Shaktoolik Battery System Construction Project

Alaska Village Electric Cooperative/
Shaktoolik IRA Tribal Council
Renewable Energy Joint Venture

2024 Program Review
Denver, Colorado
November 20, 2024

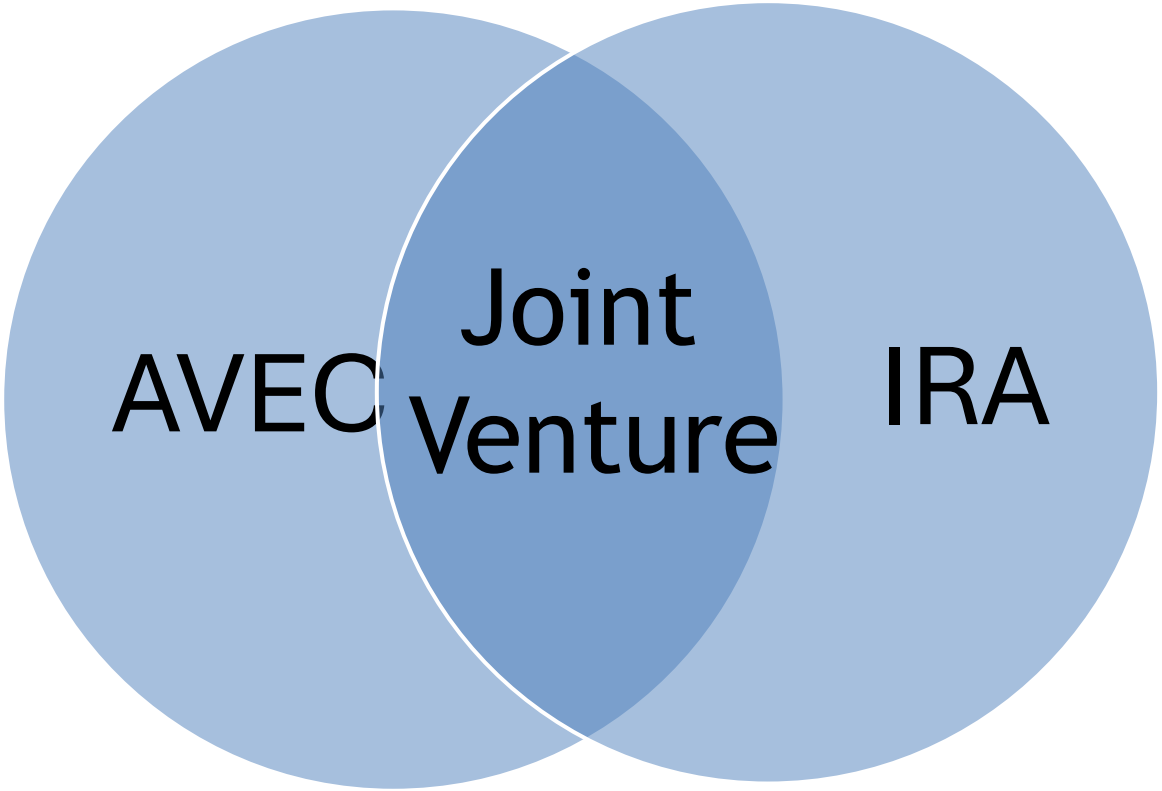
Onya Stein
Project Manager

Shaktoolik, Alaska

Image Credit: Alaska Village Electric Cooperative

Joint Venture

- Partnership between AVEC and Shaktoolik IRA
  - To benefit the community of Shaktoolik



AVEC

Established 1968, Member owned electric utility, Not for profit

- 60 Rural Communities served, 31,000+ Residents
- 46 Power Plants, 161 Diesel Generators
- 9.3M gallons of diesel in 2023 ($48M)
- 555 miles of Distribution Lines
- 90+% Alaska Native
- Smallest: Anvik 58→ Largest: Bethel 6,154
- 88 FT Employees, 77 PT Employees
- 33 wind turbines serving 23 communities
- Solar (2 AVEC & 2 IPP) serving 5 communities
- Batteries (4 AVEC & 1 IPP) serving 10 communities
- 2023 Total Electricity Sold 126.4 MW


Kivalina
Wales
Gambell
Minto
Mekoryuk
Anchorage
Yakutat
Old Harbor
0
400
Miles

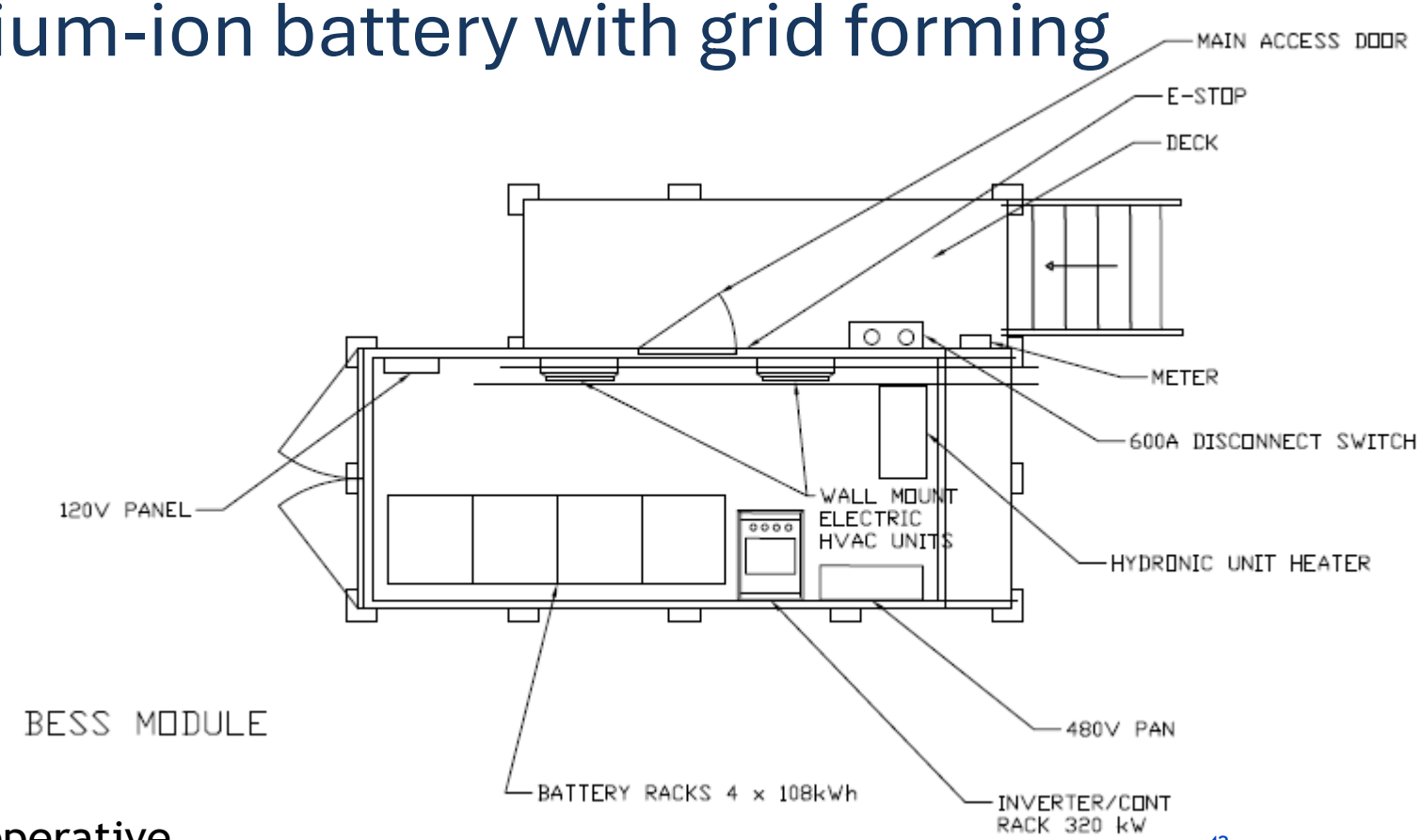
Shaktoolik IRA Tribal Council

- Formed in 1936
- Axel Jackson, President
- 6 Member Board
- 7 Employees
- Fun fact “Our school has extremely talented athletes and our High School Basketball teams have placed at the State tournament for the past few years! GO WOLVERINES!”

Project Overview

- Improve utilization of excess wind energy by installing a 320 kW/361 kWh Lithium-ion battery with grid forming inverter

Image Credit: Alaska Village Electric Cooperative




~2,800 miles
Project Location
NORTHWEST TERRITORIES
ALASKA
Fairbanks
YUKON
Canada
MANITOBA
ONTARIO
QUEBEC
Anchorage
Gulf of Alaska
ALBERTA
SASKATCHEWAN
Winnipeg
Edmonton
BRITISH COLUMBIA
MINNESOTA
NORTH DAKOTA
Calgary
SOUTH DAKOTA
MONTANA
Vancouver
Seattle
WASHINGTON
NEBRASKA
WYOMING
United States
IDAHO
OREGON
COLORADO
Google Earth
Image IBCAO
Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Data LDEO-Columbia, NSF, NOAA
1000 km

Project Location

Project Location

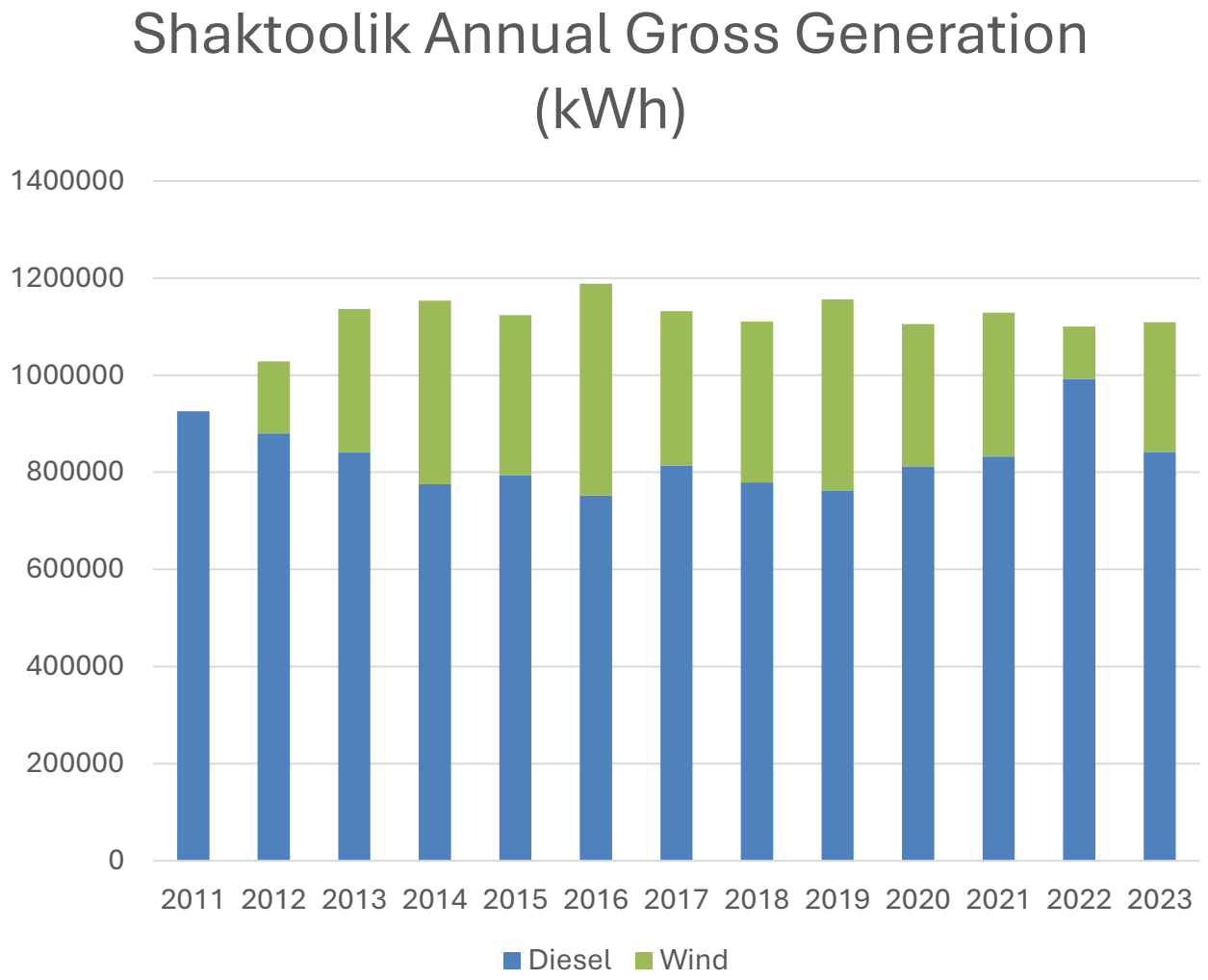
Project Location

Image Credit: Alaska Village Electric Cooperative

Project Participants

Project Objectives

- Increase wind energy output, 80%
- Fuel Savings, $99K/yr
  - Less diesel generation
  - Use smaller engine
  - “Diesel’s Off”
- Maintenance Savings, $6K/yr
- Improve Power Quality, 2 system outages
- Reduce Operational Concerns



Relevant Background

Wind Turbines

2011

BESS

2024

Image Credit: Alaska Village Electric Cooperative

Progress to Date

- Design and Purchase BESS and Foundation, 1Q2024
- Fire Marshal Plan Review, May 2024
- Materials On-site, 2Q2024
- Install, 3Q2024
- Commissioning and Troubleshooting, 4Q2024

Site Preparation

Image Credits: Alaska Village Electric Cooperative

Materials On-site

Image Credits: Alaska Village Electric Cooperative

BESS Container

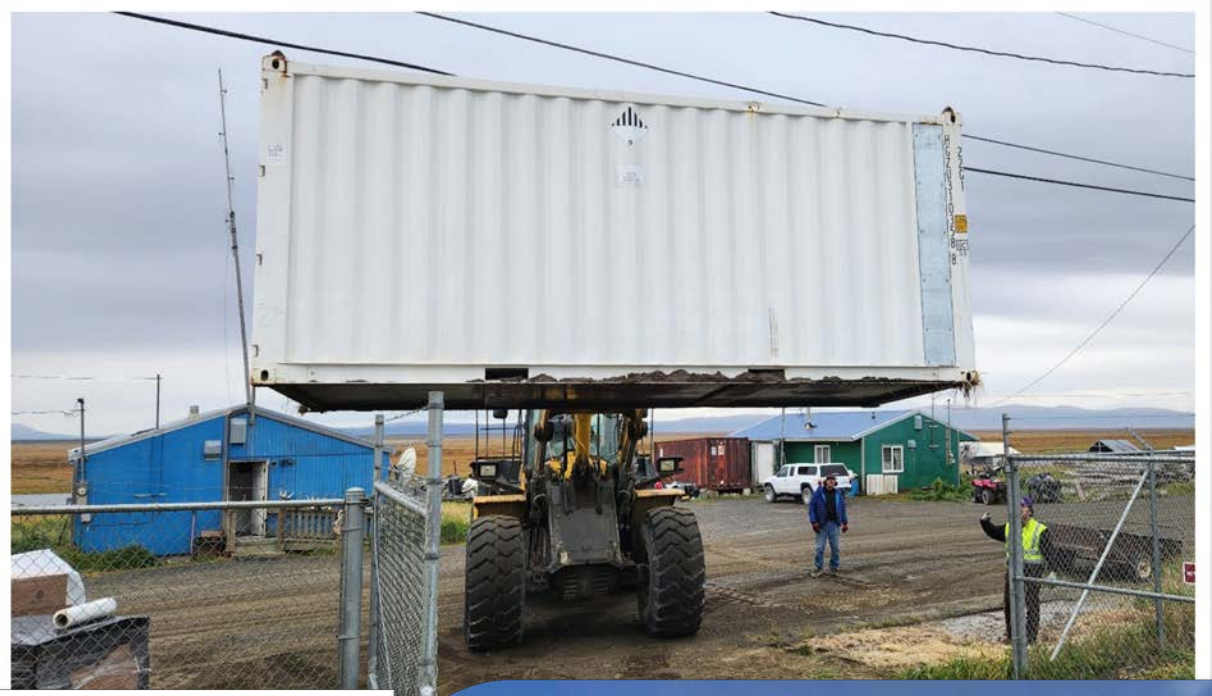


Image Credits: Alaska Village Electric Cooperative

Batteries

Image Credits: Alaska Village Electric Cooperative

Interconnection

Image Credits: Alaska Village Electric Cooperative

Activities to be Completed

- System controller and full automation of BESS

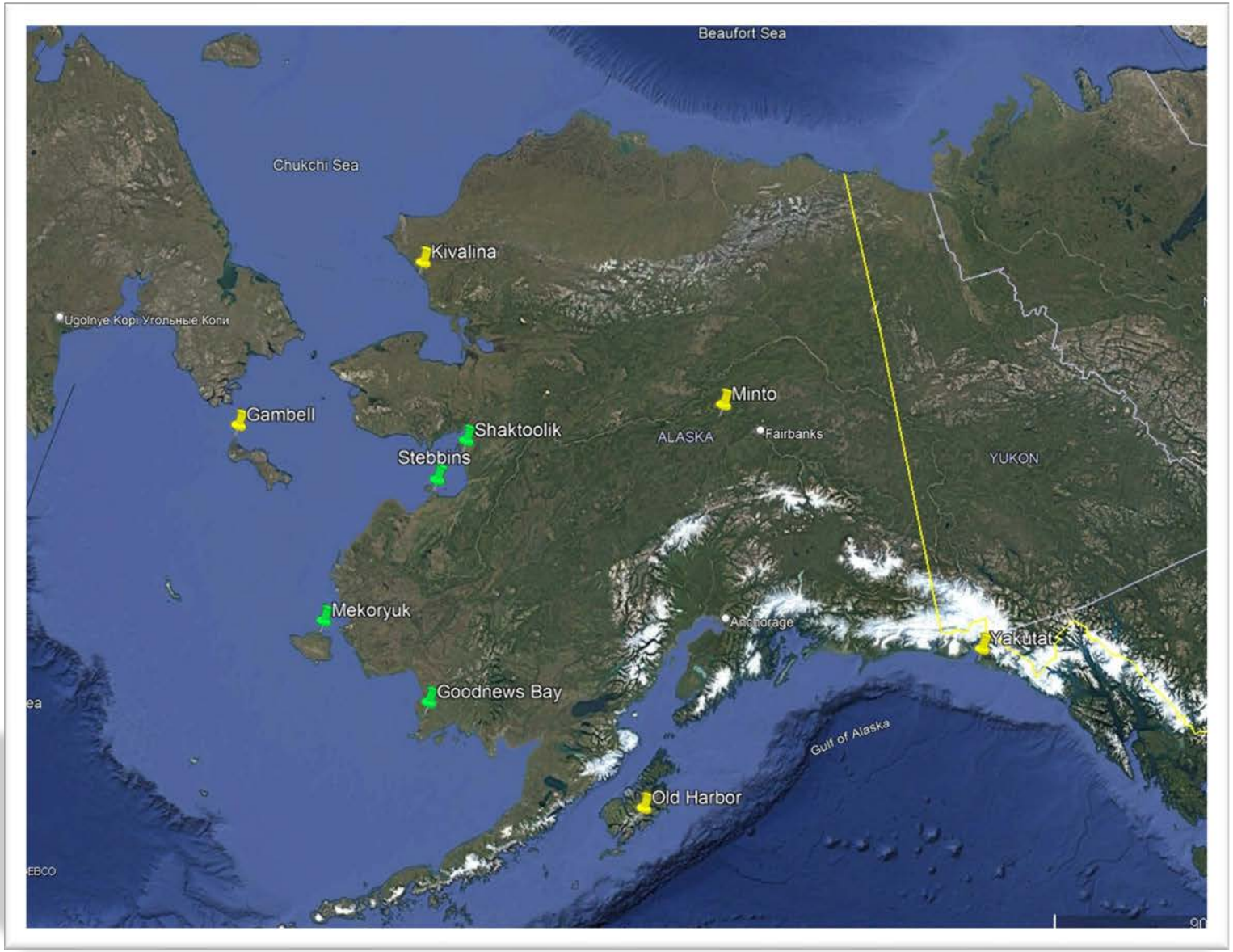
Lessons Learned

- Capable heavy equipment
- Shipping logistics
  - Batteries separate
  - Packaging waste
  - Shipping hazards
- Coordination with foreign entities
- Long lead items

Image Credits: Alaska Village Electric Cooperative

Other Projects

- Goodnews Bay Renewable Energy Project
- Stebbins/St. Michael Renewable Energy Project
- Mekoryuk Repower



Batteries?
I'm feeling positive today!

Thank you!

Questions?

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Shaktoolik, Alaska

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