

ACAT Lightning Talks

2021 Annual Meeting
December 11, 2021

Utility Scale Solar

Jenn Miller



HOUSTON SOLAR FARM

8.56 MW Solar Farm

20,000 Solar Panels

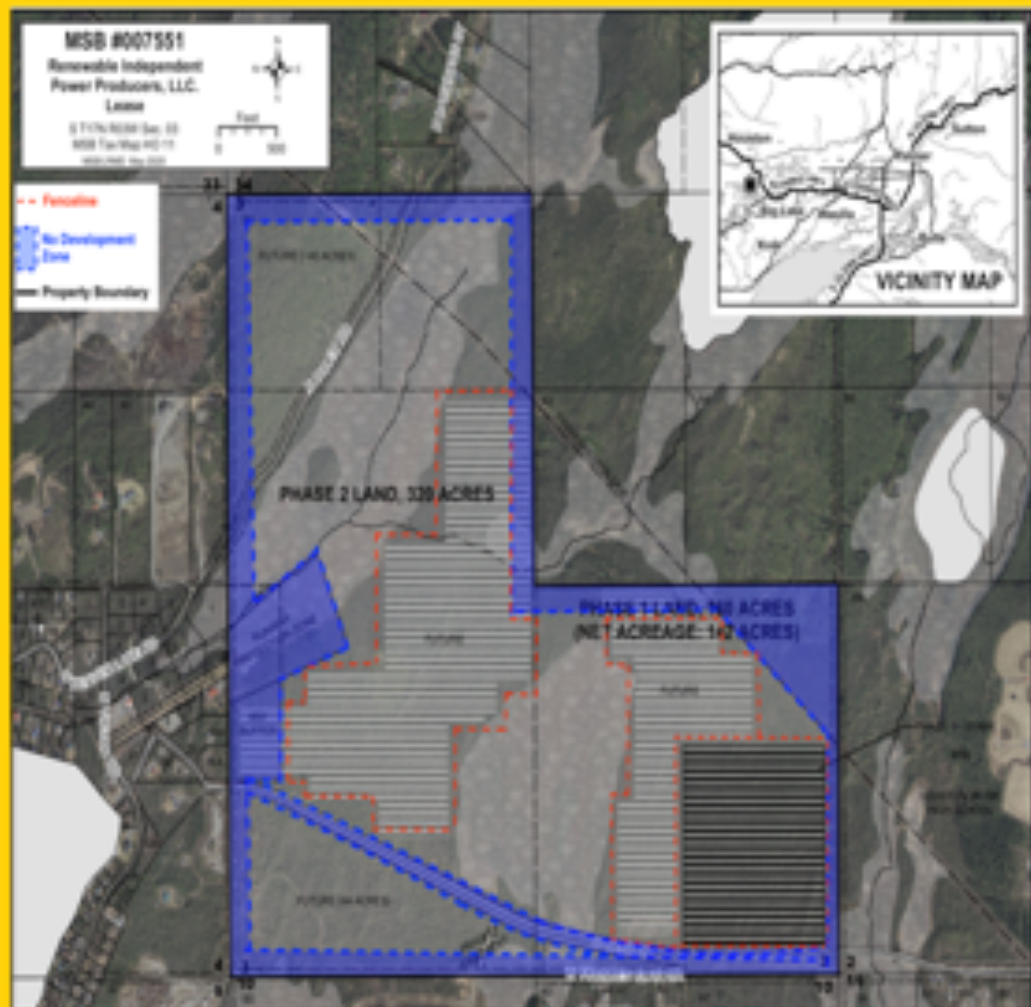
Occupies ~85 acres

Low Impact Solar Development

Status: Development Phase

- ✓ Land Lease
- ✓ PPA
- ✓ Private Investment Funding

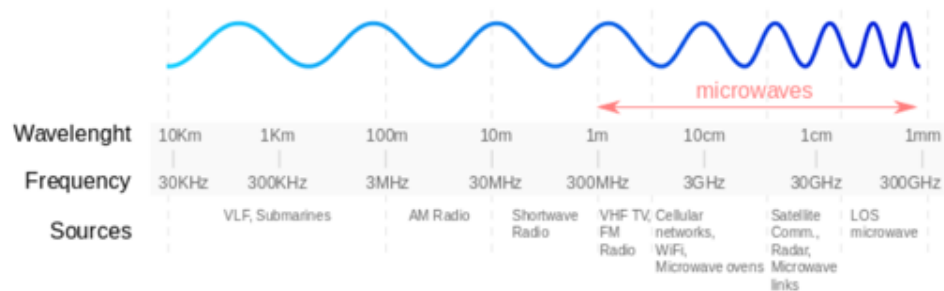
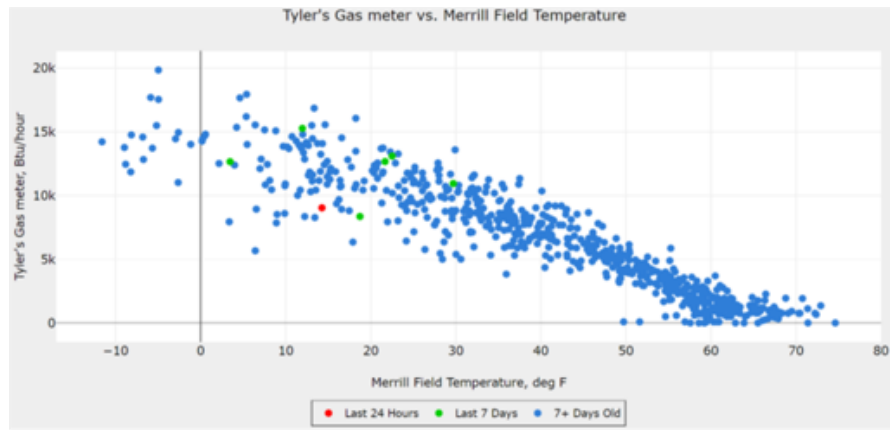
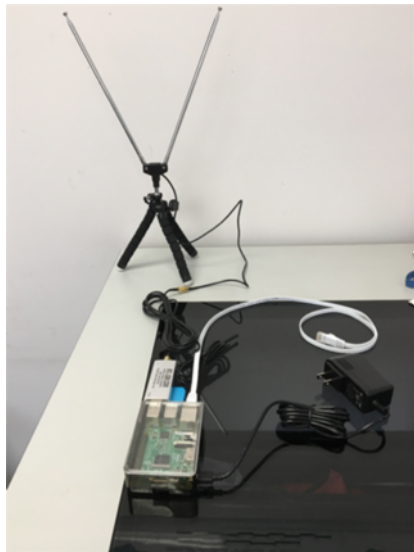
Pending timely completion of
Development Phase, Construction:
Summer/Fall 2021



Energy Monitoring Programs

Tyler Boyes

Gas usage monitoring



Long-Range, Low-Power Network



- Temperature
- Humidity
- Light
- CO2
- Occupancy

All from a single sensor!

More info at: bms.ahfc.us

 **LoRa Alliance**[®]

Energy Efficiency Legislation

Eric Visser

EV Research

Michelle Wilber

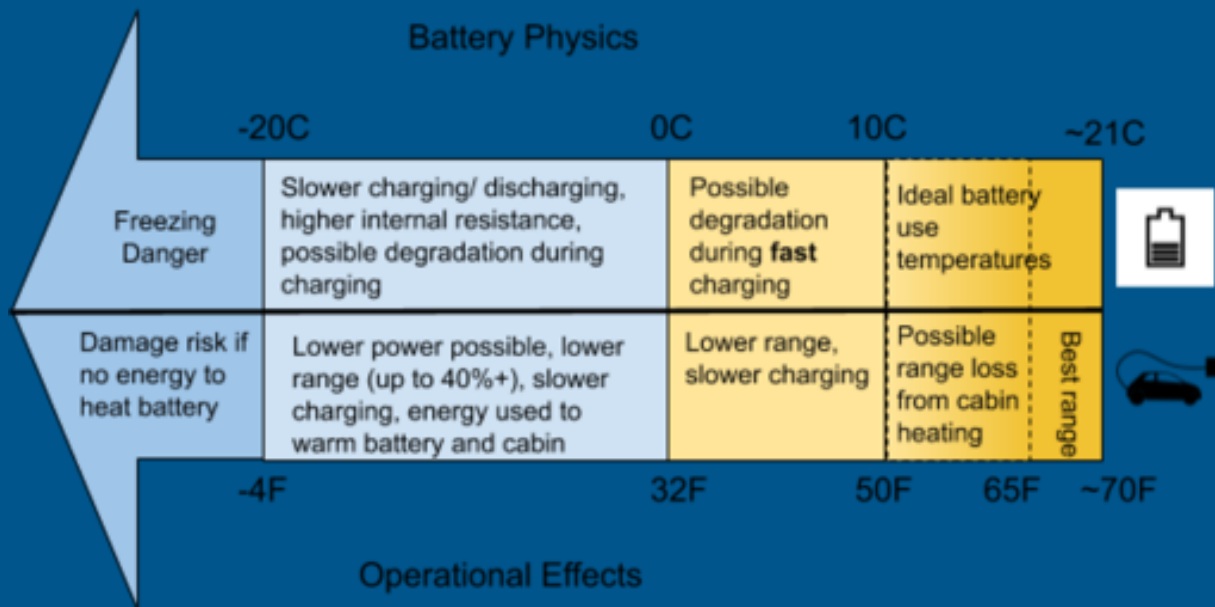


ACEP is an institute of the University of Alaska Fairbanks

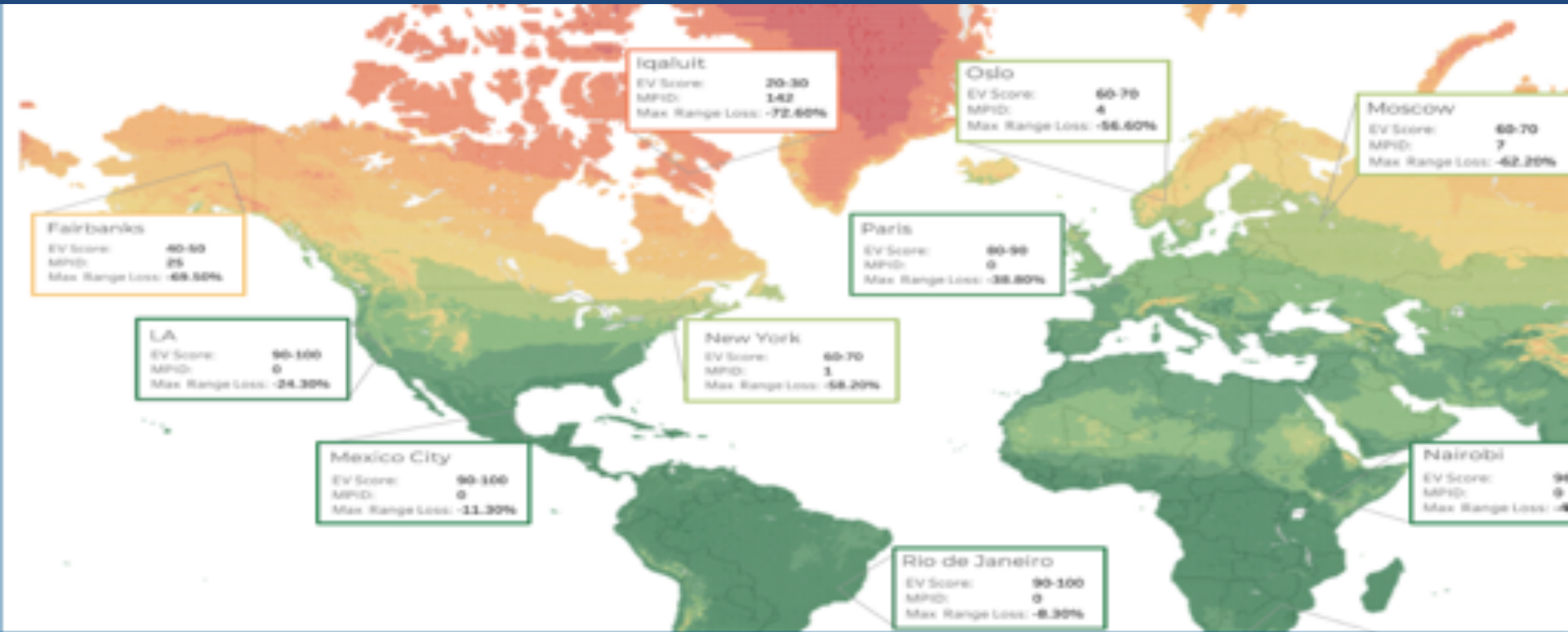
ACEP MISSION: Fostering development of practical, innovative, and cost-effective energy solutions for Alaska and beyond

Cold Weather Impacts

Figure 1: Low temperature regimes for EVs



EV Temperature Map



Link at: acep.uaf.edu

EV Cost & Emissions Web Calculator

at :
share.streamlit.io/mwilber/ak_ev_calculators/main/EV_Emissions.py

Base assumptions and data will be modified as research continues!

How many miles do you live from work?

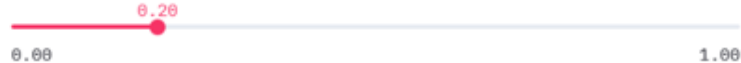


I park in a garage overnight.

enter the kWh/mile of the EV to investigate. A 2017 Bolt is .28 according to fueleconomy.gov



what do you pay per kWh for electricity?



What is the mpg of your gas car?



what is the price of gas?



Total cost of EV fuel = \$ 728.99

Total cost of ICE fuel = \$ 627.47

Total kg CO2 EV = 1601.23

Total kg CO2 ICE = 2204.44

You can help!

If you have EV data you want to share, email
mmwilber@alaska.edu



Air Tightness

Mark Houston

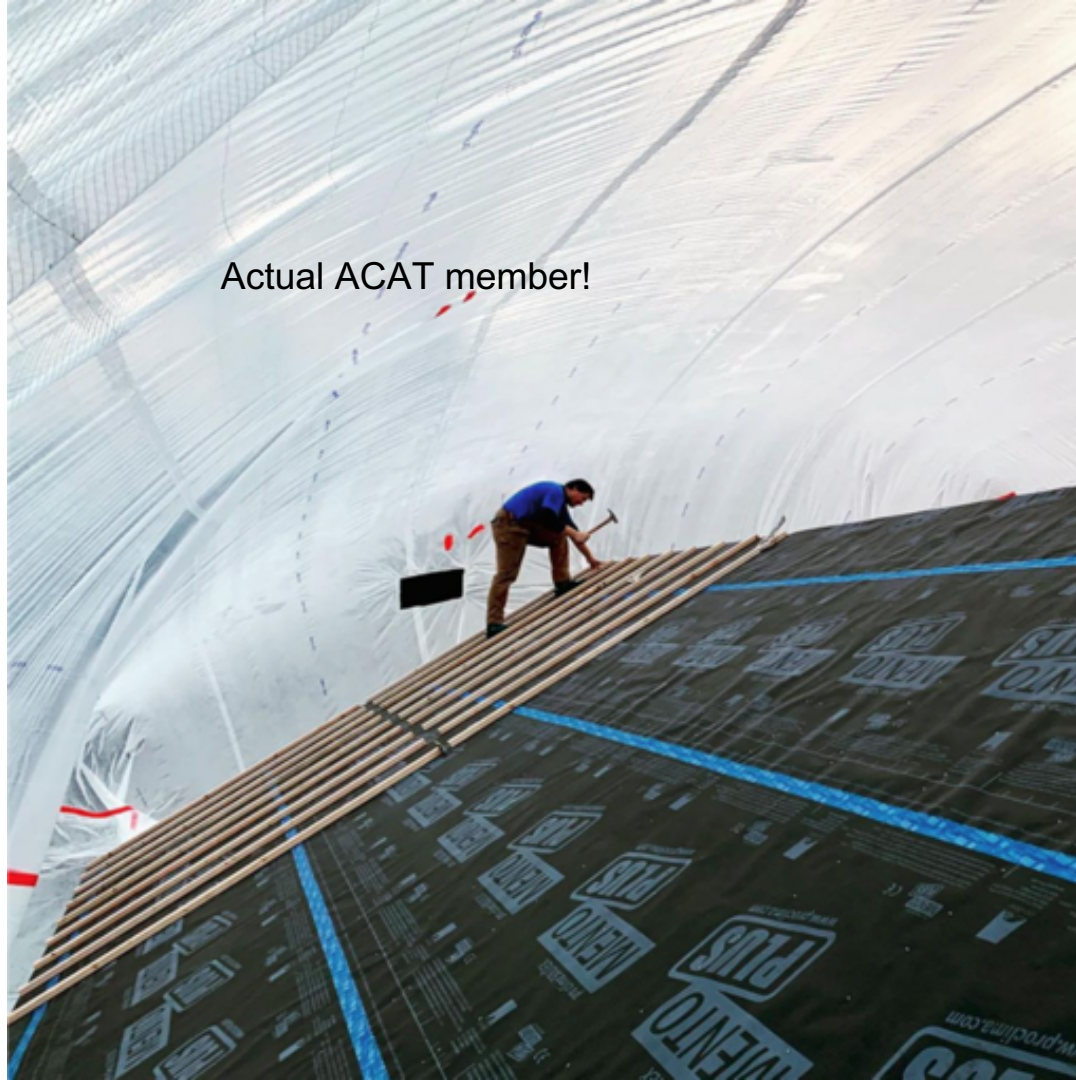


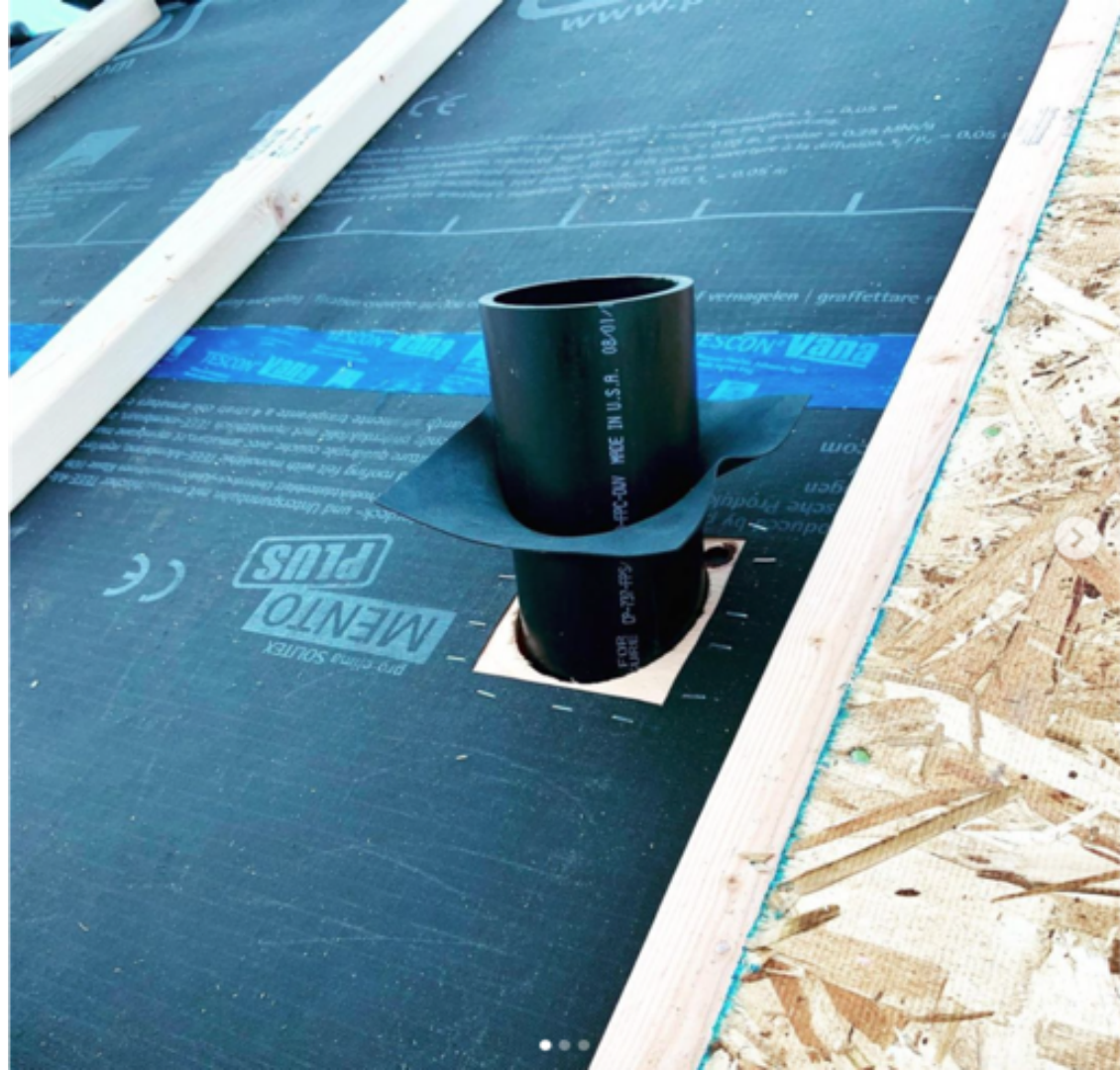




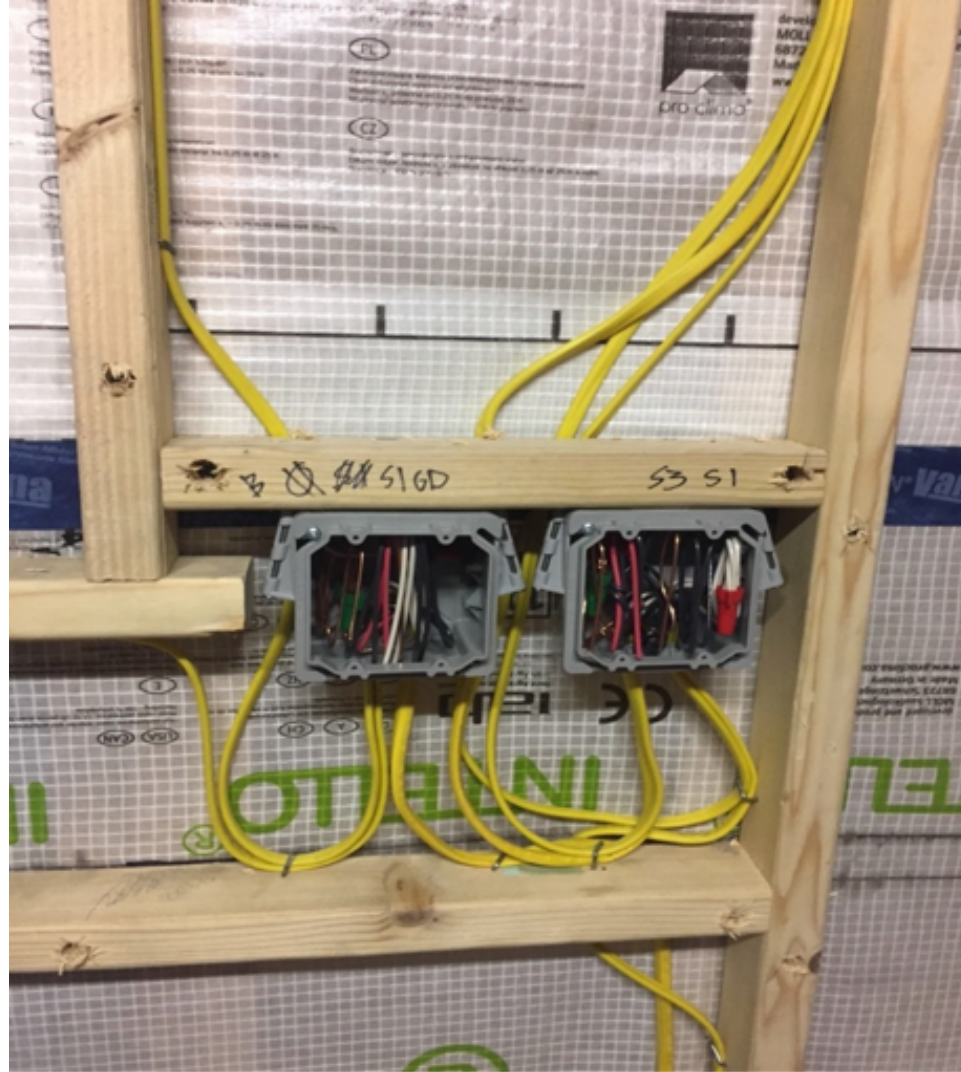


Actual ACAT member!













Another Actual ACAT member!







Air-Source Heat Pumps

Alan Mitchell

Heat Pump Installation Programs

- Thermalize Juneau - Alaska Heat Smart
 - Home Energy Assessment
 - Bulk Purchase of Mini-Split Heat Pumps (100 units)
- Northwest Arctic Borough
 - 70 Mini-Split Heat Pumps in Ambler
 - Solar-Powered Heat Pumps
- Alaska Mini-Split Heat Pump Calculator
<https://heatpump.cf>



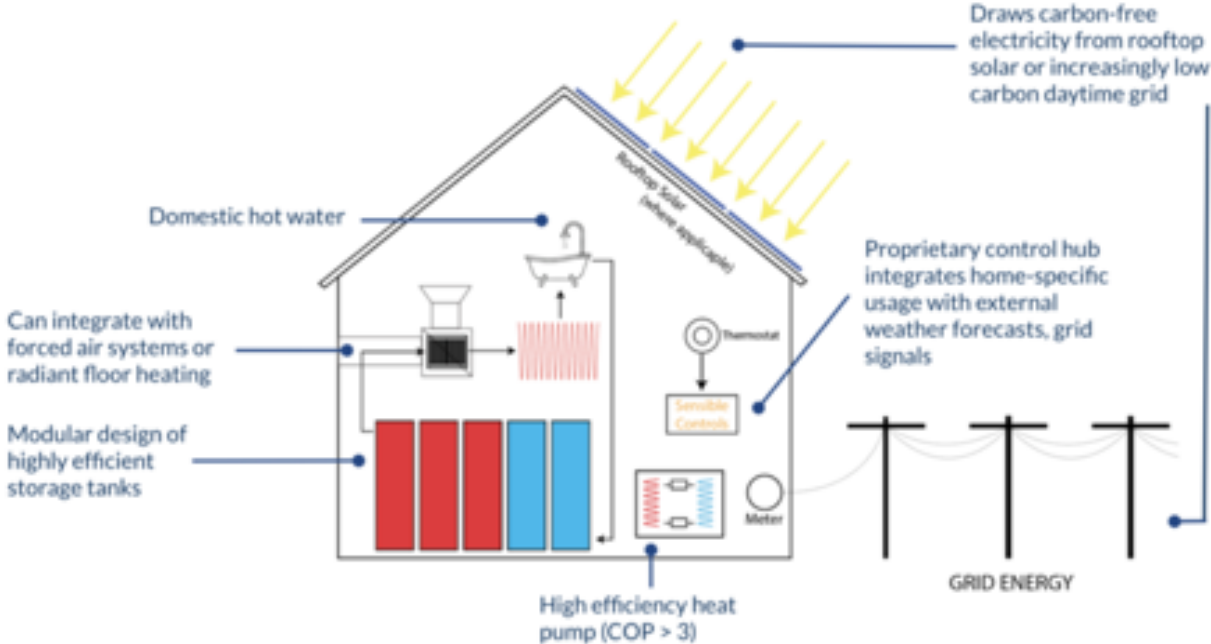
Cold Climate Heat Pump Test Chamber

- At Cold Climate Housing Research Center in Fairbanks
- Test Heat Pumps down to -20 °F



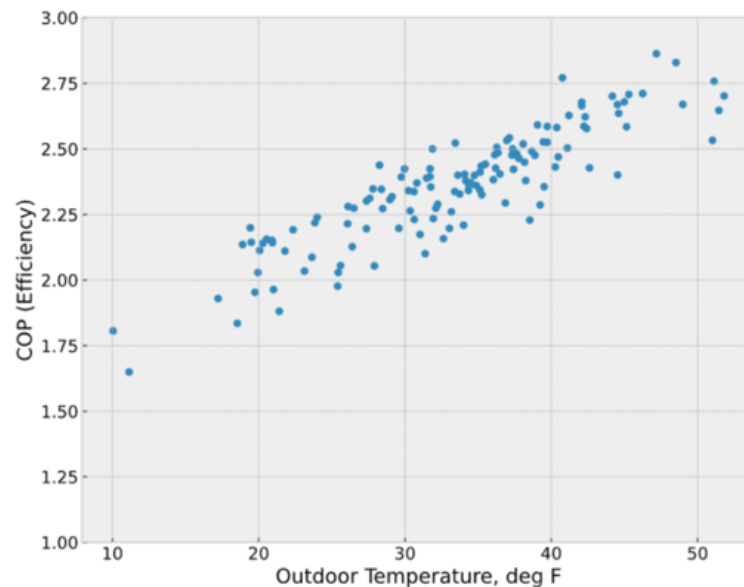
Launch Alaska funding for Sensible Heat system

SENSIBLE HEAT SYSTEM



Affordable Air-to-Water Heat Pump

- Phil Kaluza, Seward
- Space Heat *and* Domestic Hot Water Heat
- Direct from Factory in China
- Equipment Cost: \$ 2,000
- Annual COP: **2.4** in Seward (slightly less than mini-split)
- Other Options: Sanden, Chiltrix, Arctic, Nordic



Mark Masteller – Program Director UAF-Bristol Bay Sustainable Energy Program

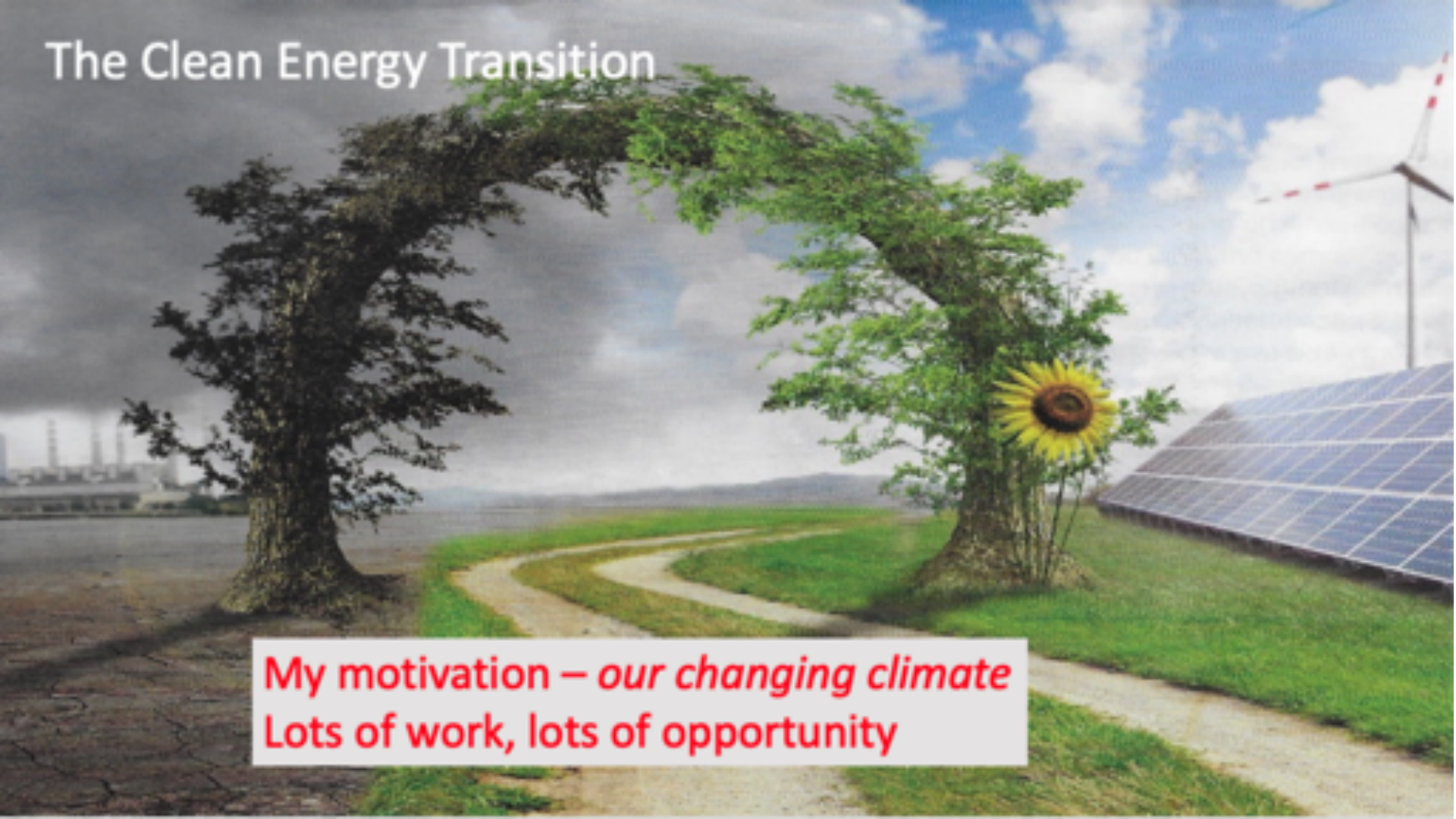
Classes:

- Introduction to Sustainable Energy
- Home Energy Basics, Solar, Heat Pumps, Biomass, Wind, Utilities

***All are welcome in the
Clean Energy Transition!***



The Clean Energy Transition



**My motivation – *our changing climate*
Lots of work, lots of opportunity**



Our own Zero Energy Ready project...

mamasteller@alaska.edu