

Western States Rural Transportation Consortium Annual Meeting

June 18, 2024

Overview/Agenda

- Welcome / Introductions
- Western States Forum Preview
- History of COATS, WSRTC
- WSRTC Pooled Fund updates/discussions
- WSRTC Documents
- Project discussion
- Upcoming Meetings
- Roundtable of recent/planned ITS activities
- Other discussions (as needed)

Welcome / Introductions

Western States Rural Transportation Technology Implementers Forum

Preview



Western States

**Rural Transportation
Technology Implementers**

Forum

June 18 – 20, 2024

Yreka, California

Best Western Miner's Inn

Presentations / Demonstrations Day 1

Utilizing Fuel Cell Technology to Power Transportation Management System Elements During Public Safety Power Shutoff Events

Jeremiah Pearce, Caltrans District 2: *Need and Purpose*

Dave Torick, AHMCT UC Davis: *Part 2, Research Project*

Justin Ellis, Caltrans EQASI: *HFCS Testing at the Translab*

Jeremiah Pearce, Caltrans District 2: *Next Steps*

Let There Be Light: Tunnel Lighting Controls

Frederick Tydeman, Eric MacGill, Kevin Maxwell

Nevada Department of Transportation

Evaluation of Starlink Satellite Broadband Communications for Caltrans ITS Field Elements

Saeid Delshad

AHMCT UC Davis

Washington's Virtual Coordination Center (VCC)

Brent Quebedeaux, David Baker

Washington State Department of Transportation

Presentations / Demonstrations Day 2

OSS by the Numbers - Analytics and their use on the One-Stop-Shop for Rural Traveler Information

Douglas Galarus

Montana Technological University

Streamlining ITS: Unifying Variable Speed Limits and Lane Control Across State Agencies

Ansley Skillern

Southwest Research Institute

Wrong-Way Driving (WWD) Detection Systems Update

Kent Thurston, Adam Lough, P.E.

Utah Department of Transportation

Schedule of Events

Tuesday, June 18th

- 4:00 pm Registration
- 5:00 pm Reception (no-host)
- 6:30 pm Dinner, Networking

Wednesday, June 19th

- 7:00 am Breakfast
- 8:00 am – 5:00 pm Technical Program
- 6:00 pm Social, Networking

Thursday, June 20th

- 7:00 am Breakfast
- 8:00 am – 12:00 pm Technical Program
- 12:00 pm – END Closing Remarks, Evaluations, Lunch

Participation

- 19th Annual Western States Forum
- 36 Participants Registered:
 - By State:
 - California (18)
 - Montana (4)
 - Nevada (5)
 - Texas (1)
 - Utah (2)
 - Washington (4)
 - Wyoming (2)

Participation - Caltrans

Caltrans Participants:

- D2 (8)
- D9 (1)
- 59, DES, METS (2)
- HQ Maintenance (1)
- HQ Operations (2)
- DRISI (2)

Participation from Other Agencies

- Montana Department of Transportation (3)
- Nevada Department of Transportation (4 + 1)
- Utah Department of Transportation (2)
- Washington State Department of Transportation (4)
- Wyoming Department of Transportation (2)
- AHMCT at University of California Davis (2)
- Montana Technological University (1)
- Southwest Research Institute (1)

History of COATS and the WSRTC

WSRTC Pooled Fund updates/discussions

WSRTC Pooled Fund

- WSRTC Phase II TPF-5(241) ended 3/31/2023
 - Remaining funds
- Western States Rural Transportation Consortium Phase 2 [TPF-5\(494\)](#)
 - Contributions

WSRTC Documents

- Charter updates
- Other

Projects

WSRTC Meeting Coordination, Western States Forum Travel Support and Website Maintenance (Phase 2, Task Order 2)

- Start Date: 4/1/2023
- End Date: 6/30/2024
- Budget: \$110,000
- WSRTC Meeting Facilitation and Attendance:
 - WSF, NRITS, (ITE)
 - Other meetings via teleconference as needed.
- Western States Forum Support
- Website Content and Maintenance
- No cost time extension to cover the Forum and annual meeting.

WSRTC Meeting Coordination, Western States Forum Travel Support and Website Maintenance (Phase 2, Task Order 6)

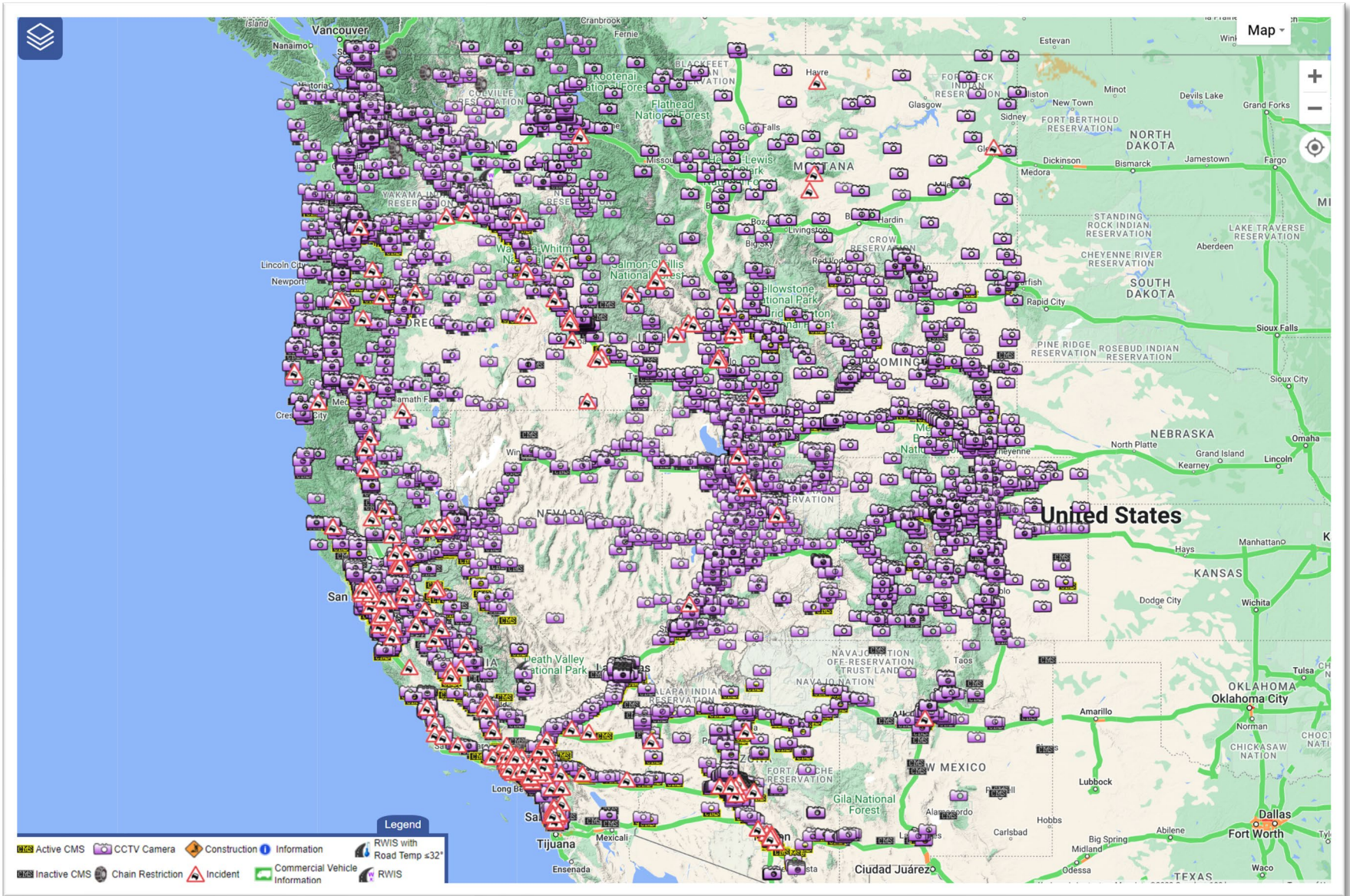
- WTI Task Order 16
- Start Date: 4/11/2024
- End Date: 6/30/2025
- Budget: \$121,977
- WSRTC Meeting Facilitation and Attendance:
 - WSF, NRITS (ITE)
 - Other meetings via teleconference as needed.
 - Western States Forum Support
 - Website Content and Maintenance
- Estimate remaining as of June 12, 2024 = \$108,525

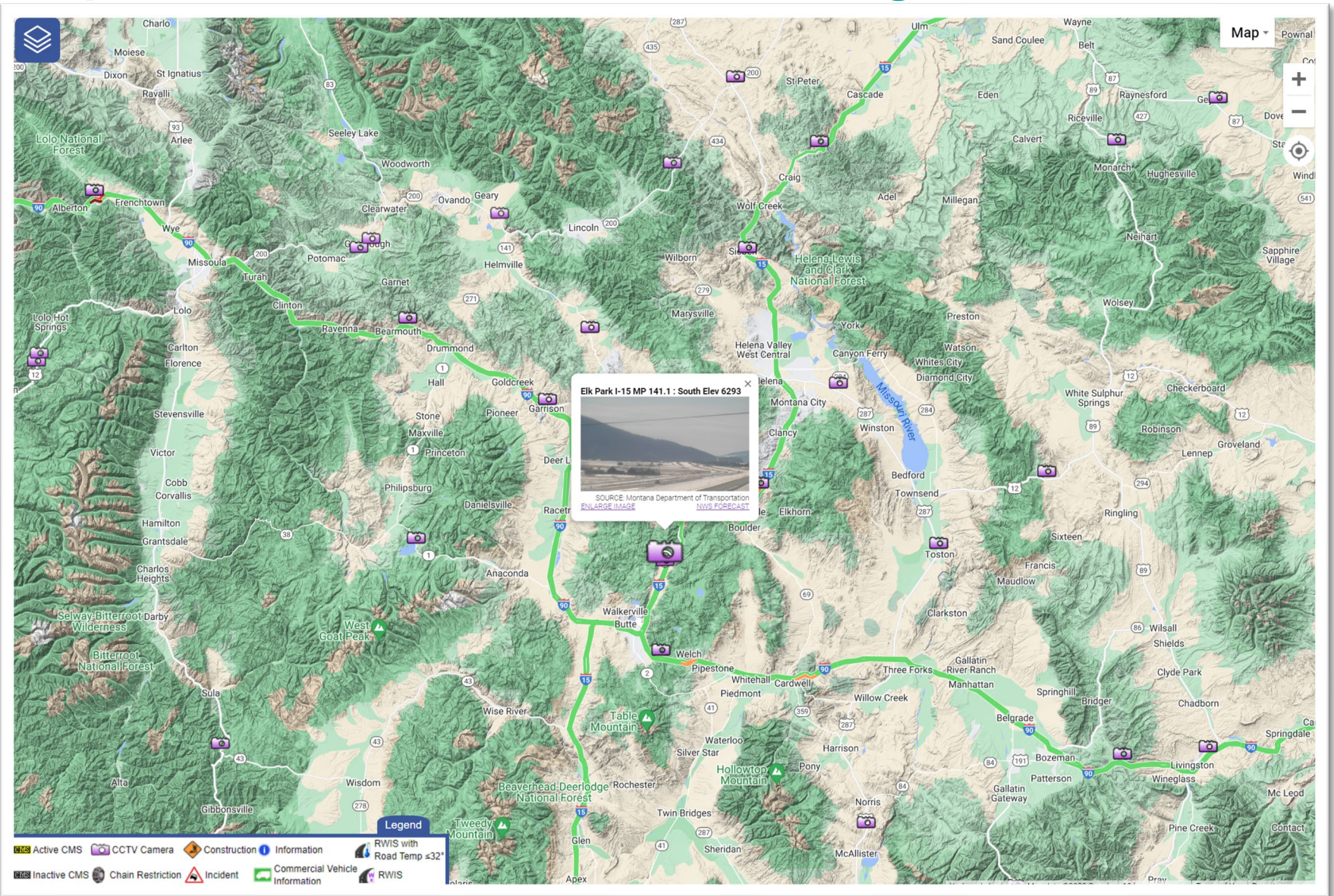
One Stop Shop

One Stop Shop

Not currently contracted, but support continues at Montana Tech

On-going support is provided for the One-Stop-Shop (OSS) project.





Washington Snow

WA-167vm01331 at NB @ 7th Ave N
Updated: 11:59 AM MST - Fri, Dec 18 2015
Location: 47.28806609, -122.258468

**I-90 EAST CLOSED
AT NORTH BEND
USE ALTERNATE ROUTES**

WSDOT 167vm01331 Dec 18, 2015 11:13 AM

Source: WSDOT

West Nelson on I-90 @ mp 73.19

WSDOT I-90
West Nelson

© WSDOT Dec 18, 2015 11:09 AM PST

Source: WSDOT

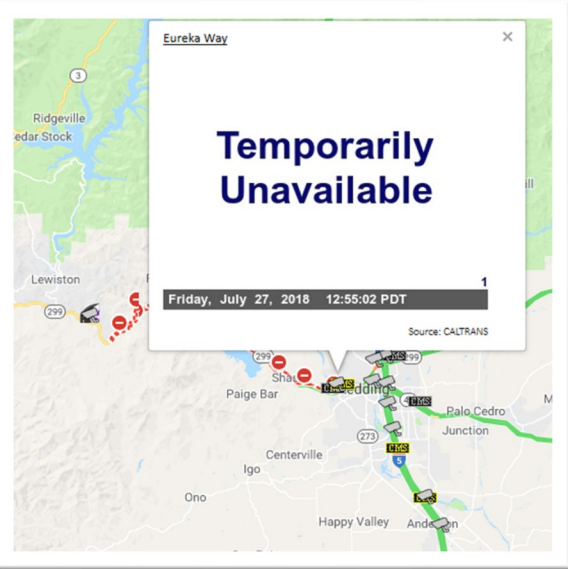
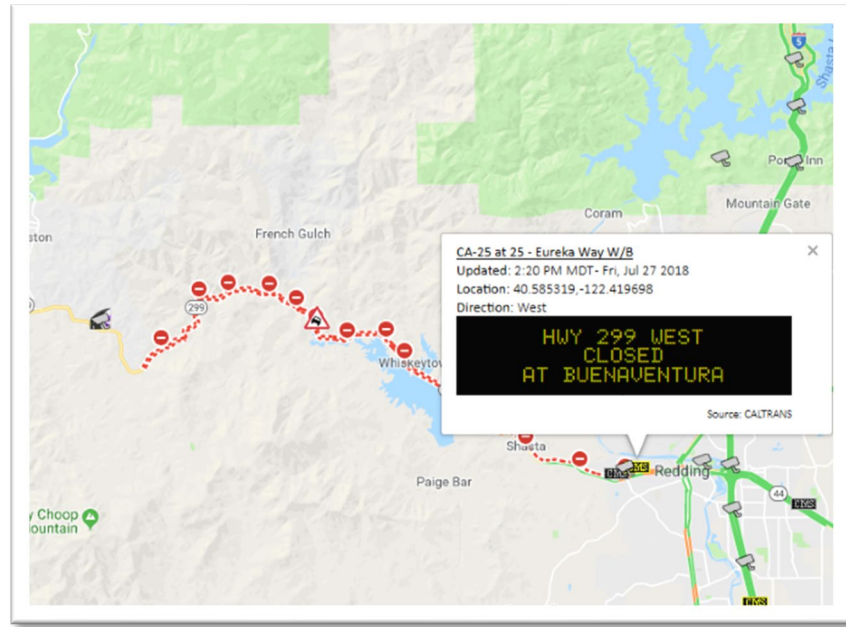
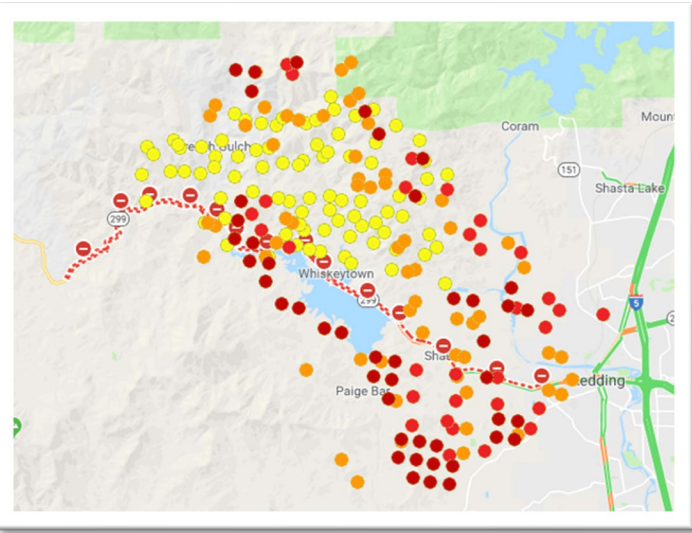
Tinkham Road I-90 @ MP 45.26

WSDOT I-90
Tinkham Road

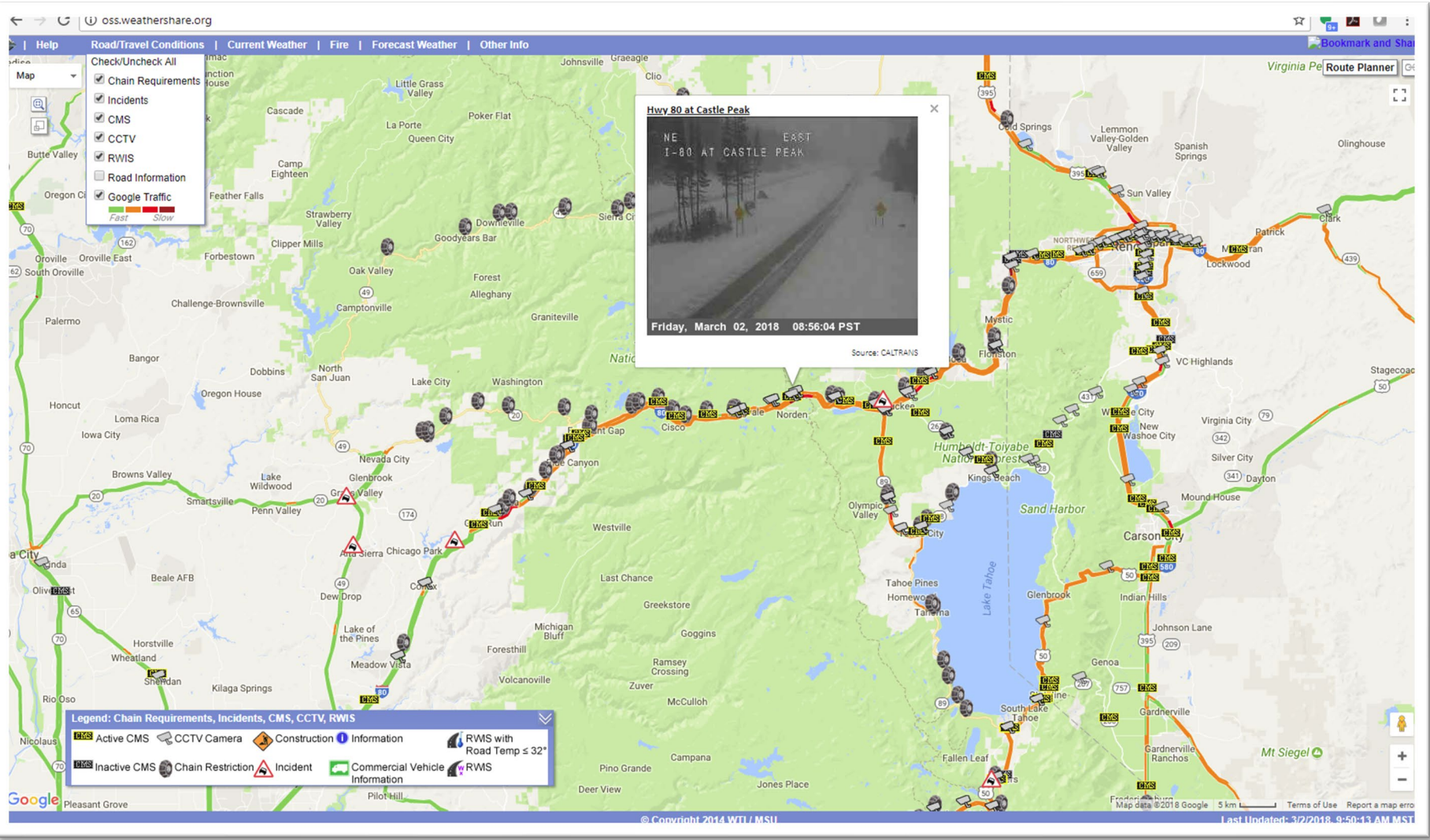
© WSDOT Dec 18, 2015 11:02 AM PST

Source: WSDOT

Redding Fires



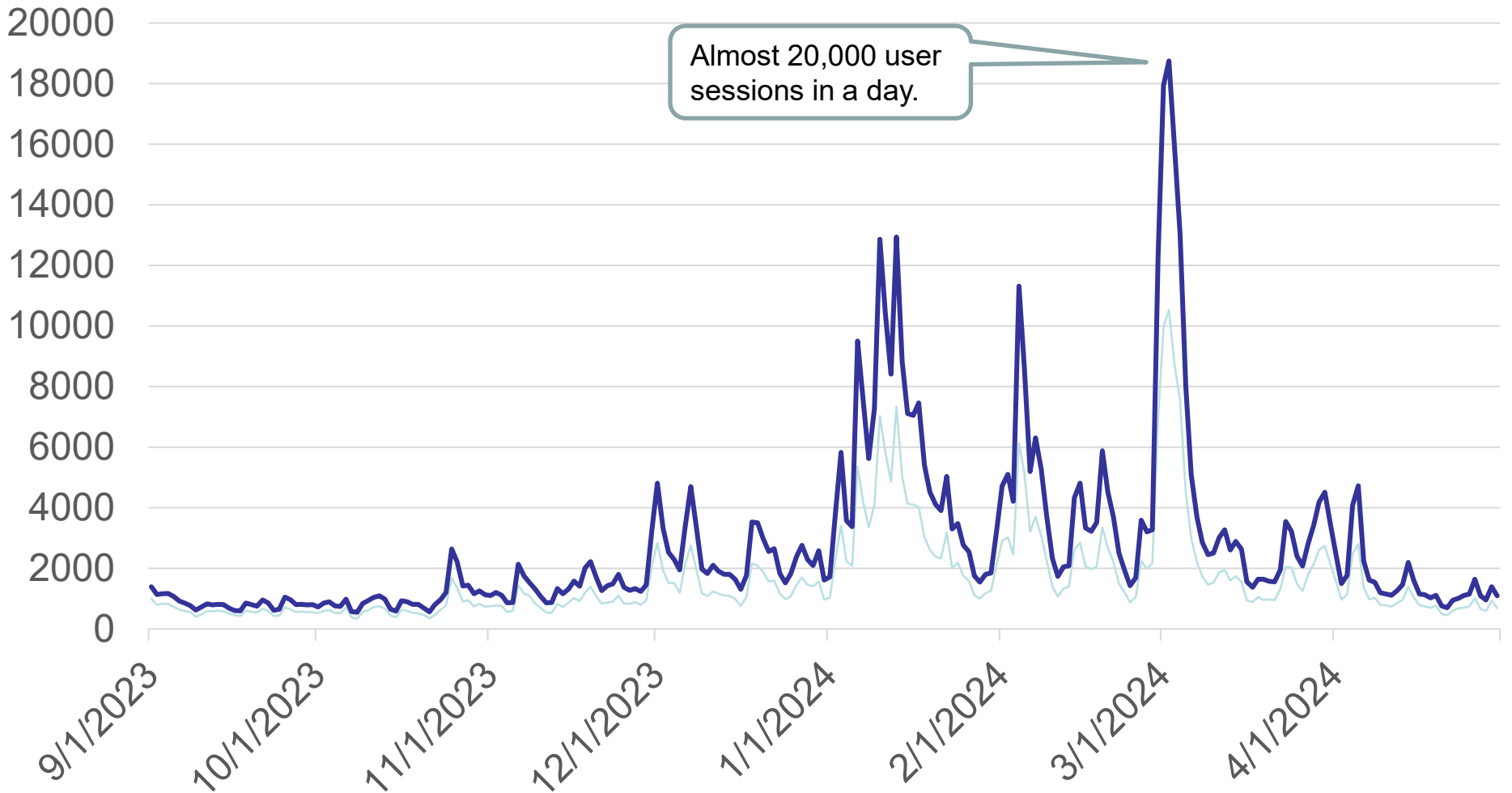
Donner Pass Snow



September 2023 – April 2024

OSS Users and Sessions per Day

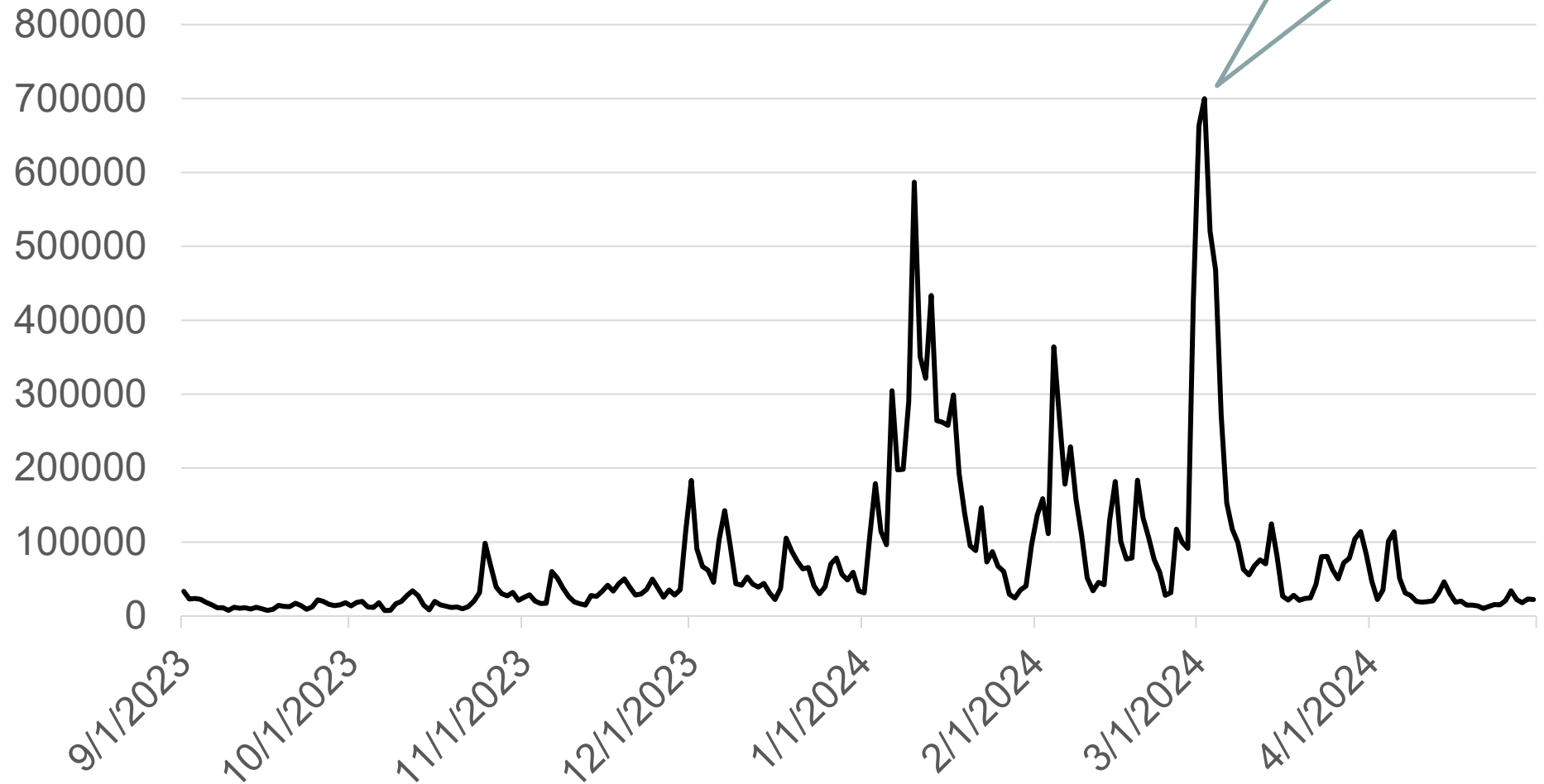
— Users — Sessions



September 2023 – April 2024

OSS CCTV Views by Day

700,000 CCTV views in a day



One Stop Shop

Presentations / Outreach:

“Analytics and the One-Stop Shop for Rural Traveler Information – Measuring Use Across Corridors and Between Communities During Winter Weather Events”, Institute of Transportation Engineers (ITE) Mountain District Conference, Helena, Montana, November 1-3, 2023

“One-Stop-Shop for Rural Traveler Information Usage Analytics – Conditions and Corridors”, ITE Webinar - Things We Do: Moving Our Rural Programs Forward with Transportation Technology, June 4th, 2024.

“OSS by the Numbers - Analytics and their use on the One-Stop-Shop for Rural Traveler Information, Measuring Use Across Corridors and Between Communities During Winter Weather Events”, Western States Forum, Yreka, CA, June 19-20, 2024.

Chain-Up Delay Tracking and Estimation

Chain-Up Delay Tracking and Estimation

- Start Date: June 1, 2023
- End Date: August 31, 2025
- Budget: \$125,000
- Montana Tech

We need to discuss a no-cost time extension due to a relatively mild winter 2023-4.

The intent of this project is to use data from Caltrans-deployed Bluetooth loggers that will log time and MAC address, and to use the readings from these loggers in conjunction with chain control status and other data to develop an algorithm to estimate travel time/delay through the affected area.

Chain-Up Delay Tracking and Estimation



Back-up at Fawndale – Caltrans Image



Back-up at Pine Grove – Caltrans Image

Chain-Up Delay Tracking and Estimation

Map of I-5 near Fawndale

11 Sensor Locations



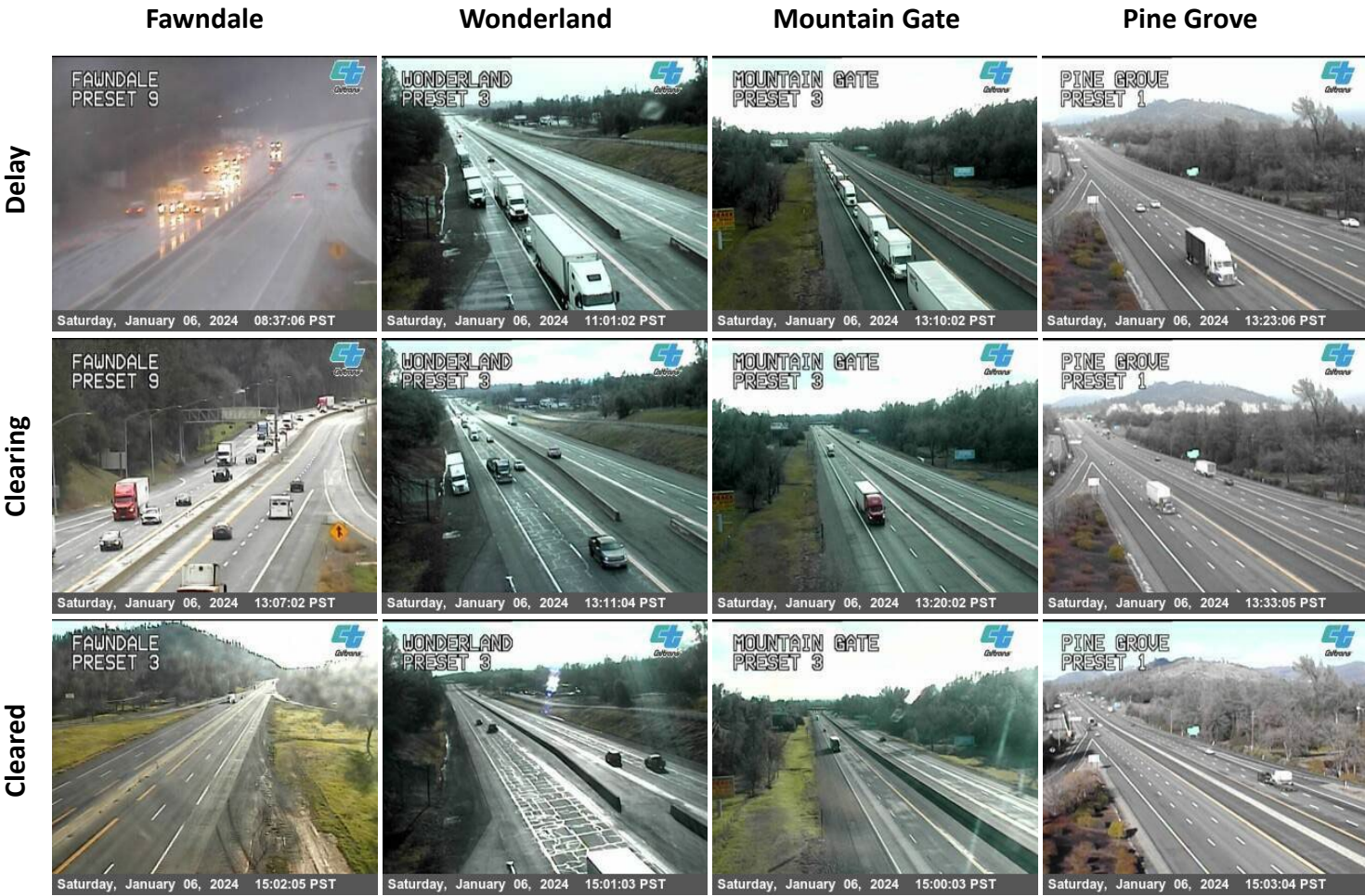
Google Maps

Example

The backup starts at Fawndale shortly after chain control goes into effect, building up over time extending past Wonderland and Mountain Gate.

When chain control ends, Fawndale traffic begins to clear, followed by Wonderland and then Mountain Gate.

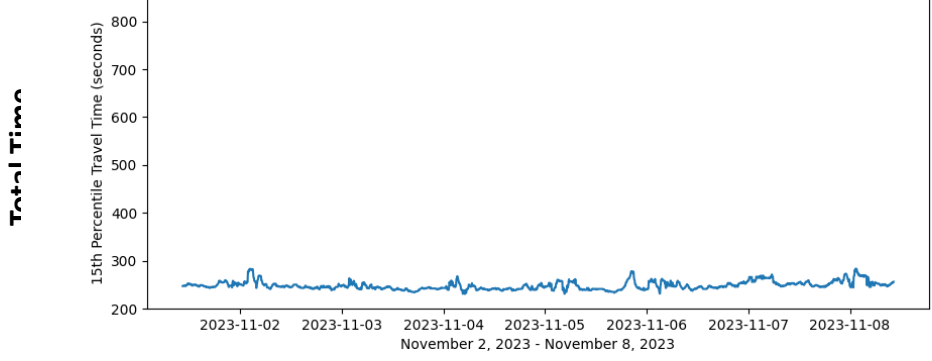
Chain Control Message	Time
All truck trailer combinations are being held at the chain control camper due to incidents or weather-related conditions.	8:23 AM
Vehicle Screening—All vehicles will be checked to make sure they have a full set of tire chains before being allowed to travel into areas where chains will be required.	10:00 AM
No chain controls are in effect at this time.	12:58 AM



Bluetooth Data

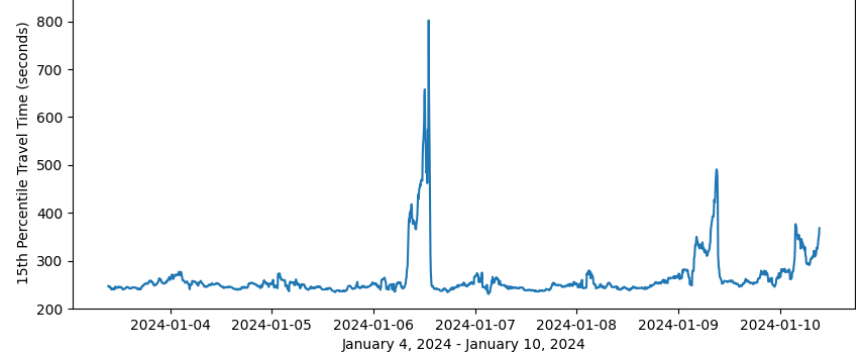
Normal Flow

Travel Times from Pine Grove to Fawndale

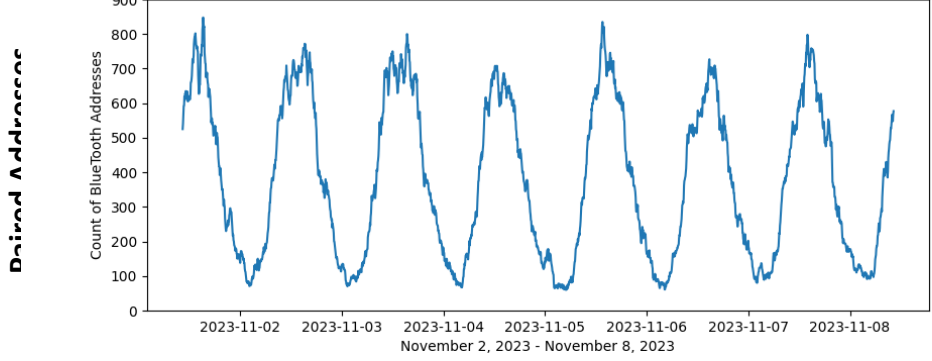


Delay

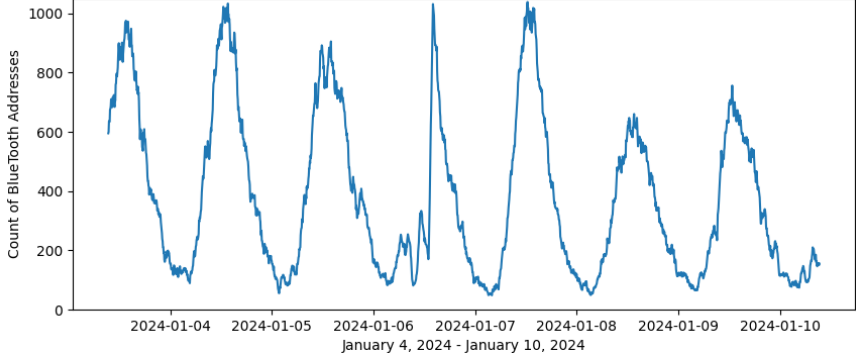
Travel Times from Pine Grove to Fawndale



Travel Frequency from Pine Grove to Fawndale



Travel Frequency from Pine Grove to Fawndale



WeatherShare Maintenance

WeatherShare Maintenance

- Start Date: ~~January 2022~~ June 1, 2024
- End Date: January 28, 2027
- Budget: \$100,000
- Montana Tech

On-going support will be provided for the WeatherShare project.

WeatherShare Maintenance

Project Goals

This project focuses on maintaining WeatherShare as the central repository for Caltrans RWIS data and weather information.

Mission-critical roadway data, such as surface temperature and condition (dry, wet, icy, etc.), are sourced from over 150 Road Weather Information Stations (RWIS). Additional weather data is retrieved from approximately 2,000 third-party weather stations. Caltrans maintenance and operations personnel have access to real-time and historical weather information that will help them better manage roadways, apply treatments and handle weather-related incidents.

This platform of weather observations and forecasts with near real-time road sensor data will allow Caltrans crews to make the best-possible decisions both for maintenance operations and incident response.

WeatherShare Maintenance

WeatherShare Features

- Repository for current and historical RWIS data.
- Leveraged resources (more than 2,000 weather stations in addition to 150 Caltrans RWIS stations).
- Integrated alert capability.
- Scalable, interactive elements for map, tabular and graph display.
- An easy-to-maintain, cost-effective product powered by an open-source platform.

WeatherShare Maintenance

Current Conditions: Spring Garden

RWIS Timestamp: 04/01/2014 06:40:03 AM

Temperature

Air	30.20 °F
Wet Bulb	28.94 °F
Dewpoint	26.96 °F
24-hr Max	41.36 °F
24-hr Min	30.02 °F

Wind

Situation	
Avg	0 mph from 30°
Spot	0 mph from 3°
Max	0 mph

Precipitation

Y/N	NO
Situation	noPrecipitation
Rate	0 in/hr
1 hr	0 in
3 hr	0 in
6 hr	0.012 in
12 hr	3.413 in
24 hr	4.689 in
Start	4/1/2014 01:49
End	4/1/2014 01:50

Visibility

Visibility	
Visibility Situation	other

Other

Relative Humidity	88%
Water Depth	



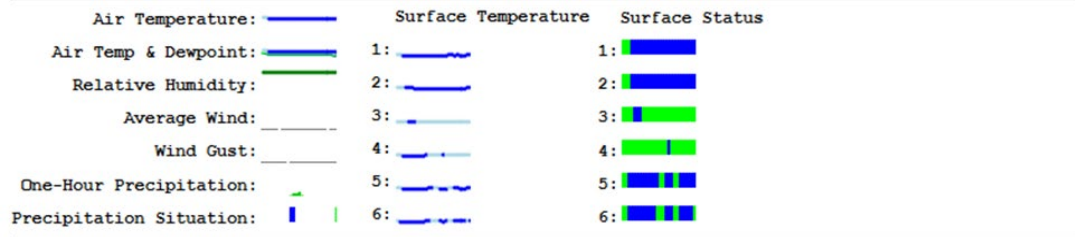
CCTV Timestamp: 04/01/2014 06:39:10

Near: Quincy
 Longitude: -120.8184°
 Latitude: 39.91438°
 Elevation: 3813 ft
 Direction: West
 County: Plumas
 Route: SR-70
 Milepost: 131.351

Surface Sensors

Sensor #	1	2	3	4	5	6
Surface Status	iceWatch	iceWatch	wet	wet	iceWatch	wet
Surface Temperature	31.64 °F	31.64 °F	33.08 °F	32.54 °F	31.82 °F	32.00 °F
Pavement Temperature						
Surface Water Depth						
Surface Salinity						
Surface Freeze Point						
Surface Black Ice Signal	other	other	other	other	other	other

Graphical Summary for 04/01/2014 00:00 through 04/01/2014 06:39



Evaluation of the Fotokite Tethered Unmanned Aerial System for DOT Operations in Network-Deprived Areas

- Start Date: 2/1/2023
- End Date: 6/30/2024
- Budget: \$399,994
- AHMCT Research Center
 - Department of Mechanical & Aerospace Engineering
 - University of California – Davis
 - Dr. Ty Lasky, Dave Torick
- Washington State DOT
 - Michael Southwick, Technical Contact

Evaluation of the Fotokite Tethered Unmanned Aerial System for DOT Operations in Network-Deprived Areas

Goals and Objectives

The Advanced Highway Maintenance and Construction Technology (AHMCT) Research Center proposes to procure and evaluate Fotokite UASs for DOT operations in network-deprived areas. This effort will be a partnership between WSDOT, the California Department of Transportation (Caltrans), and the AHMCT Research Center. There will be two main phases for the research. The first phase will be procurement, which will be completed by the end of fiscal year 1. The second phase will be documentation of system setup, field trials by WSDOT and Caltrans including support and observation by AHMCT, and final evaluation and documentation.

Connected Vehicle Highway Grip Factor Reporting for Snowplows

- Start Date: July 2024
- End Date: September 2026
- Budget: \$200,000
- Western Transportation Institute
 - Montana State University
 - PI: Leann Koon
 - Sub to Iowa State, David Veneziano
- Project Customer: Jeremiah Pearce, Caltrans District 2

Connected Vehicle Highway Grip Factor Reporting for Snowplows

- **Purpose:** To deploy and evaluate Advanced Safety Warning System Controllers (ASWSC) with connected vehicles in District 2. ASWSC will be installed at RWIS stations in remote mountainous areas for real-time surface condition monitoring. OBUs will be placed in maintenance vehicles and snowplows. The project aims to assess the effectiveness in winter-impacted rural regions. (*Caltrans Research Request Form*)
- **Need:** Real-time highway surface condition data is essential for D2 Maintenance staff to optimize road treatment during inclement weather, reducing costs and improving safety. By leveraging RWIS station data and communication systems, Caltrans aims to enhance treatment effectiveness and minimize expenses. (*Caltrans Research Request Form*)

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

- Start Date: July 2024
- End Date: June 2026
- Budget: \$350,000
- AHMCT at UC Davis
- PI: Iman Soltani
- Project Customer: Jeremiah Pearce,
Caltrans District 2

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

What is the goal?

An alternative detection system technology that can be deployed using existing infrastructure and requires little-to-no Construction resources. The optical fiber vehicle detection system data may be used for rural travel time messages, queue warning messages, and vehicle count statistics. *(Caltrans Research Notes)*

Vehicle Detection on Rural Roads Using Optical Fiber Sensing Technology

What will be done?

We will procure, install, and operate an optical fiber vehicle detection system on I-5 near Redding. Once deployed, we will ground truth and make fine-tuned adjustments to improve the accuracy of the system during the project. We intend to develop this system so it will be usable with other optical fiber infrastructure statewide, including Broadband Middle Mile network infrastructure. We will also document this system's design, installation, integration, operation, and maintenance processes. (*Caltrans Research Notes*)

How-To Handbook/Manual for the Western States Forum

- Updated annually
- Practical, how-to guide for planning and executing the Western States Forum
- “...intended to document the Forum in such a way that the event and its standard of excellence can be easily continued even as staffing and other inevitable changes occur.”

WSRTC Website

- www.westernstates.org
- Summary of Consortium's Work, Documents
- Compliance and accessibility
- Also Forum website
 - www.westernstatesforum.org

Upcoming Meetings

- WSRTC Annual Meeting
 - Yreka, California
 - June 18, 2024
- NRITS, ITE
 - Philadelphia, Pennsylvania
 - July 21-24, 2024

Roundtable of Recent ITS Activities

Other Discussions

Wrap-up

- Next meeting
 - NRITS, ITE in Philadelphia, Pennsylvania, July 21-24, 2024
- Action items
- Other