

Stebbins and St. Michael Renewable Energy Project

*Alaska Village Electric Cooperative /
Stebbins Native Corporation
Renewable Energy Joint Venture*

2023 Program Review
Denver, Colorado
November 15, 2023

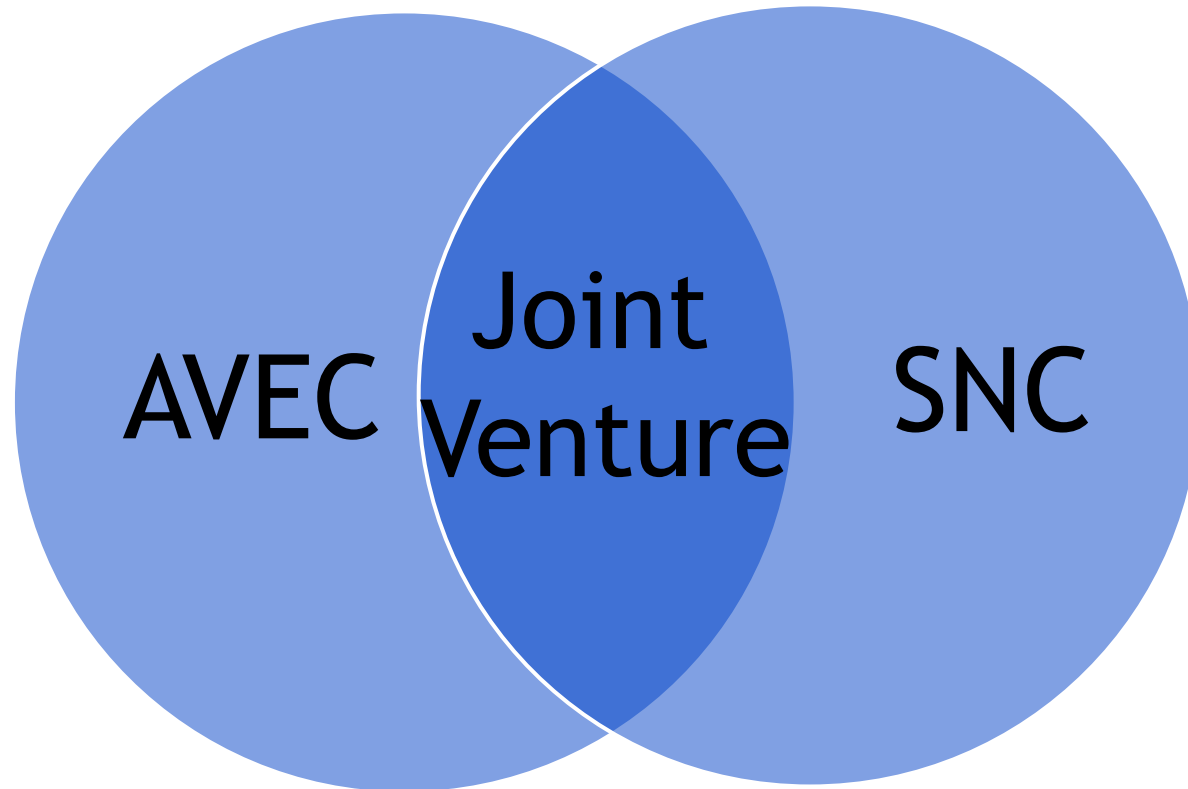
Onya Stein
Project Manager

Courtesy of STG, Incorporated



Joint Venture

- ▶ Partnership between AVEC and SNC
 - ▶ To benefit the communities of Stebbins and St. Michael

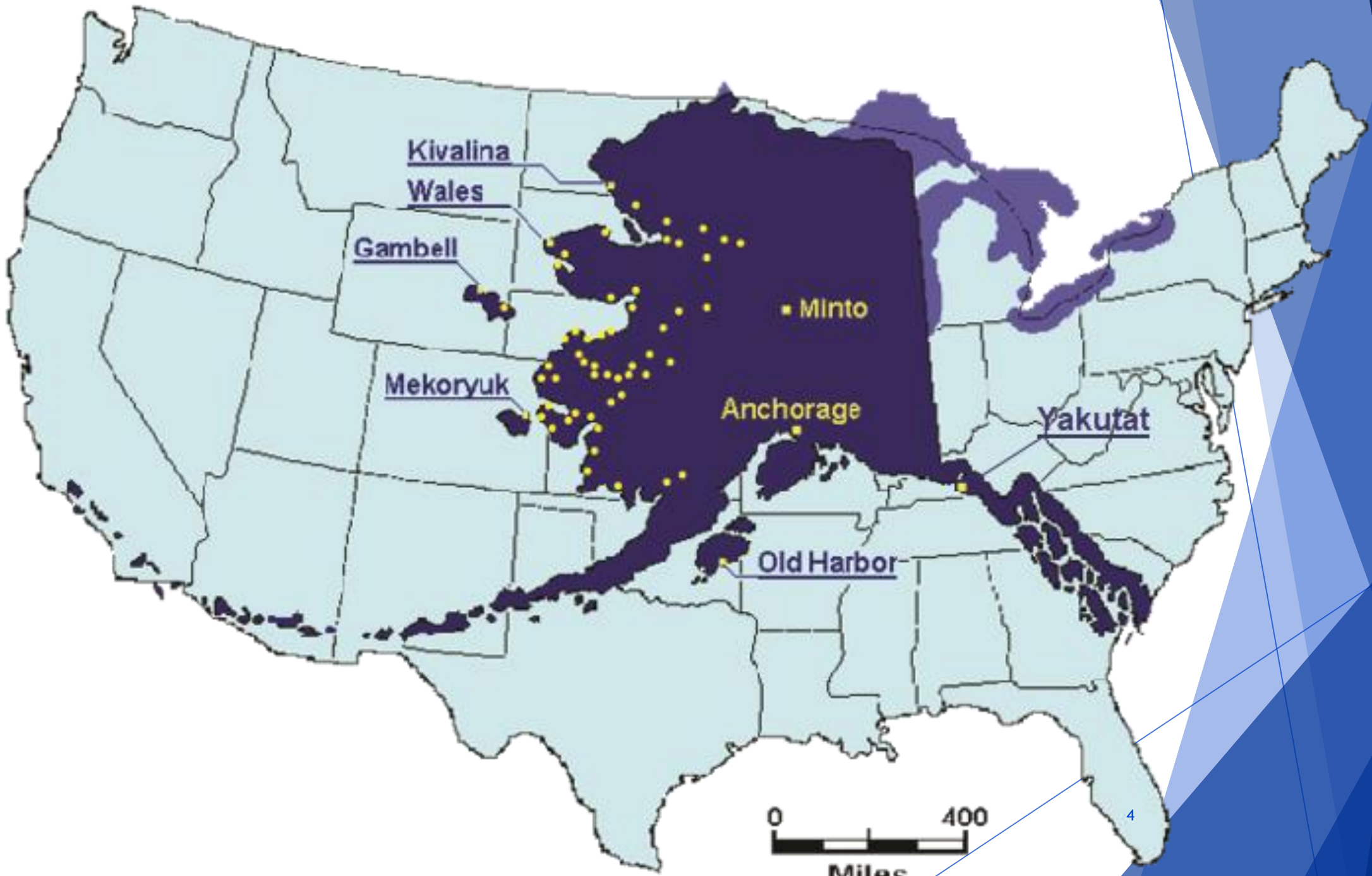


AVEC

Established 1968, Member owned electric utility, Not for profit

- ▶ 59 Rural Communities, 31,000+ Residents
- ▶ 48 Power Plants, 160 Diesel Generators
- ▶ 9.1M gallons of diesel in 2022 (\$35.3M)
- ▶ 520 miles of Distribution Lines
- ▶ 90+% Alaska Native
- ▶ Smallest: Anvik 58 → Largest: Bethel 6,154
- ▶ 86 FT Employees, 57 PT Employees
- ▶ 33 wind turbines serving 23 communities
- ▶ Solar (2 AVEC & 1 IPP) serving 4 communities
- ▶ \$60.7M Annual Revenue
- ▶ 2022 Total Electricity Sold 124.5 MW





Stebbins Native Corporation

Established 1974, ANCSA village corporation

- ▶ Managed by Thomas Kirk
- ▶ 414 Shareholders
- ▶ 20 Employees
- ▶ 3 subsidiaries: fuel, store, rock/gravel
- ▶ 149 households
- ▶ Partners in construction: Advanced Blasting, Tapraq Rock
- ▶ Own 100,000+ acres
- ▶ Landowner

Project Overview

- ▶ Final stages of an energy vision for the area.
- ▶ Installation of one Emergya Wind Technologies (EWT) wind turbine
 - ▶ 900 kW
 - ▶ 52 meter diameter rotor
 - ▶ 75 meter high tower
 - ▶ Direct drive

Stebbins Turbine Site

~2800 miles

Project Location

Denver





Kivalina

Gambell

Nome

Minto

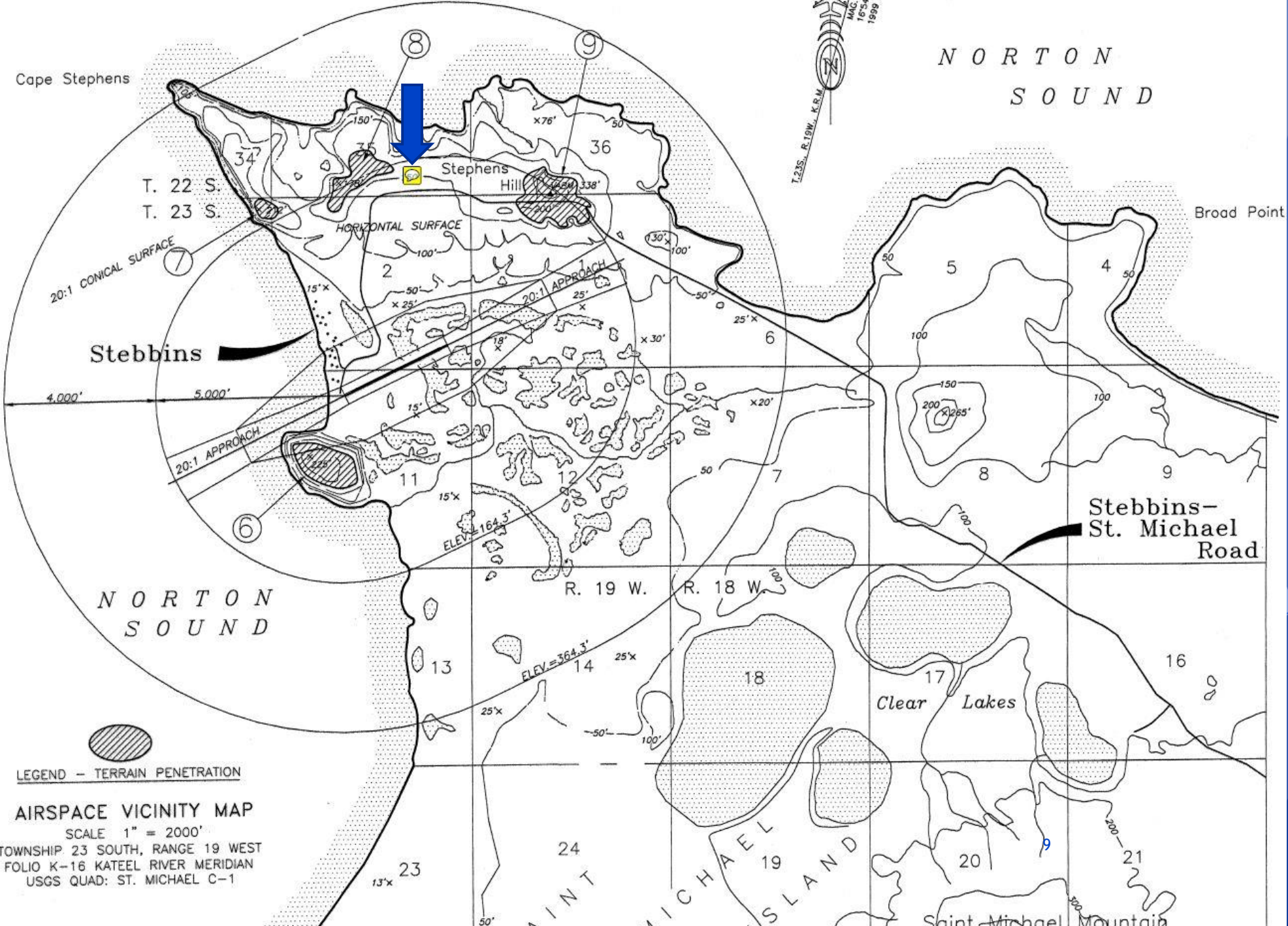
Stebbins Turbine Site

Anchorage, Alaska

Yakutat

Old Harbor

Project Location



LEGEND - TERRAIN PENETRATION

AIRSPACE VICINITY MAP
 SCALE 1" = 2000'
 TOWNSHIP 23 SOUTH, RANGE 19 WEST
 FOLIO K-16 KATEEL RIVER MERIDIAN
 USGS QUAD: ST. MICHAEL C-1



Stebbins, Alaska

Population: 629

Gas: \$7.02

Heating Fuel \$7.78

Electric \$0.63/\$0.25

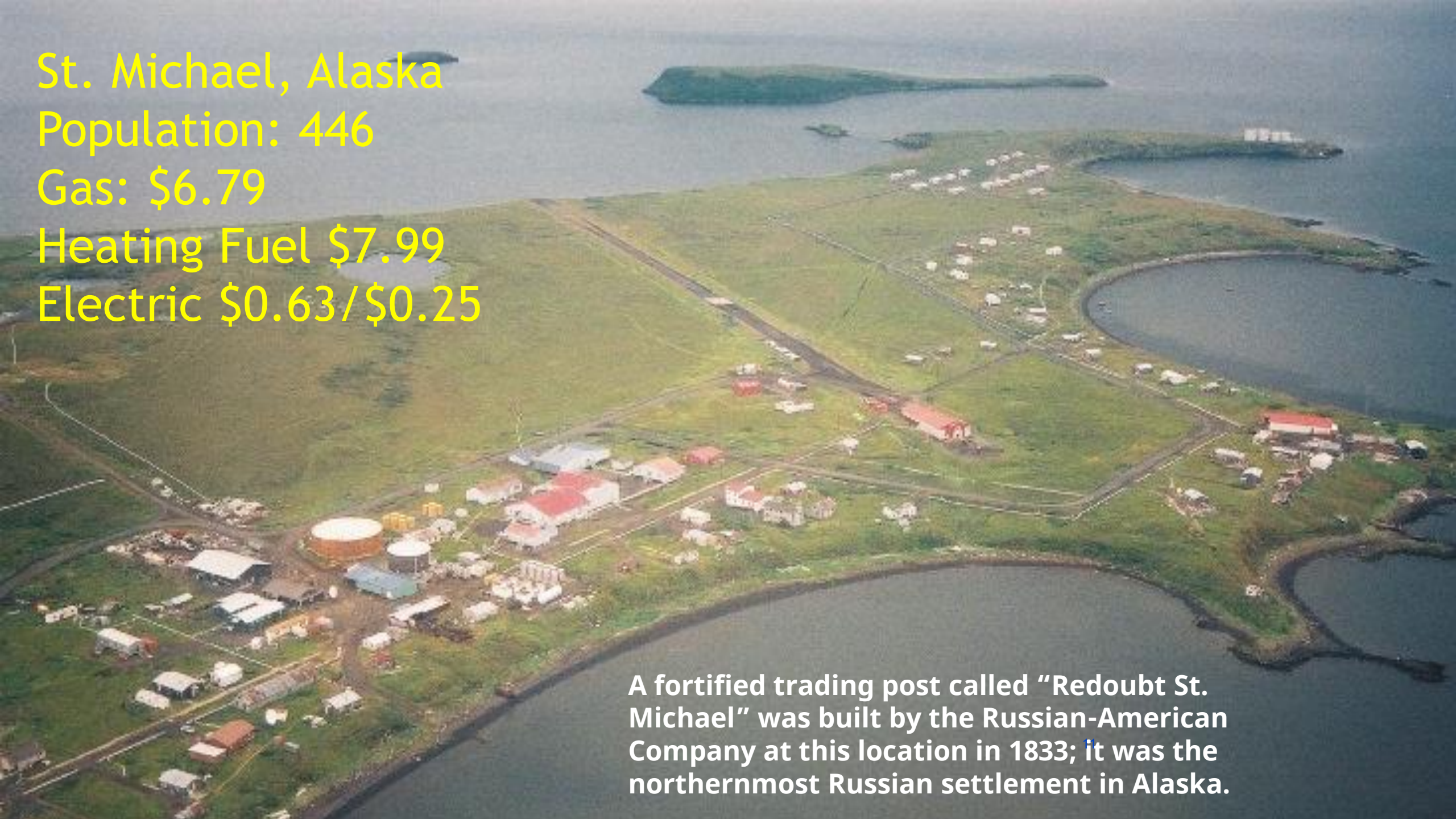
St. Michael, Alaska

Population: 446

Gas: \$6.79

Heating Fuel \$7.99

Electric \$0.63/\$0.25

An aerial photograph of St. Michael, Alaska, showing a coastal town with various buildings, a large circular structure, and a body of water. The town is situated on a green, grassy area with a road network. The water is dark blue, and there are several small islands or peninsulas in the background.

A fortified trading post called "Redoubt St. Michael" was built by the Russian-American Company at this location in 1833; it was the northernmost Russian settlement in Alaska.

Stakeholders



City of Stebbins

Stebbins Native Corporation



Native Village of St. Michael



Native Village of Stebbins



City of St. Michael

St. Michael Native Corporation

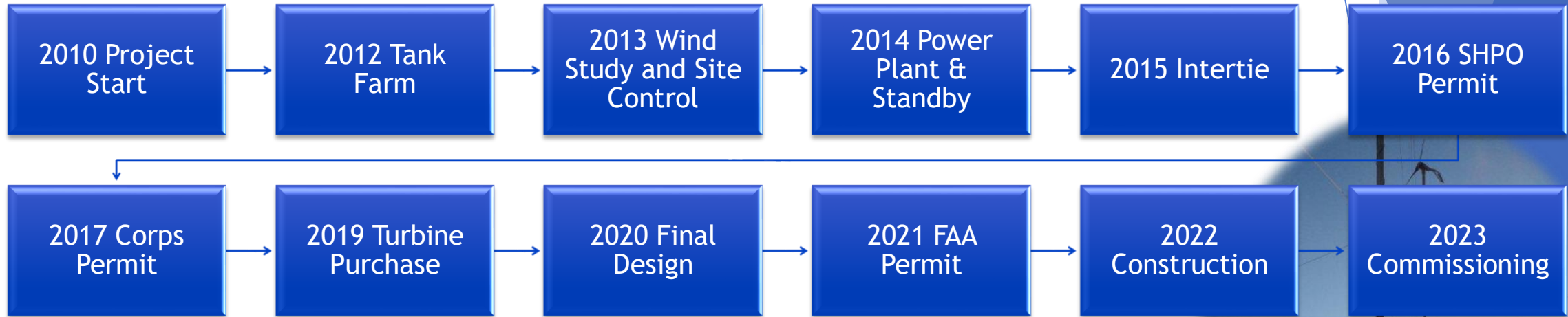


Project Objectives

- ▶ Install 900 kW turbine
- ▶ Generate ~2,529 MWh/year
- ▶ Produce 50% of total energy for two communities
- ▶ Save 104,700 gallons/year
- ▶ \$365,403 savings first year
- ▶ \$11.4M savings over 25 years



Past Related Projects



Similar Projects

DOE Tribal Energy's impact in AVEC Villages

- ▶ Bethel - 900kW EWT
 - ▶ Online September 2018
 - ▶ 8,135,831 kWh¹
 - ▶ 583,954 gallons avoided²
 - ▶ 5,944.65 tons CO2 avoided
 - ▶ Saving \$3.095 million³
- ▶ St. Mary's/Pitka's Point - 900kW EWT
 - ▶ Online January 2019
 - ▶ 9,263,597 kWh¹
 - ▶ 718,761 gallons avoided²
 - ▶ 7,316.99 tons CO2 avoided
 - ▶ Saving \$2.70 million³

¹ kWh data through August 2023

² Avoided gallons calculated with avg. diesel efficiency since turbine commissioning

³ Savings calculated with 2022 fuel costs



Let's install a turbine.

- ▶ Procure Turbine 1Q2020
- ▶ Mob to site 3Q2022 / 2Q2023
- ▶ Site improvements 1Q2023 / 4Q2022
- ▶ Turbine Foundation 1Q2023 / 2Q2023
- ▶ Turbine Delivery / Installation 2Q2023 / 3Q2023
- ▶ Start up / Commissioning 3Q2023 / 4Q2023

September 2022



January 2023







February 2023



June 2023



Courtesy of STG, Incorporated





Courtesy-of STG, Incorporated







Courtesy of STG, Incorporated

Activities to be Completed

- ▶ 12 months of turbine production monitoring
- ▶ Finish upgrades including boiler installations in Stebbins and St. Michael pump house
 - ▶ Acquire long lead items
 - ▶ RFP for installation
 - ▶ First barge 2024
 - ▶ Construction 2024



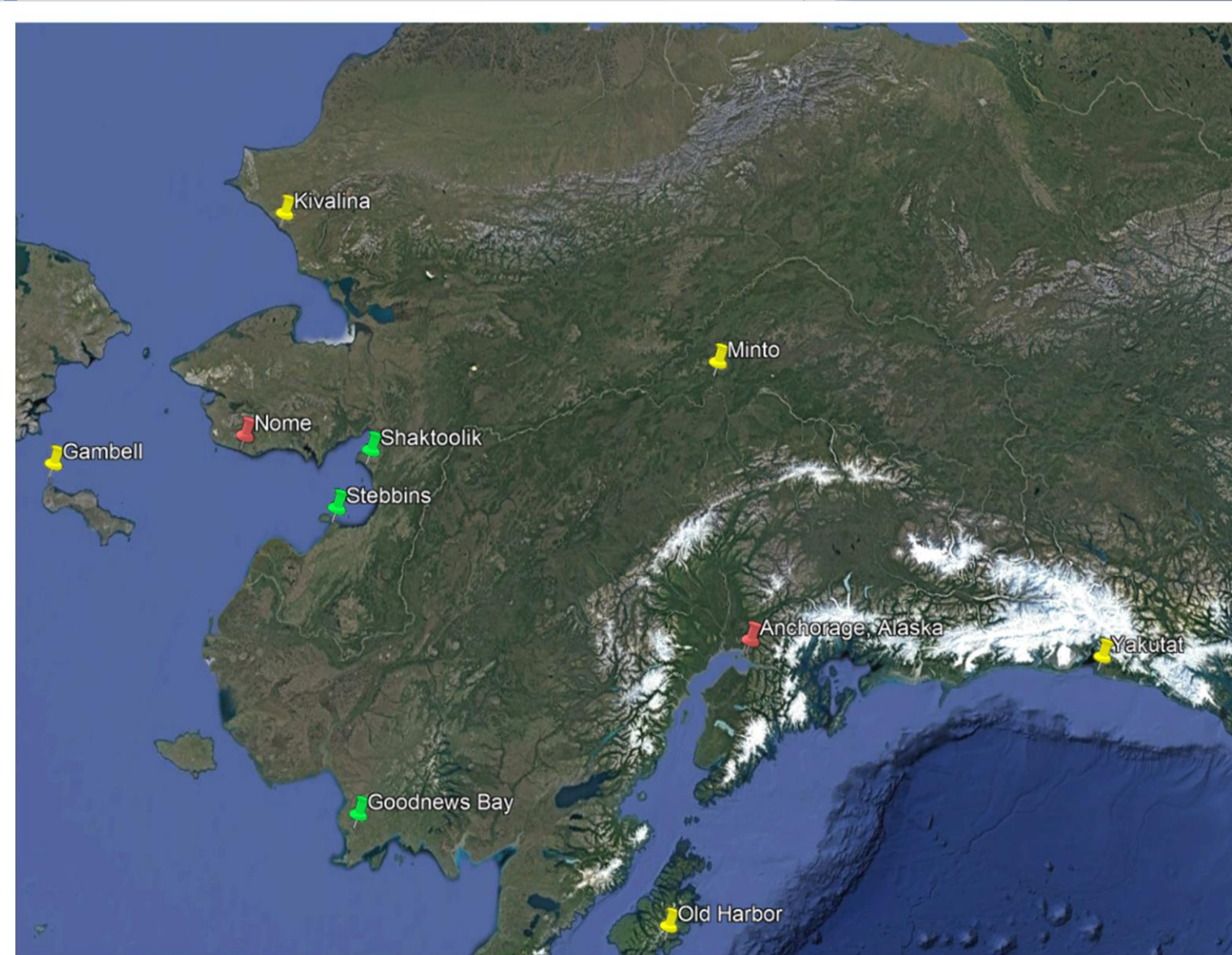
Lessons Learned

- ▶ Poor weather impacts
- ▶ Sequence of Site Work
- ▶ Coordination with foreign entities
- ▶ Staffing availability
- ▶ Sufficient materials
- ▶ Troublesome equipment



Other Upcoming Projects

- ▶ Goodnews Bay Renewable Energy Project
- ▶ Shaktoolik Battery Energy Storage System





RENEWABLE ENERGY?
I'm a big fan.

Thank you!

Questions?

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