FILLING GAPS IN REMOTE LOCATIONS WITH LOW POWER RWIS

SIRWEC 2022 Druskininkai

Campbell Scientific

Road Weather Solutions

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Mini-RWIS?

- “Full” RWIS systems require mains power. This is not always available, especially in remote areas.
- Mini-RWIS stations are self-sufficient, running exclusively on solar power & batteries, with wireless comms (3G/4G). This makes it possible to install them in areas without existing power or comms infrastructure.
- Mini-RWIS feature a limited set of sensors, typically camera, wind and IR road temp.

Mini-RWIS for remote locations

Ministry Transportation Ontario

Ontario
MINISTRY OF TRANSPORTATION

MTO's RWIS Network

- 11 Mini Station Trial
  - Camera
  - Non-intrusive pavement sensor
  - Atmospheric sensors
  - 2 vear evaluation

- Provincial RWIS Expansion
  - Location determined by:
    1. Theoretical analysis
    2. Meteorological perspective
    3. Field knowledge
  - Potential Sites have been reviewed
  - Contract package being prepared
  - Timing is dependant on available funding

- CS to deploy a network of mini-RWIS stations in locations selected by the Province.
- CS to install the stations, deliver data to the Province and maintain the stations over two Winters.
- All at no cost to the Province.

Mini-RWIS for remote locations

Deployment in Ontario

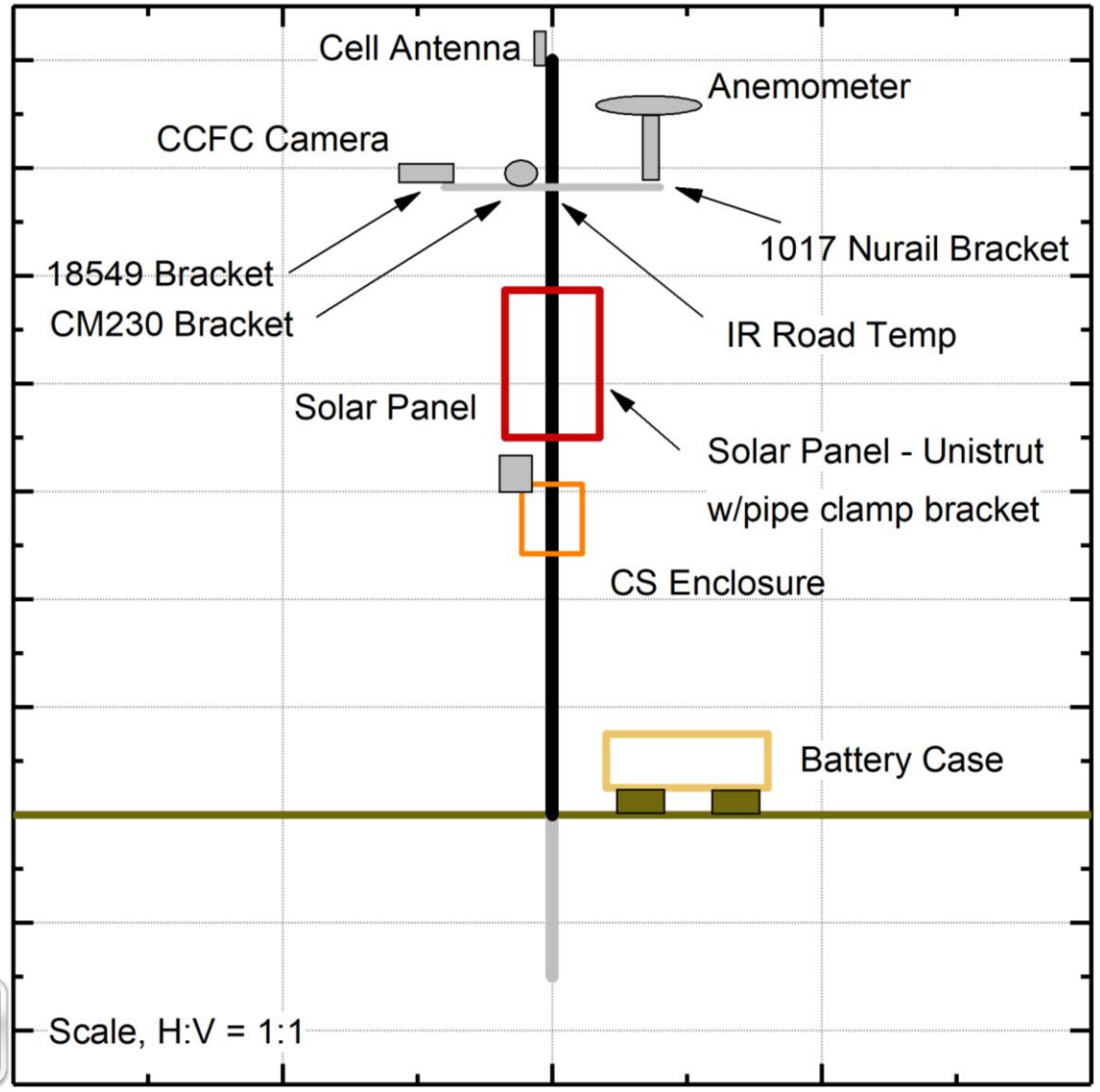
- 11 stations in 2018
- Near the Great Lakes (cold & little sunshine)

- 2yrs of testing
- 11 station data used operationally
- Additional units incl. Yukon territory

Next stop: Alaska, USA

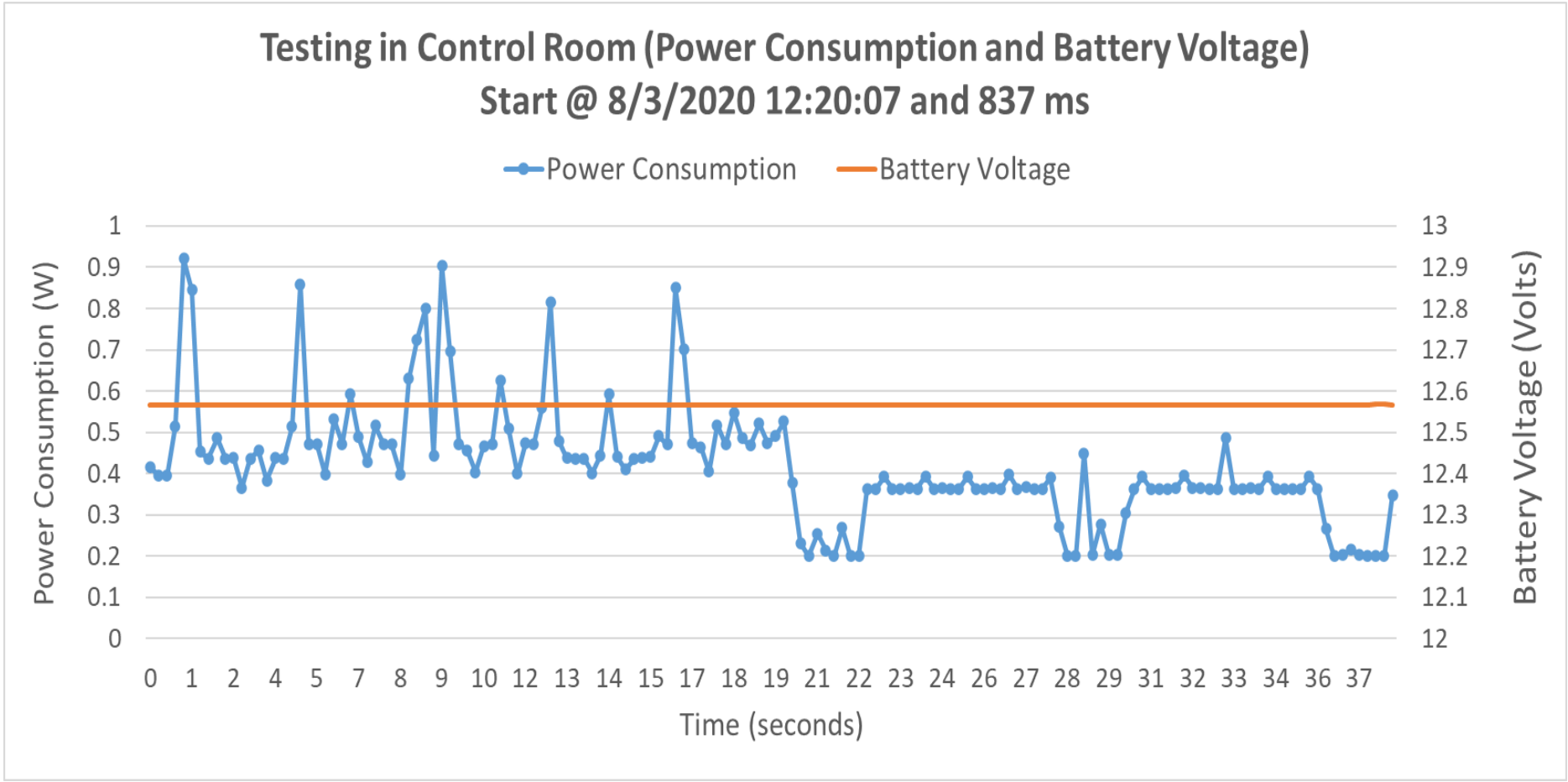
- Some periods of almost total darkness, hundreds of kilometers away from the nearest city, away from power and on some of the most dangerous sections of road in the State.
- **Survivability!**

Mini-RWIS design

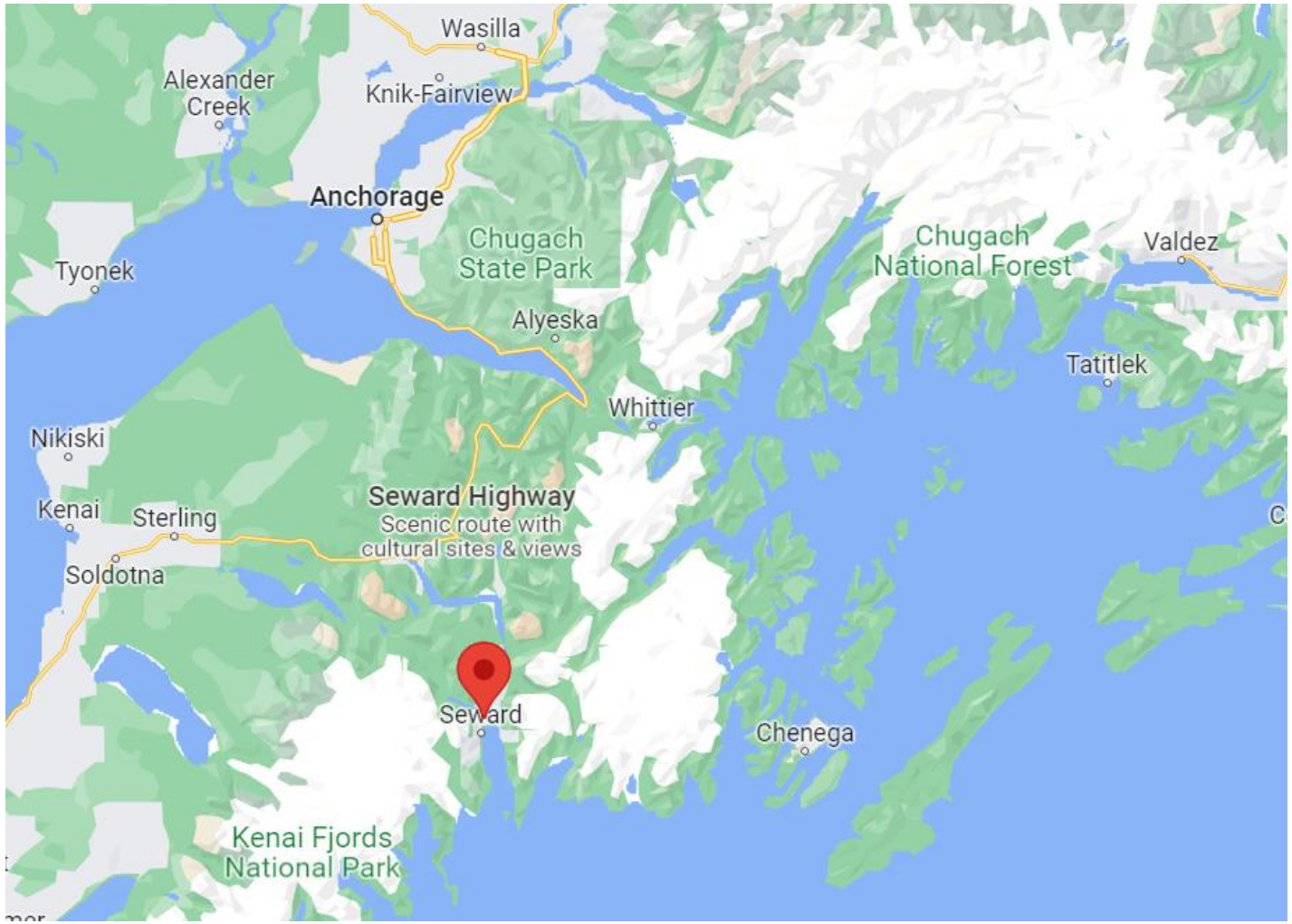


University Of Alaska Fairbanks - Cold Room Testing

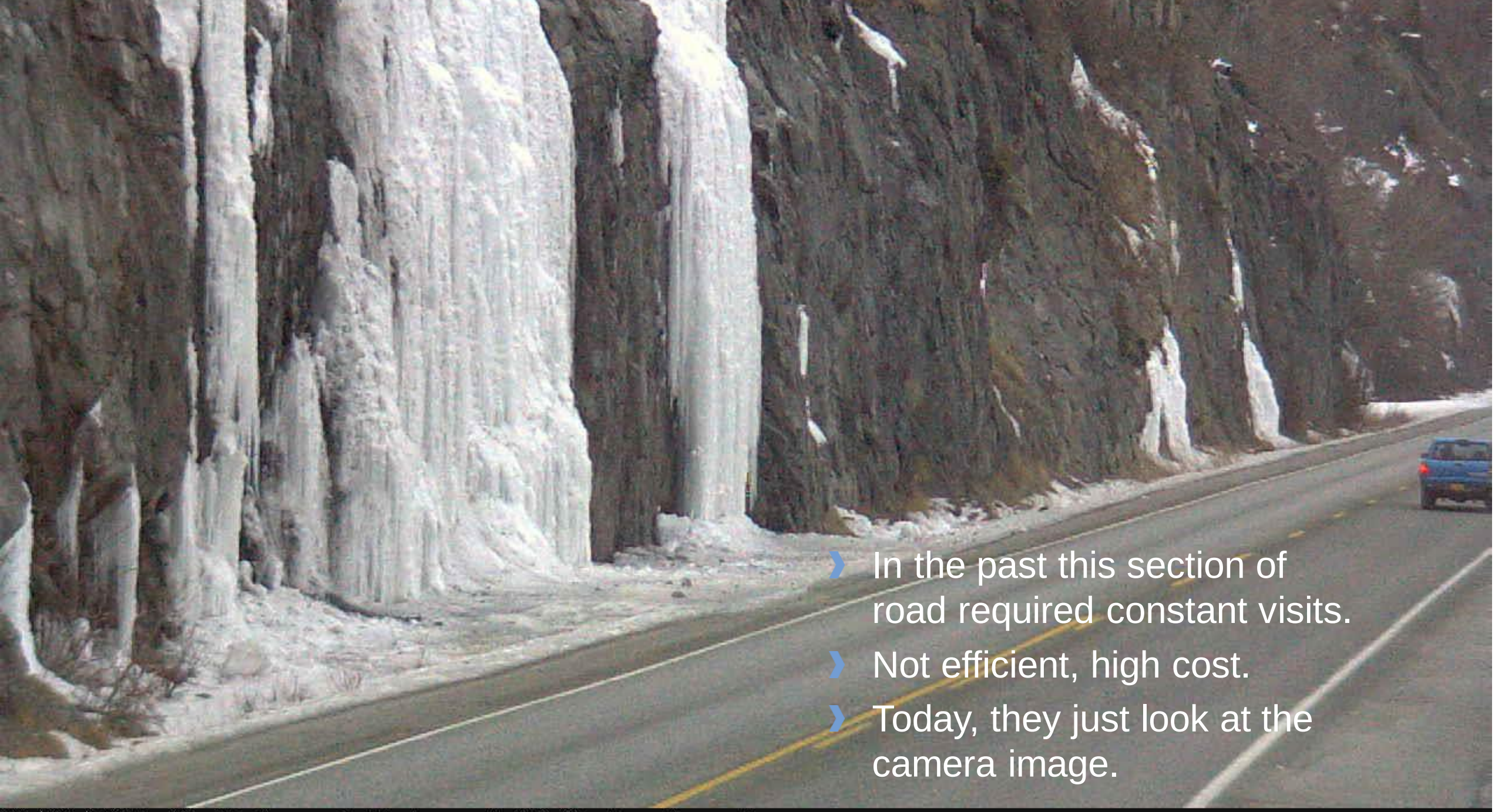
- Cold test to -40°C: test power consumption
- Measurements show system performance with camera heaters constantly off.



Example Deployment:
Seward Highway Station, 113 miles from Anchorage



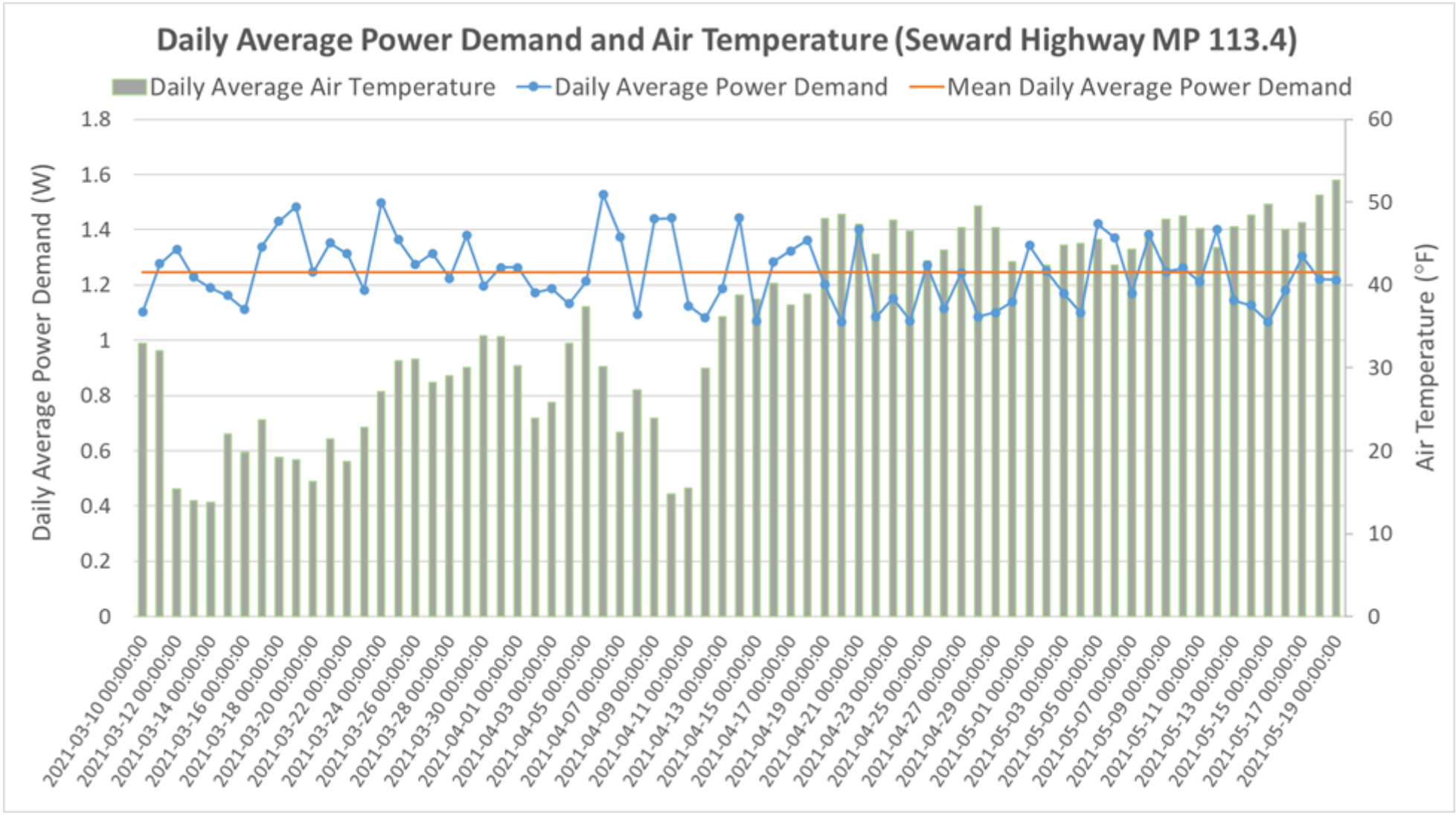

03/09/2021 09:00 Seward Highway @ MP 113



- In the past this section of road required constant visits.
- Not efficient, high cost.
- Today, they just look at the camera image.

Seward Highway Station

- Average 1.5W
- Max 6W



Thank you for listening!

- Thanks to:
  - State of Alaska Department of Transportation
  - University of Alaska Fairbanks, Arctic Infrastructure and Development Centre
  - Ontario Ministry of Transportation
- Questions?