
  - Bolton & Menk
- **Project Subcommittee:** Mark Goldstein, AJ Younes, Doug McBroom, Randi Feltner, Emil Juni, Joe Thompson, Marcus Zimmerman, Steve Spoor, Matthew Heinze, Paul Denkler, Tom Peters
- **Next Steps:** MnDOT will coordinate a project selection committee meeting in October. Then subcommittee members will score the technical proposals and a research team will be awarded.

### 3. 23-03: Update to CR 14-02: Quantifying the Impact that New Capital Projects will have on Roadway Snow and Ice Control Operations

- **Presenter:** Todd Law, Vermont
- **Proposal:** University of Vermont
- **Project Subcommittee:** Todd Law, Emil Juni, AJ Younes, Joe Thompson, Chris Landry, Paul Denkler, Mark Goldstein, Matthew Oullette, Tom Peters
- **Next Steps: (ACTION ITEM)** CTC will facilitate any needed revisions to the work plan and send it, along with the final budget, to MnDOT for contracting.

### 4. 23-04: Solar Radiation Benefits / Chloride Reduction Potential Associated with the Use of

#### 5. Vegetation Management Practices Near Roads

- **Presenter:** Aidan Neely, Connecticut
- **Proposals:** Bolton & Menk
- **Project Subcommittee:** Aidan Neely, Jessica Andrews, James Morin, Doug McBroom, Joe Thompson, David Gray, Kevin Duby, Dan Whetzel, Joe Huneke, Rick Nelson, Tom Peters
- **Next Steps: (ACTION ITEM)** CTC will facilitate any needed revisions to the work plan and send it, along with the final budget, to MnDOT for contracting.

## Computer-based ELDT Program

Ohio LTAP – Victoria Beale

## Clear Roads Budget

### Overview of TPF-5(479)

- Income through FFY2023= \$1,850,000
- Total committed = \$3,275,000
- Expenses = \$2,045,940
- **Motion:** Remove Computer-based ELDT Training project from 2023 list of programmed projects (Cliff S). Seconded (Doug M). **Motion carries.**
- **Motion:** Reaffirmation of Clear Roads intent to pursue three 2023 synthesis projects with CTC & Assoc. once enough FFY2024 funds are transferred into TPF-5(479) to cover the needed amendment to the Clear Roads Admin contract (Cliff S). Seconded (Todd L). **Motion carries.**

## Frequency of Clear Roads Internal Surveys

- This is not in reference to surveys sent by members to the rest of the TAC.
- Current survey frequency.
  - State Winter Maintenance Data Survey – Annually.
  - Product Experience Survey - Annually.
  - Research Implementation Survey – every 3 to 4 years.
- Would like to see a Research Implementation Survey – or – at least an update on completed projects with links to additional information every two years.
- Revisit discussion in the spring.
  - **ACTION ITEM:** CTC will provide Google Analytics data and the number of responses to the Product Experience Survey over the past 5 years.
- Next Implementation Webinar (after AWSSI and Operator and Supervisor Training) will be on the topic of the use of State Winter Maintenance Data.
  - Panel members: Todd L, Doug M, James M, and Patti C.

## State Reports

- Kansas – Clay Adams
- Michigan – Justin Droste
- Texas – Matthew Heinze

## Roundtable Topics

- Salt Symposium Award received in recognition of Clear Roads.
- FHWA's Transportation Pooled Fund Excellence Award nomination submitted by MnDOT on behalf of Clear Roads.
- Comparison of salt prices.
- Performance measures for winter operations.
  - Speed vs grip vs time to bare pavement.
- States sharing of RWIS data.
- Experience with NHI's Maintenance Leadership Academy.
- Pay differentials for maintenance equipment operators in urban vs rural communities.

**Update on Projects in Progress**

**18-06:** [Standard Test Procedure for Ice Melting Capacity of Deicers](#)

- **Contractor:** Washington State University
- **Subcommittee:** [Jasmine Dondlinger](#), [Jeff Pifer](#), Doug McBroom, Patti Caswell, James Morin, Tom Peters, Dave Hansen, Rick Nelson
- **End Date:** September 2023 (extending to March 2024)
- **Status:** The research team prepared the Standard Test Procedures, Executive Summary, and Resolution to go before AASHTO's Maintenance Committee – Technical Working Group (TWG) on Maintenance Operations. The TWG recommended the IMC Test Method for approval in July 2022. The same documents then went before the AASHTO Committee on Materials and Pavements (CoMP), a week later. The CoMP determined they would need more time to review the test method. Voting on a provisional recommendation for approval occurred in the summer of 2023 and was approved, therefore, the IMC Test Method will be published in 2024 as a provisional test method. Another round of voting will take place in November 2023 or sooner to get further feedback, which may be addressed in future balloting.

**20-05:** [Using GIS to Highlight Highway Segments Sensitive to Deicing Materials](#)

- **Contractor:** SRF Consulting Group
- **Subcommittee:** [Joe Thompson](#), [Mark Goldstein](#), Patti Caswell, Jessica Andrews, Dan Whetzel, Chris Landry, Laura Shanley, Tom Peters
- **End Date:** September 2023 (extending to March 2024)
- **Status:** An initial round of testing on the Tool was conducted and revisions were made. Another round of testing was attempted by the project subcommittee but couldn't be done due to technical and personnel reasons. TAC was contacted to volunteer to test the revised Tool and about 8 states volunteered. To conduct this larger test, an amendment for about \$12.5k and an additional six months has been put in front of the TAC for approval. As of 9/12, we received enough votes to amend the contract.

**20-06:** [Salt Shed Design Template](#)

- **Contractor:** Wilf Nixon and Associates
- **Subcommittee:** [James Morin](#), [Cliff Spoonemore](#), Dan Varilek, Craig Bargfrede, Paul Denkler, Matthew Ouellette, Alastair Probert, Mike Mattison, Tom Peters, Pat Jeffrey
- **End Date:** January 2024
- **Status:** The PI is working on taking what he's provided for the Scalable Designs (Task 4) and expanding it into a Design Guide, while also providing the recommendations (should have been included in T3, Analysis) in the Design Guide or Final Report.

**21-01:** [Grip Sensor Technology and Salt Applications](#)

- **Contractor:** Western Transportation Institute, Montana State University
- **Subcommittee:** [Kevin Duby](#), [James Morin](#), Nick Evans, Patti Caswell, Emil Juni, Matthew Heinze, Justin Droste, James Roath, Tom Peters
- **End Date:** August 2023
- **Status:** The literature review, survey, and case studies are complete. The next step is to develop an algorithm methodology which will be used to develop a decision matrix that attempts to incorporate road condition (grip, pavement temperature) and atmospheric variables (air

temperature, etc.), chemical treatments and plowing, and weather forecast data to support decision-making in winter maintenance operations.

**21-02:** [Update to CR 13-04: Best Practices for Protecting DOT Equip. from the Corrosion Effect of Chemical Deicers](#)

- **Contractor:** Washington State University
- **Subcommittee:** [Todd Law](#), [Steve Spoor](#), Matthew Ouellette, Jeff Pifer, Cliff Spoonemore, Chris Landry, Tom Peters
- **End Date:** February 2024
- **Status:** In the early summer, the subcommittee approved the experimental plan. As of 7/5/23, PI has proceeded with procurement of materials and preparation of test coupons but not the actual testing.

**21-04:** [Training Module Development for Evaluation of Storm Severity Index and Winter Severity Index Variables](#)

- **Contractor:** Focus EduVation
- **Subcommittee:** [James Morin](#), [Kevin Duby](#), [Justin Droste](#), Paul Denkler, James Roath, Dan Whetzel, Scott Rattay, Kevin Hensley, Tom Peters
- **End Date:** January 2024
- **Status:** Training modules are in various stages of review. As of 8/31...
  - Module 1: Final Version posted. Needs final approval.
  - Module 2: Beta Version posted. Needs comments / approval.
  - Module 3: Alpha Version posted. Needs initial review comment.

**21-06:** [Calculating Plow Cycle Times from AVL Data](#)

- **Contractor:** AECOM Technical Services
- **Subcommittee:** [David Gray](#), [Mike Mattison](#), Dan Whetzel, Emil Juni, Dan Varilek, Jessica Andrews, Steve Spoor, Patti Caswell, Mike Chapman, Kevin Hensley, Tom Peters
- **End Date:** April 2024
- **Status:** The literature review, survey, user stories, methodology development and case study are complete. The next step is for the research team to develop an online tool framework.

**21-07:** [Determining the Migration of Chloride-Based Deicers through Different Soil Types](#)

- **Contractor:** Washington State University
- **Subcommittee:** [Aidan Neely](#), [Doug McBroom](#), Mark Goldstein, James Morin, Patti Caswell, Joe Thompson, Nick Evans, Matt Kraushar, Tom Peters
- **End Date:** May 2024
- **Status:** A Test Plan was approved in May 2023. Testing is on-going and should conclude in the fall of 2023.

**22-01:** [Comprehensive Guide to Pre-wetting Application Rates and Methods](#)

- **Contractor:** Washington State University
- **Subcommittee:** [James Morin](#), [Patti Caswell](#), Kevin Duby, Mike Nichols, Aidan Neely, Doug McBroom, Joe Thompson, Dan Varilek, and Tom Peters
- **End Date:** September 2024
- **Status:** The literature review is complete. The survey questions were approved, and the survey was distributed in late August 2023.

**22-02:** [Best Management Practices for Liquid Chloride Storage and Pumping Systems](#)

- **Contractor:** Western Transportation Institute, Montana State University
- **Subcommittee:** [Chris Landry](#), [Mark Goldstein](#), Clay Adams, Nathan Morian, Dan Whetzel, Mike Chapman, Matthew Heinze, Scott Simons, Patti Caswell, Marcus Zimmerman, Alastair Probert, Tom Peters
- **End Date:** December 2024
- **Status:** Kickoff meeting was held in July. Survey questions are approved, and as of early September, the research team is obtaining their university's Institutional Review Board's approval prior to distributing the survey.

#### 22-03: [Effects of Additives in Deicing Salts at Lower Temperatures](#)

- **Contractor:** Western Transportation Institute, Montana State University
- **Subcommittee:** [Jessica Andrews](#), [Steve Spoor](#), Kevin Duby, Mike Mattison, Jasmine Dondlinger, Nick Evans, Doug McBroom, Patti Caswell, Dean Alatsis, Tom Peters
- **End Date:** August 2024
- **Status:** Held project kickoff meeting on March 22. The project team met on 8/31 to review the draft literature review and survey questions.

#### 22-04: [Evaluation of Direct Liquid Application of Salt Brine Versus Granular Salt as Measured Through Various Performance and Safety Metrics](#)

- **Contractor:** University of Wisconsin – Madison
- **Subcommittee:** [Emil Juni](#), [Matthew Heinze](#), Gerald Kracher, Justin Droste, Joe Thompson, Jeff Pifer, Paul Denkler, Joe Huneke, Tom Peters
- **End Date:** December 2024
- **Status:** Conducted project kickoff meeting in July and posted draft literature review and survey questions for review during a progress meeting on September 6.

#### 22-05: [Use of Dashboards for Winter Maintenance](#)

- **Contractor:** AECOM Technical Services
- **Subcommittee:** [Kevin Duby](#), [Doug McBroom](#), Jessica Andrews, Emil Juni, Aidan Neely, Mike Mattison, Craig Bargfrede, Joe Thompson, Todd Law, David Gray, Paul Denkler, AJ Younes, Alastair Probert, Aaron Murra, Dean Alatsis, Tom Peters
- **End Date:** June 2024
- **Status:** The literature review is complete. The survey questions were approved in mid-summer and the survey was distributed at the end of July. Research team was targeting late August to collect all the survey responses.

#### 22-06: **pH Waiver for Deicing Products and the Qualified Products List**

- **Contractor:** Washington State University
- **Subcommittee:** [Patti Caswell](#), [Doug McBroom](#), James Morin, Mike Chapman, Steve Spoor, Jasmine Dondlinger, David Gray, Tom Peters
- **Status:** Contract negotiations are ongoing.

#### **State Reports**

- Rhode Island – Matthew Ouellette
- Oregon – Patti Caswell
- Delaware – Alastair Probert

## QPL Update

- Patti Caswell, Oregon
- Add Kevin Duby (AZ), Joe Thompson (NY), and AJ Younes (VA) to the project subcommittee.

## Recently Completed Project Reports

- 21-03 Efficacy, Cost, and Impacts of Non-Chloride Deicers (Doug McBroom, Montana)

## Future Meetings and Peer Exchange

2024

- Spring: Annapolis, MD. Week of 4/15. Details for RFB have been sent to MnDOT. Awaiting the release of the RFB. Backup is Blacksburg or Richmond, VA.
- Fall: Kalispell, MT. Week of 9/15. MnDOT will proceed with RFB as soon as a hotel in Annapolis is selected. Backup is Boise, ID.

2025

- Spring: Blacksburg or Richmond, VA. Week of 4/14. Backup is Boise, ID.
- Fall: National Winter Maintenance Peer Exchange.
  - In a meeting of the Executive Committee in the late spring, three cities (Denver, Minneapolis, St. Louis) were identified as potential locations for the NWMPE. During this meeting, the TAC voted in favor of holding the peer exchange in Denver.
  - The potential to hold FHWA's Roadweather Stakeholder meeting in conjunction with the NWMPE was also discussed.

2026

- Spring: Kentucky or Ohio. One will be the destination, while the other will be the backup.
- Fall: Boise, ID.

## Roundtable

- Selection of the Research Development Groups for the 2024 research cycle.
  - Group 1: Iowa, Wisconsin, Nevada, Wyoming, Texas, Montana, Idaho.
  - Group 2: Rhode Island, Connecticut, Utah, Arizona, Delaware, Oregon, West Virginia.
  - Group 3: Ohio, Minnesota, South Dakota, Massachusetts, Kansas, New Hampshire.
  - Group 4: Washington, Nebraska, Virginia, Missouri, Alaska, Oklahoma.
  - Group 5: New York, Maryland, Vermont, Pennsylvania, Kentucky, Maine.
  - **ACTION ITEM**: CTC will assign the remaining states seven states to the existing five RDGs by need to achieve the most regional diversity.
- GPS-directed snowplow routes.
- MnDOT's slip and fall simulator.
- Physical capacity test for new hires.
- Route (direction) optimization.
- Drivers calling in road conditions.

**State Reports**

- Arizona – Kevin Duby
- West Virginia – Jeff Pifer

**Industry Reports**

- AASHTO – Rick Nelson
  - SICOP has been rebranded as Winter Weather Management TSP.
  - The podcast is now Talkin’ Winter Ops and the website link is [talkinwinterops.org](http://talkinwinterops.org).
  - The AASHTO email distribution list is being replaced by a new system that you can subscribe to yourself by going to [subscribe.talkinwinterops.org](http://subscribe.talkinwinterops.org).
  - Snow and ice guide is going through publication editing, but we don’t have a release date.
  - NCHRP guide on mechanical snow removal is under review.
- APWA – Kevin Hensley

**Business Roundtable**

- Clear Roads’ new practice of soliciting research ideas year-round from those outside of the Clear Roads membership.
- Vendor outreach / initiatives to attract vendors.
- Fleet trucks and analytics, such as GPS / AVL.
- How AVL and other data is managed.
- Friends of Clear Roads: Vendor participation during Clear Roads meetings and the National Winter Maintenance Peer Exchange.
- Caltrans has lifted their ban on out-of-state travel.
- Impact of Complete Streets on winter maintenance.
- Benefits / justification for winter maintenance “Rodeos.”
- Clear Roads’ social media presence.