Alaska Village Electric Cooperative, Inc./Bethel Native Corporation
Renewable Energy Joint Venture

Bethel Wind Energy Construction Project

Forest Button
Manager, Project Development
& Key Accounts
Alaska Village Electric Cooperative
Member owned, not-for-profit
Energizing Rural Alaska since 1968

• 58 Member Communities
• 11,500 Services
• Population Served: 30,194
• 94% Alaska Native
• Smallest: Shageluk 71 ➔ Largest: Bethel 6,205
• 9 million gallons of diesel / $31 million ($3.45)
• 90 FT / 95 PT Employees
• 48 Power Plants
• 36 Wind turbines serving 20 communities
• 2 Solar arrays serving 2 communities
• Two tug and barge sets
Bethel Native Corp.

- ANCSA village corporation
- Construction, Environmental, Logistics
- Alaska, Washington, California
- Serves 1,800 shareholders
- Mostly Yup’ik Eskimo
Joint Venture

- Partnership between AVEC and BNC - ABRE
  - To benefit the communities of Bethel and Oscarville
Project Participants

AVEC - Electric Utility
BNC - Local native corporation

State of Alaska
DOE Tribal Energy
AVEC
Denali Commission

CRW Engineering
Golder
STG /EWT
Project Location
Project Overview

Upgrade power plant to accept wind energy
- Automated governors - actuators
- Voltage Regulators

Installation of one Emergya Wind Technologies (EWT) 900 kW direct drive wind turbine.
- 52 meter diameter rotor
- 50 meter high tower
Project Objectives

- Generate 2,604 MWh / Year
- Offset 200,000 gallons fuel consumption per year
- Save approx. $700,000 per year on fuel
- Eliminate 2,238 tons of CO2 / year

- Energized September 14, 2018
- 446,698 kWh
- Offset 32,000 gallons of diesel
- Savings $111,674
- 358 tons of CO2 eliminated
2017-2018 Construction

Road, pad, and pile foundation winter 2017/2018

Turbine ship to Alaska May 2018

Concrete foundation June / July 2018

Erect turbine, install transformers connect to grid August - September 2018

Commission bring on line September 2018
Construction
Construction
Alaska Village Electric Cooperative, Inc./Pitka’s Point Native Corporation Renewable Energy Joint Venture

Pitka’s Point/Saint Mary’s Wind Energy Construction Project
Pitka’s Point Native Cooperation

• ANCSA village corporation
• Serves 426 shareholders
Joint Venture

• Partnership between AVEC and PPNC - APPRE
  • To benefit the communities of Pitka’s Point, Saint Mary’s, and Mountain Village
Project Participants

AVEC - Electric Utility
PPNC - Local native corporation

State of Alaska
DOE Tribal Energy
AVEC

CRW Engineering
Golder
STG / NPC / EWT
Project Overview

• Installation of one Emergya Wind Technologies (EWT) 900 kW direct drive wind turbine.
  • 52 meter diameter rotor
  • 50 meter high tower
• Upgrade electrical distribution line to three-phase between St. Mary’s and Pitka’s Point
• Upgrades at the Saint Mary’s power plant to effectively utilize wind
• Wind-to-heat component
Project Location
## Project Objectives

### Wind Generation
- Replace approximately 202,000 gallons fuel/year
- Save an estimated $874,000/year
- Generate around 2,525 MWh/year
- Eliminate roughly 2,100 Metric tons of CO2/year

### Wind-To-Heat
- Replace approximately 4,220 gallons fuel/year
- Save an estimated $11,250/year

### Together
- Strive to stabilize future energy costs
- Reduce risk of environmental damage
Progress:

Road, pad, and foundation complete in 2017

Electrical upgrade complete 2018

Turbine installed 2018

Next steps...

Commission Turbine and bring on line - December

Intertie Mt. Village with St. Mary’s - 2019
Foundation Construction 2017
Turbine Construction 2018
Turbine Construction 2018
Turbine Construction 2018
Alaska Village Electric Cooperative, Inc./Stebbins Native Corporation Renewable Energy Joint Venture

Stebbins / St. Michael Renewable Energy Construction Project
Figure 1. Project Vicinity
Install EWT 900kW Turbine

- Offset 104,700 of diesel
- Savings in first year $365,403
- Life time savings $11.4 million
- Project life 25 years
- NPV benefit $6.694 million
- Provide wind to heat