

Western States Rural Transportation Consortium Annual Meeting

June 13, 2023

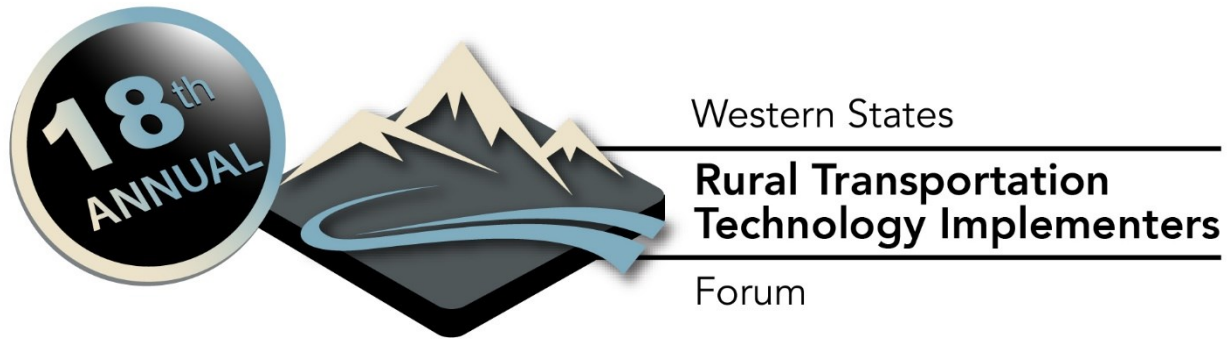
Overview/Agenda

- 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



June 13 – 15, 2023
Yreka, California
Best Western Miner's Inn

Presentations / Demonstrations Day 1

Broadband Communications Design Strategies and Considerations for ITS Applications in Caltrans District 2

Jeremiah Pearce: *The Evolution of Communications System Architecture and Supporting Emerging Technologies*

Keith Koeppen: *Red Bluff Wireless Expansion*

Kenneth Shipley: *Sac Canyon Wireless Expansion*

Playbook CMS Messaging via ActiveITS Databus

Andres Chavez, Jared Sun

Caltrans District 3

Caltrans Satellite Communications

Eric Ho, Bud Rojas, Ernesto Fermin*

Caltrans Office of Radio Communications

*speaker

UDOT Weather Operations' Wildfire and Debris Flow Response

Jeff Williams, Cody Oppermann

Utah Department of Transportation

Presentations / Demonstrations Day 2

Managed Lighting Control Systems

Eric MacGill, Kevin Maxwell

Nevada Department of Transportation

NDOT 3 GIS Telecommunications Infrastructure Management Software

Kerry Palmer

Nevada Department of Transportation

C-Street Wrong Way Detection System

Scott Mercer

Washington State Department of Transportation

Schedule of Events

Tuesday, June 13th

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

Wednesday, June 14th

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

Thursday, June 15th

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

Participation

- 18th Annual Western States Forum
- 48 Participants Registered:
 - By State:
 - Arizona (1)
 - California (30)
 - Montana (2)
 - Nevada (5)
 - Oregon (2)
 - Texas (2)
 - Utah (3)
 - Washington (3)

Participation - Caltrans

Caltrans Participants:

- D1 (1)
- D2 (9)
- D3 (2)
- D4 (1)
- D6 (2)
- D9 (1)
- 59, DES, METS (2)
- HQ Maintenance (5)
- HQ Operations (5)
- DRISI (2)

Participation from Other Agencies

- Oregon Department of Transportation (2)
- Nevada Department of Transportation (5 + 1)
- Utah Department of Transportation (3)
- Washington State Department of Transportation (3)
- Montana State University / Western Transportation Institute (1)
- Montana Technological University (1)
- Southwest Research Institute (2)

History of COATS and the WSRTC

WSRTC Pooled Fund updates/discussions

WSRTC Pooled Fund

- WSRTC Phase II TPF-5(241) ended 3/31/2023
- Western States Rural Transportation Consortium Phase 2 TPF-5(494)

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

- Start Date: 4/1/2023
- End Date: 3/31/2024
- 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
- Estimated \$97,133 remaining as of beginning of June7, 2023.

WSRTC Documents

- Charter updates
- Other

Projects

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

- Start Date: July 1, 2021
- End Date: March 31, 2023
- Budget: \$71,450
- Spent: \$64,729.23 / Remaining: \$6720.77 at project end
 - HostGator erroneously refunded a \$4869.68 payment for hosting services after the project ended. Otherwise, $\$4869.68 + 1631.34 \text{ IDC} = \6501.02 would have been spent, leaving \$219.75.
- Montana Tech

On-going support was provided for the Automated Safety Warning System Controller (ASWSC) and One-Stop-Shop (OSS) projects. Project lab development environments were established at Montana Tech in Butte so that support could be provided for the ASWSC and OSS projects.

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

Highlights:

- This task order started July 1st, 2021.
- The Caltrans Project Champion (Jeremiah Pearce) visited Montana Tech on 8/24/2021 to configure and turn on the ASWSC lab and conduct a project kickoff.
- Two students were hired to assist on ASWSC at the end of September 2021.
- Principal Investigator (Doug Galarus) and Caltrans District 2 (Jeremiah Pearce and Jeff Worthington) prepared and delivered a presentation about ASWSC Western States Forum in October 2021.
- ATC Firmware and ASWSC updates were tested and demonstrated to address issues from the prior phase.
- ASWSC lab equipment was returned to Caltrans District 2 in conjunction with the trip to WSF 2023.
- A presentation on ASWSC will be given at ITE/NRITS 2023 in Portland in August 2023.

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)



ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

Highlights:

- The Principal Investigator (Doug Galarus) conducted public outreach for the One-Stop-Shop via a press release at Montana Tech
 - Subsequent interviews were conducted with local news affiliates from FOX, ABC, CBS and NBC.
 - Sean Campbell and Keith Koeppen from Caltrans participated in an interview, the news piece aired statewide and resulted in increased traffic and usage for OSS.

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

Highlights:

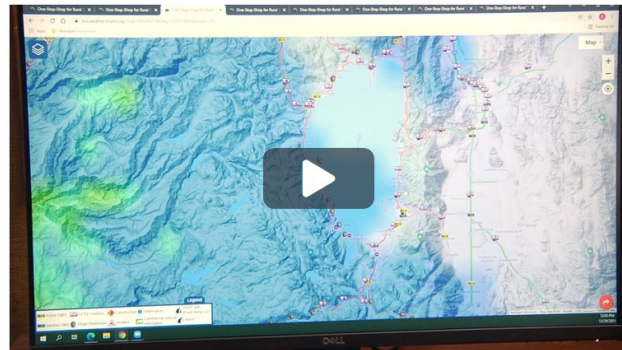
- The One Stop Shop had record traffic during December 2021, with 83,208 users, 266,915 user sessions, almost 17 million events, and over 8 million CCTV views.
 - While this monthly record stands, Winter 2022-3 showed remarkable usage from December through March: 200,044 users, 807,086 user sessions, almost 30 million events, and nearly 22 million CCTV views.
 - A related presentation entitled, “Analytics and the One-Stop Shop for Rural Traveler Information – Measuring Use Across Corridors and Between Communities During Winter Weather Events” will be presented at the Institute of Transportation Engineers (ITE) Mountain District Conference, Helena, Montana, November 1-3, 2023

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

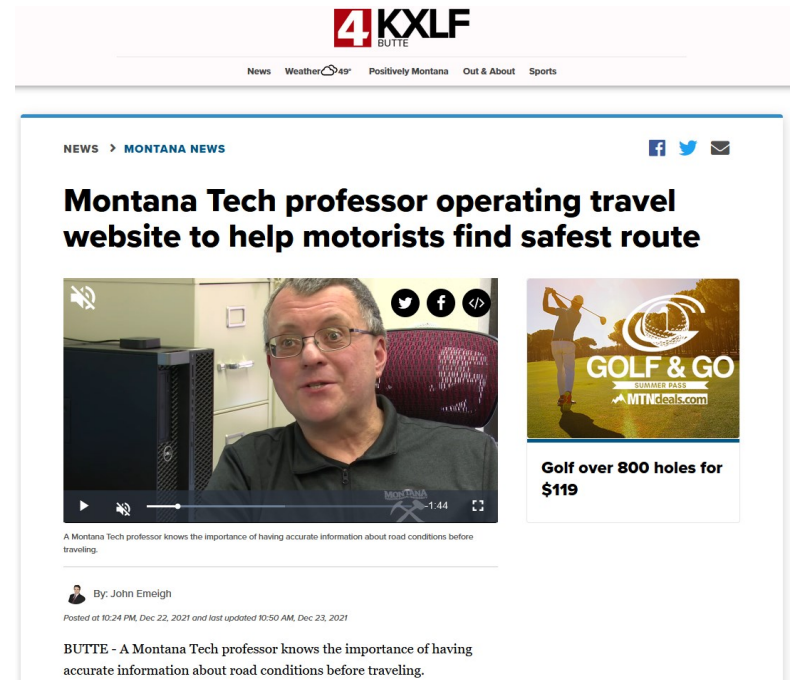


'One-Stop-Shop' provides winter weather info for travelers

DJ Bauer Reporter, ABC FOX Montana Dec 29, 2021 Updated Jan 4, 2022



https://www.montanarighnow.com/butte/one-stop-shop-provides-winter-weather-info-for-travelers/article_910d5526-68f8-11ec-8892-574612f43758.html

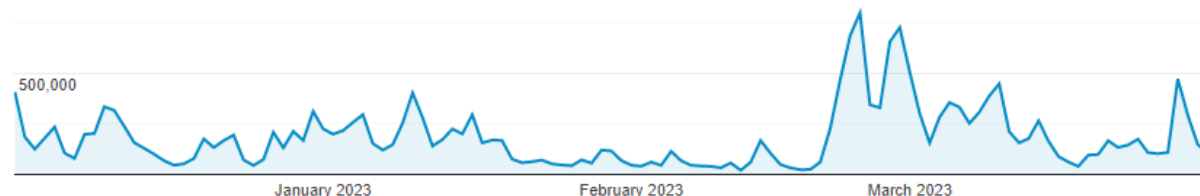


<https://www.kxlf.com/montana-tech-professor-operating-travel-website-to-help-motorists-find-safest-route>

Event Action ?	Total Events ?
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● Total Events

1,000,000



ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

Highlights:

- The two student research assistants who worked on ASWSC:
 - helped to finish setup of the ASWSC lab and set up a development environment for ASWSC,
 - worked through prior documentation to check for correctness of the install and proper operation of the system,
 - installed the ASWSC software on the ATC,
 - replicated errors that Caltrans observed in system operation,
 - and verified that firmware and ASWSC updates addressed these errors.

ASWSC, One Stop Shop and WeatherShare Support (Montana Tech WSRTC Task Order 1)

Highlights:

- A student research assistant was hired in January 2022 to work on OSS and help to fix broken and missing data feeds.
- Feeds for incidents in Montana and Idaho were made operational in the One-Stop-Shop.
 - Work was done on maintenance and construction data for Montana, but there was an issue causing this data to not be displayed. This issue has not yet been resolved.
- Maintenance and monitoring of OSS and WeatherShare continued, with several bug fixes performed.
- Issues were addressed including one in which WeatherShare data filled storage on the old production server.
 - Archived data was moved off the server to free up space and system operation quickly returned to normal.

Chain-Up Delay Tracking and Estimation

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

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



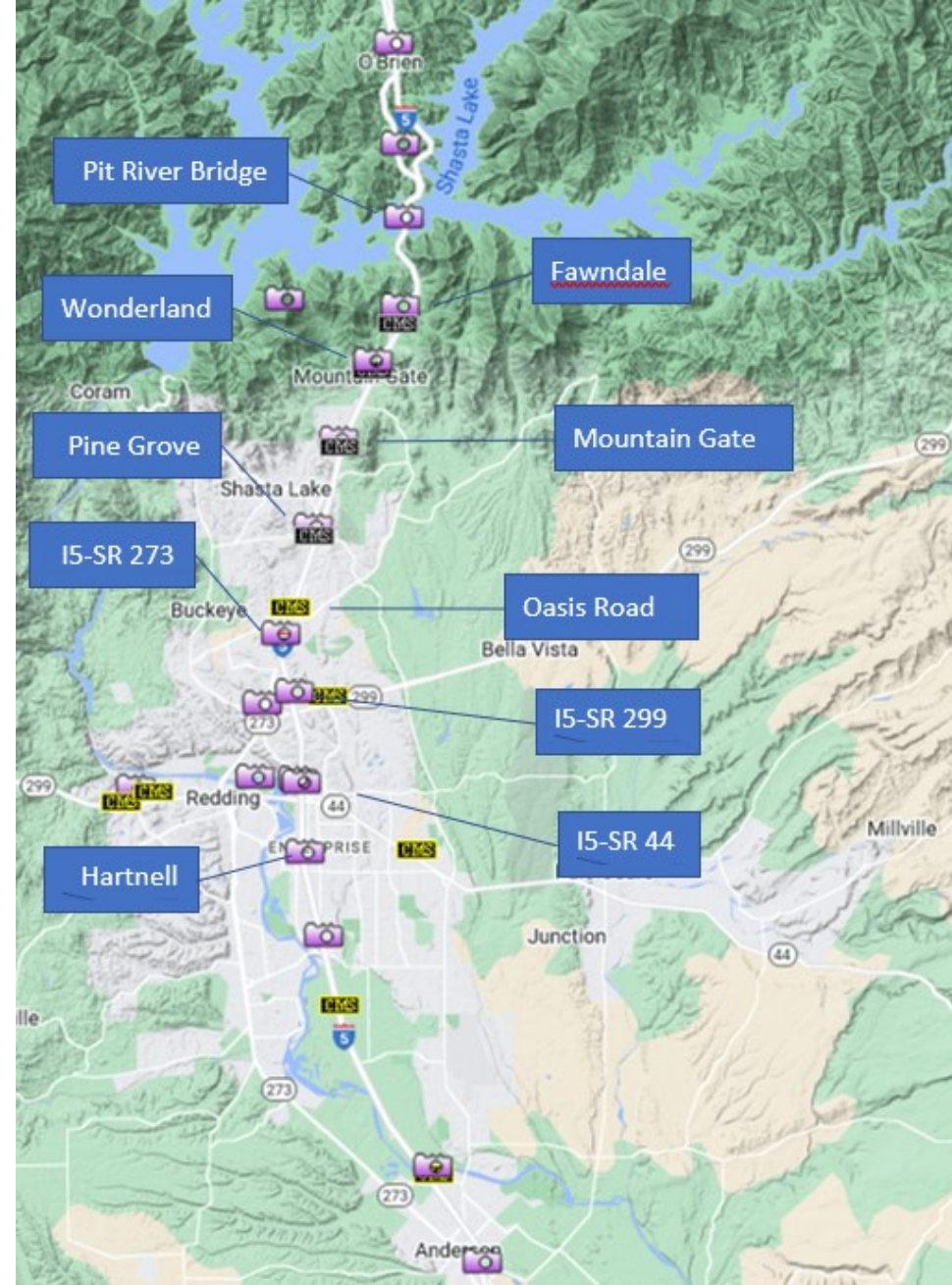
Back-up at Fawndale – Caltrans Image



Back-up at Pine Grove – Caltrans Image

Chain-Up Delay Tracking and Estimation

Map of I-5 near Fawndale
– Google Maps



Chain-Up Delay Tracking and Estimation

Feasibility Test of Bluetooth Times and Speeds

May 3rd – May 11th

Pine Grove to Fawndale and Fawndale to Pine Grove

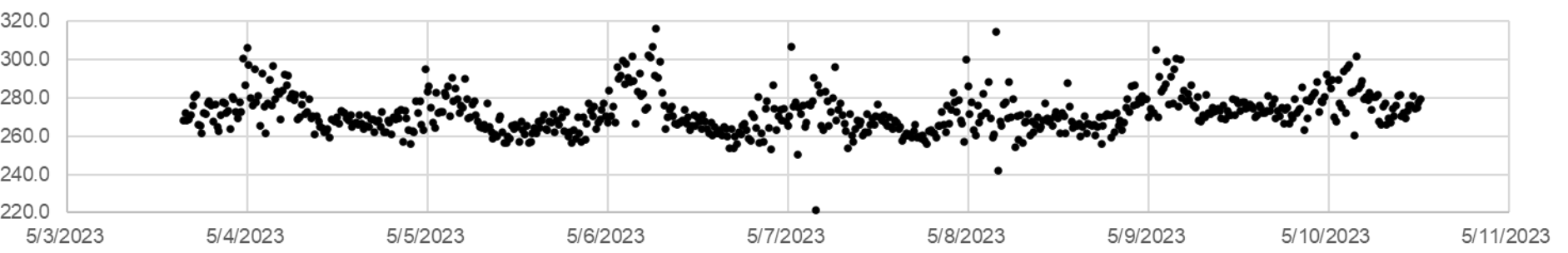
Quick and Dirty Approach:

MAC addresses were paired between the two sites and aggregated by MAC address, within 15-minute time intervals. An average was computed within the time interval per each MAC address and an overall average was then computed per time interval. Counts are unique MAC addresses for which pairs were made within each time interval.

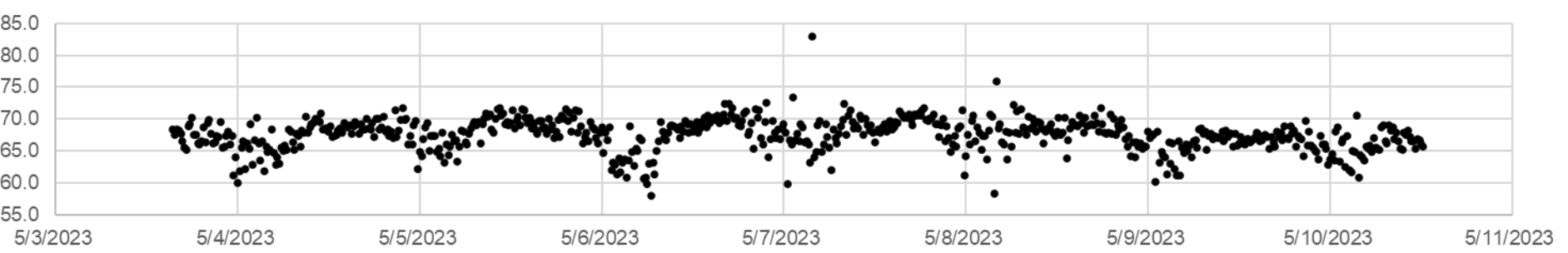
NOTE: This test was done to simply and quickly verify that the data looked reasonable before more sensors are purchased and deployed. Chain-up delay involves stopped and mixed traffic, making the problem interesting and challenging.

Chain-Up Delay Tracking and Estimation

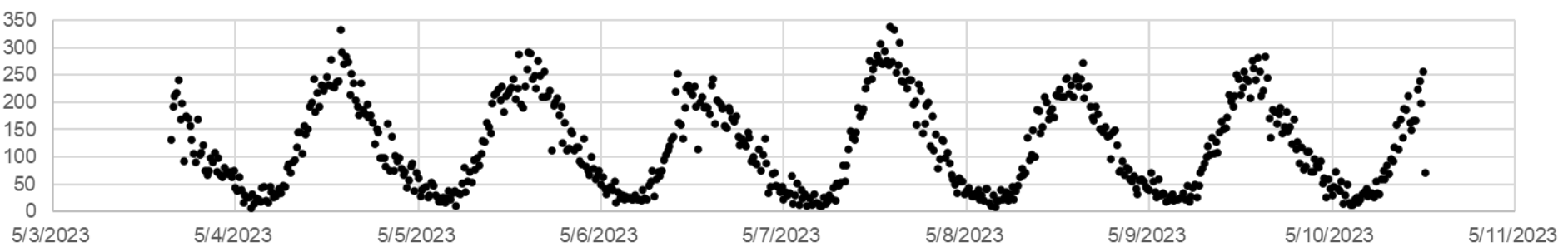
Average Travel Time (sec) - Pine Grove to Fawndale, 15 minute intervals



Speed Estimate (mph) - Pine Grove to Fawndale, 15 minute intervals

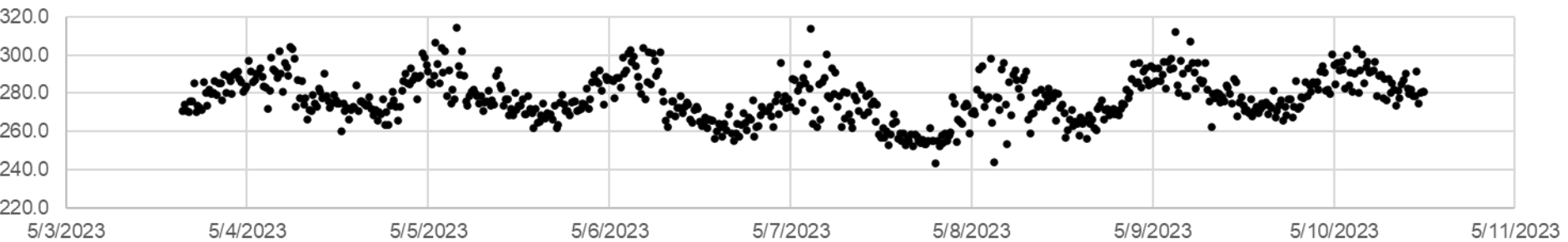


Count (unique MAC) - Pine Grove to Fawndale, 15 minute intervals

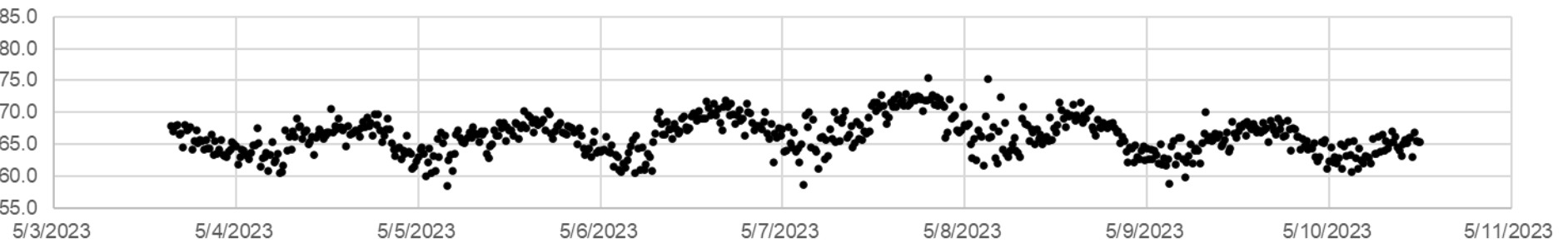


Chain-Up Delay Tracking and Estimation

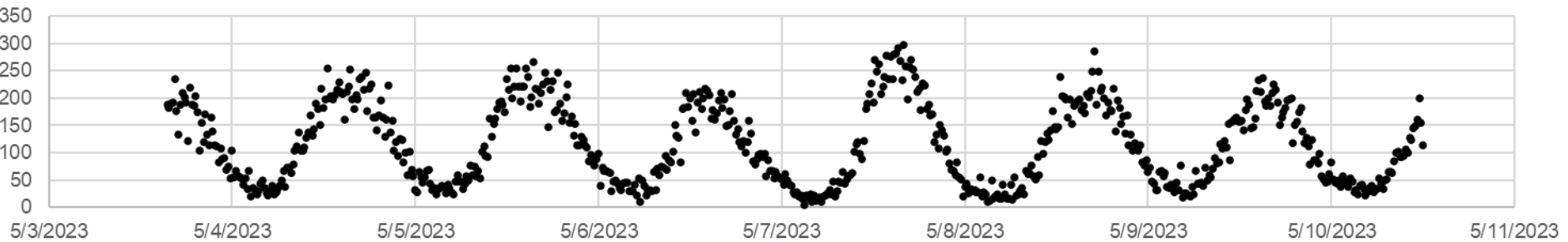
Average Travel Time (sec) - Fawndale to Pine Grove, 15 minute intervals



Speed Estimate (mph) - Fawndale to Pine Grove, 15 minute intervals



Count (unique MAC) - Fawndale to Pine Grove, 15 minute intervals



WeatherShare Maintenance

(Funded and Contracted Directly by Caltrans)

- Start Date: ~~January 2022~~ September 2023?
- Start Date: ~~December 31, 2024~~ August 2026?
- Budget: \$100,000
- Montana Tech

On-going support will be provided for the WeatherShare project. Project lab development environments will be established at Montana Tech in Butte so that support can be provided for the WeatherShare project.

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.

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.”

Spin-Off Projects

- Professional Capacity Building (PCB) for Communication Systems Phase 5
 - Start: 04/01/2020
 - End: 03/31/2023
- COATS Phase 8
 - Start: 2/04/2020
 - End: 1/31/2023

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, CA, June 13, 2023
- ITE, NRITS Portland, Oregon, August 13-16, 2023 (early bird registration ends June 23, 2023)

Roundtable of Recent ITS Activities

Other Discussions

Wrap-up

- Next meeting
 - ITE, NRITS Portland, Oregon, August 13-16, 2023
- Action items
- Other