

Alaska Electric Vehicle Working Group

Technical Session – Dec. 8, 2020

Who: Fleet vehicle owners and interested parties
What: AEVWG Technical Sub-Committee Meeting – Fleet Vehicle Data Collection, Part 2
When: Dec. 8, 2020 from 11 a.m. to 12 p.m.
Where: In accordance with the State of Alaska's COVID-19 Health Alerts, we will conduct this meeting via Zoom. To join online click alaska.zoom.us/j/82169298044?pwd....
Meeting ID: 82169298044; Password: 777728

Or dial [+1 669-900-6833](tel:+16699006833) (passcode: 777728)

Those not yet signed up for the Alaska Electric Vehicle Working Group listserv may do so at:
<http://list.state.ak.us/mailman/listinfo/alaskaev>

Agenda

Intros

Municipality of Anchorage – DOE funded project, data collection for 2 refuse trucks and 1 box truck

Tok Transportation – AEA funded project, data collection for 1 electric school bus

Capital Transit – discussion of data collection possibilities for Juneau's Proterra buses

Next Steps

Notes

Attendees

Michelle Wilber - ACEP

Tim Leach - SparkBox

Stretch Blackard – Tok Transportation

Alec Mesdag – AEL&P

April Woolery – DOT&PF

Andrea Tousignant – Ions for EVs

Denise Guizio - Capital Transit, Juneau

Clay Koplin – Cordova Electric Coop

Brian Winnestaffer – Chickaloon Village

Jon Jantz

Josh Craft - MEA

Taylor Asher – AEA

Betsy McGregor - AEA

Municipality of Anchorage – Pierce Schwalb

The Municipality is working with ACEP on the data collection and analysis of the DOE-funded project which is supporting 2 refuse trucks and 1 panel truck (all Peterbilt) and an eCamion battery-tied EV charging station.

A ChargePoint CPF50 charging station will also be used to charge the Peterbilt panel truck and possibly the Muni's Chevy Bolt and Volt, although Level 1 charging seems adequate for those vehicles. The ChargePoint unit will record & report data on charging sessions for that unit.

The eCamion battery-tied charger will be used to charge the two refuse trucks.

The data sources for the project are included in the list at the bottom of these notes.

MOA will use data to determine the performance and cost-effectiveness of the medium- and heavy-duty electric vehicles as well the performance and cost-effectiveness of the battery-tied EV charging unit.

Both the refuse trucks will be parked indoors when not in service. The panel truck will be parked outdoors when not in service.

Stretch – comment for Pierce: Stretch has noted that even when his bus is parked indoors it consumes energy for thermal conditioning of the bus. After two months of operational data the bus generally is using about 50% of its energy for space heating. If the Muni will be parking the panel truck outdoors expect higher energy use.

Tok Transportation – Stretch Blackard

The Apex system is used by Proterra to log data on the electric school bus used by Tok. Stretch has seen some difference in what is logged compared with what he has recorded locally. For example, Stretch's observation of the total energy provided for charging is higher than what Apex records as energy used by the bus.

Stretch has built a spreadsheet to share some of this data, including a screenshare during the meeting. He records notes to identify differences in operations that will help explain differences in energy consumption or vehicle performance.

He will use the data to help show the cost per mile and show impact of temperature on range and cost. Stretch also is collecting data on the solar PV system to determine how much grid energy and emissions are offset by that system.

Stretch is sharing the data with Thomas Bus and with AEA. He can share the data collection template and will consider what level of data sharing he is comfortable with for the wider group.

Bus battery 200kWh batteries

From October 25 to November 25, 2020 Tok's Thomas electric school bus consumed 2.392 MWh and drove 875.5 miles. \$835 were spent on electricity from the grid to charge the bus. The months immediately before and after the winter solstice will be the lowest for solar input, with the PV system offsetting grid energy.

Stretch records temperature at the time the bus leaves the bus barn for both the morning and afternoon runs. He does not know where the temperature sensor is located on the bus. The location of the sensor likely could influence how accurate the reading is. However, the recorded temps from the bus seem more accurate than what is reported through the Apex system, which shows temps have not gone below 0°F. The temperature sensor on the bus was already installed.

Capital Transit - Denise Guizio

Juneau's Proterra bus is on order and Denise is interested in using Tok Transportation's spreadsheet format for data capture on the bus in Juneau

The Juneau electric buses will be used for a greater amount of time than the Tok school buses, with buses in Juneau traveling routes for up to 10 hours at a time.

The Juneau electric buses will use diesel heaters. This is different than the Tok bus which uses electric heaters.

Denise is interested to see how temperature affects the buses in Juneau. As there are micro-climates in Juneau with the potential for large temperature difference, she feels it will be helpful to have an outdoor air temperature sensor on the bus recording time-series data.

Next Steps

We will develop and circulate a spreadsheet with suggested headers for data collection

Research questions

Energy use versus temperature

Cost per mile versus ICE

Data Sources

The following data sources to consider:

- Electric Vehicle Service Equipment (EVSE)
 - Number of charging sessions
 - kWh dispensed (time series)
 - If this is unavailable through the EVSE unit, consider whether the vehicle's onboard software collects and reports this or whether a telematics unit on the vehicle is needed
 - kW required (time series)

- If this is unavailable through the EVSE unit, consider whether the vehicle's onboard software collects and reports this or whether a telematics unit on the vehicle is needed
- Ambient air temperature (time series - can be acquired from onboard sensor or nearby weather stations)
- Department reported costs – energy and additional demand charges
- Meter-level load data (from electric utility via MOA)
- For battery-tied EVSE also consider
 - Integrated battery performance
 - Integrated battery health
- Electric Vehicle
 - Trip data
 - Miles driven
 - Days used
 - Beginning state of charge (SoC) or reported range
 - Ending SoC or reported range
 - Outside air temperatures
 - Cabin conditioning (use of defrost, cabin warmers, heated seats, heated steering wheel)
 - Charging data
 - Beginning state of charge (SoC) of battery
 - Ending SoC of battery
 - Ambient temperature
 - Time and duration of charge
 - User reported
 - Maintenance log
 - Operational costs (excluding fuel)

The recording of this technical session is available at the link below and will be uploaded to the Sharepoint site soon:

https://alaska.zoom.us/rec/share/uBSQA5Cbzwc1Lp72YHnW6t5XwRCM-zJPU9-F8Acydd_ZdX2hpHSVD9rO9juDNlaX.UB9Fj18sImFZr75b Passcode: \$pj%r2y6