



Department of Energy
OIE Program Review
November 2024
Presented by Bertha Prince

Nuvista Kwethluk Energy Storage 2032-1524



Nuvista Kwethluk Energy Storage



Department of Energy Office of Indian Energy

Energy Infrastructure Deployment on Tribal Lands

Tribal Energy Development Organization (TEDO) Partners:

Nuvista Light & Electric Cooperative, Inc.

Kwethluk, Incorporated

Organized Village of Kwethluk

Period of Performance: 10/01/2019 through 9/30/2025

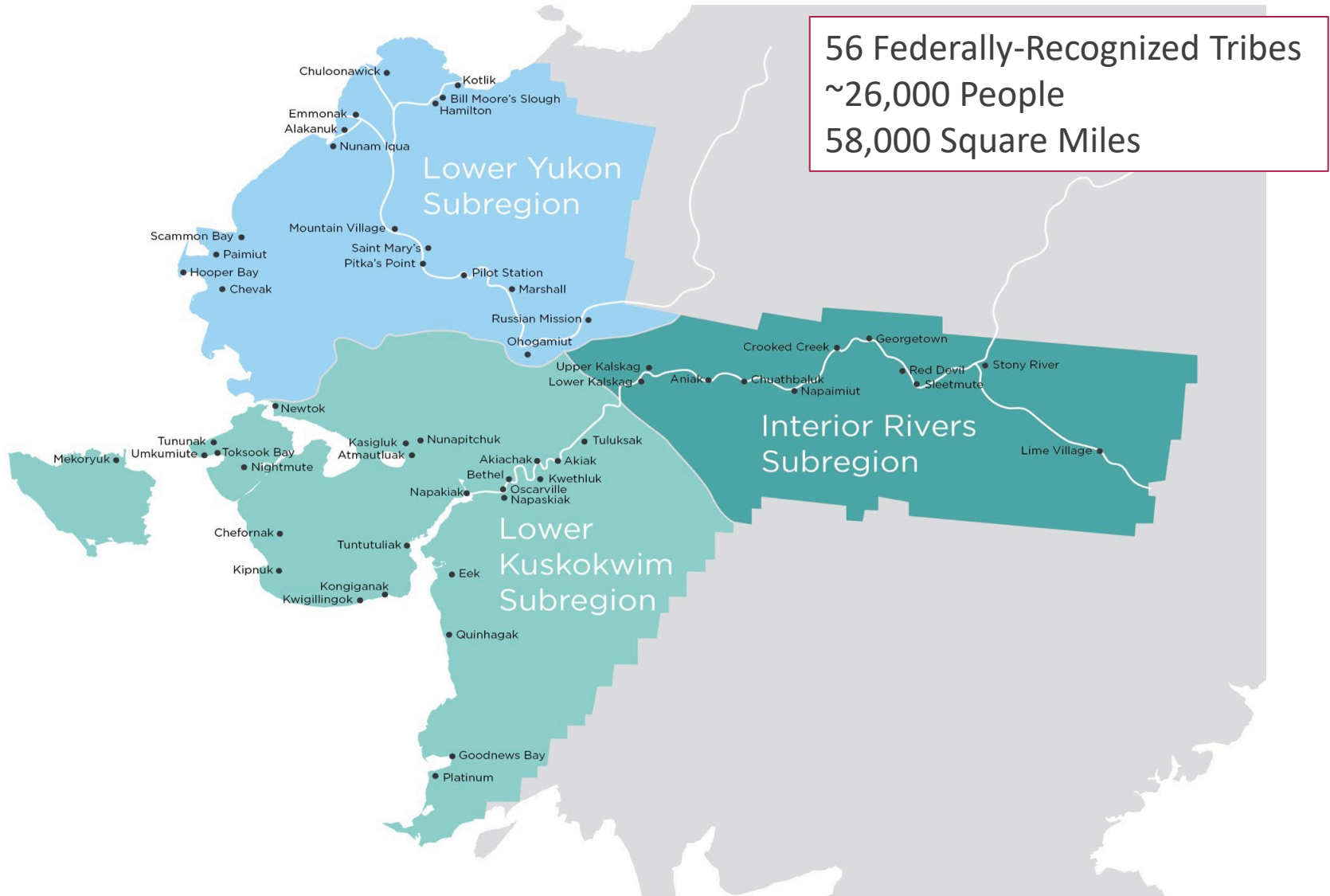
About Nuvista



Nuvista is a non-profit cooperative created by regional leaders of the Yukon-Kuskokwim Delta to help **our people** find energy opportunities that **carry our culture** and traditional **way of life** into the future.



Yukon-Kuskokwim Delta Region



Nuvista's Focus



Our mission is to achieve a **more resilient** and connected region while **empowering** our communities with access to **affordable, sustainable** energy infrastructure.

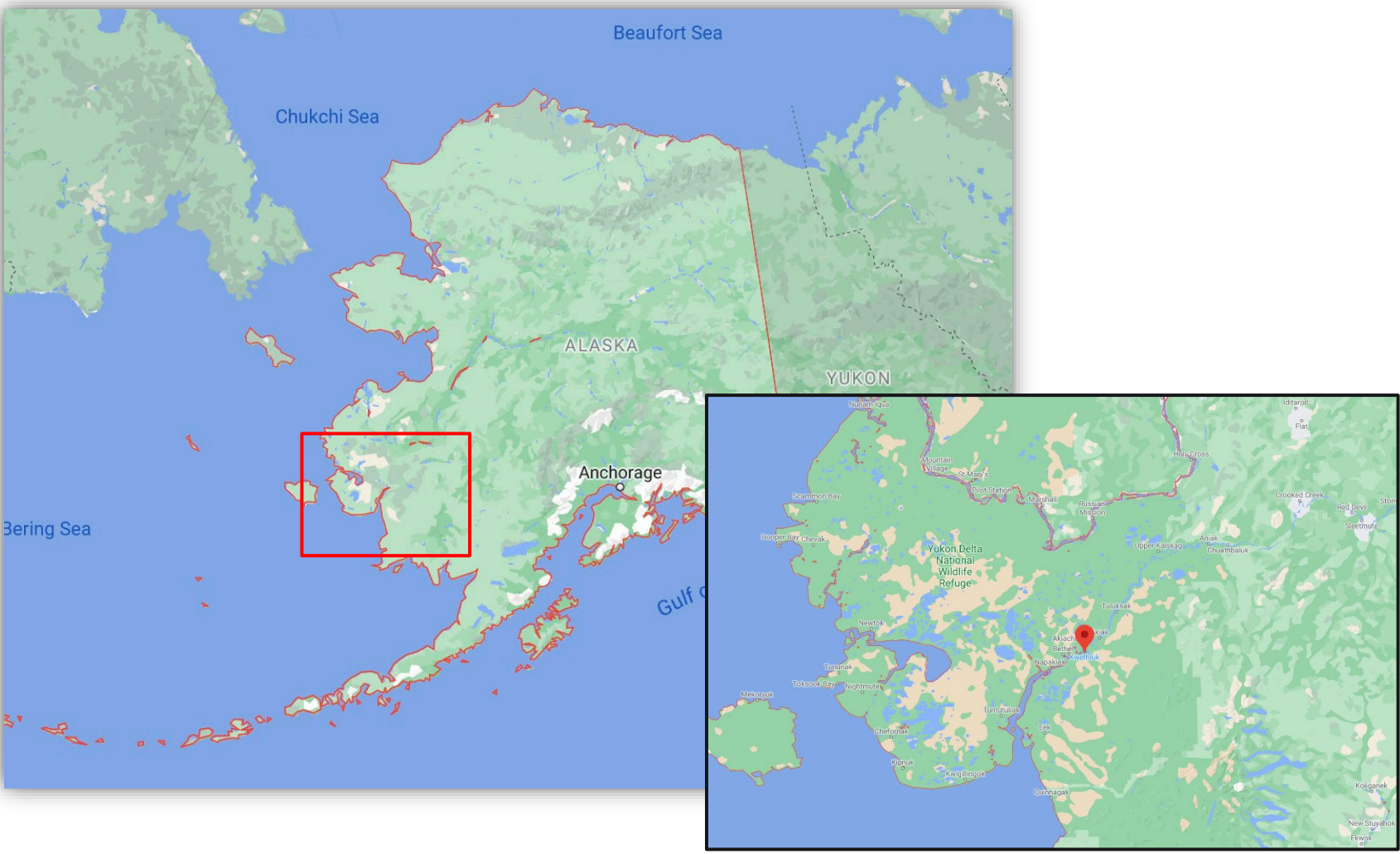
Our approach focuses on **locally-driven** energy planning and education, community **energy efficiency** efforts, energy **generation and transmission** projects.



Kwethluk, Alaska



Yup'ik: "Kuiggluk" translates to "bad river"





Project Overview

Installation of an ABB 500/670 kW E-Mesh PowerStore battery energy storage system (BESS) into the Kwethluk power plant with 2 primary goals:

1. Improve the Tribal community's energy **resilience** and energy **security**
2. Provide **grid stability** to supplement the addition of **renewables** to the Kwethluk system



Kwethluk's Electric System



- Kwethluk's current electrical system is a standalone diesel power plant with 3 generators
- Peak load is 450 kW
- Average load is 180 kW
- Kwethluk has an average of 9 outages per year
- **Project in progress:** installation of 4 100-kW wind turbines with an estimated production of 200,000 kWh/year for each turbine





Energy Security & Resilience

The BESS will provide a renewable, rechargeable, non-fossil fuel emergency power back up for community facilities during outages.

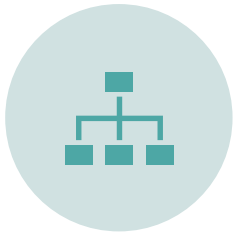
In the event of an outage, the BESS will provide emergency power to:

- The **power plant**, so that operators can complete necessary repairs
- The local **clinic, Tribal buildings and offices**, and the **Headstart building**
- Residential customers to prevent the thawing of **subsistence foods** stored in freezers

The battery will provide power for an estimated 3 hours for essential services, or 1 hour at the community's average load.



Progress To-Date



In November 2024, the Nuvista board decided to put the project on hold due to organizations restructure.



Remaining Milestones:



Commissioning of the battery (targeting the Spring of 2025)



12 months of monitoring

Quyana Cakneq!



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Nuvista Kwethluk Solar Energy Project 0177



Nuvista Kwethluk Solar Energy Project



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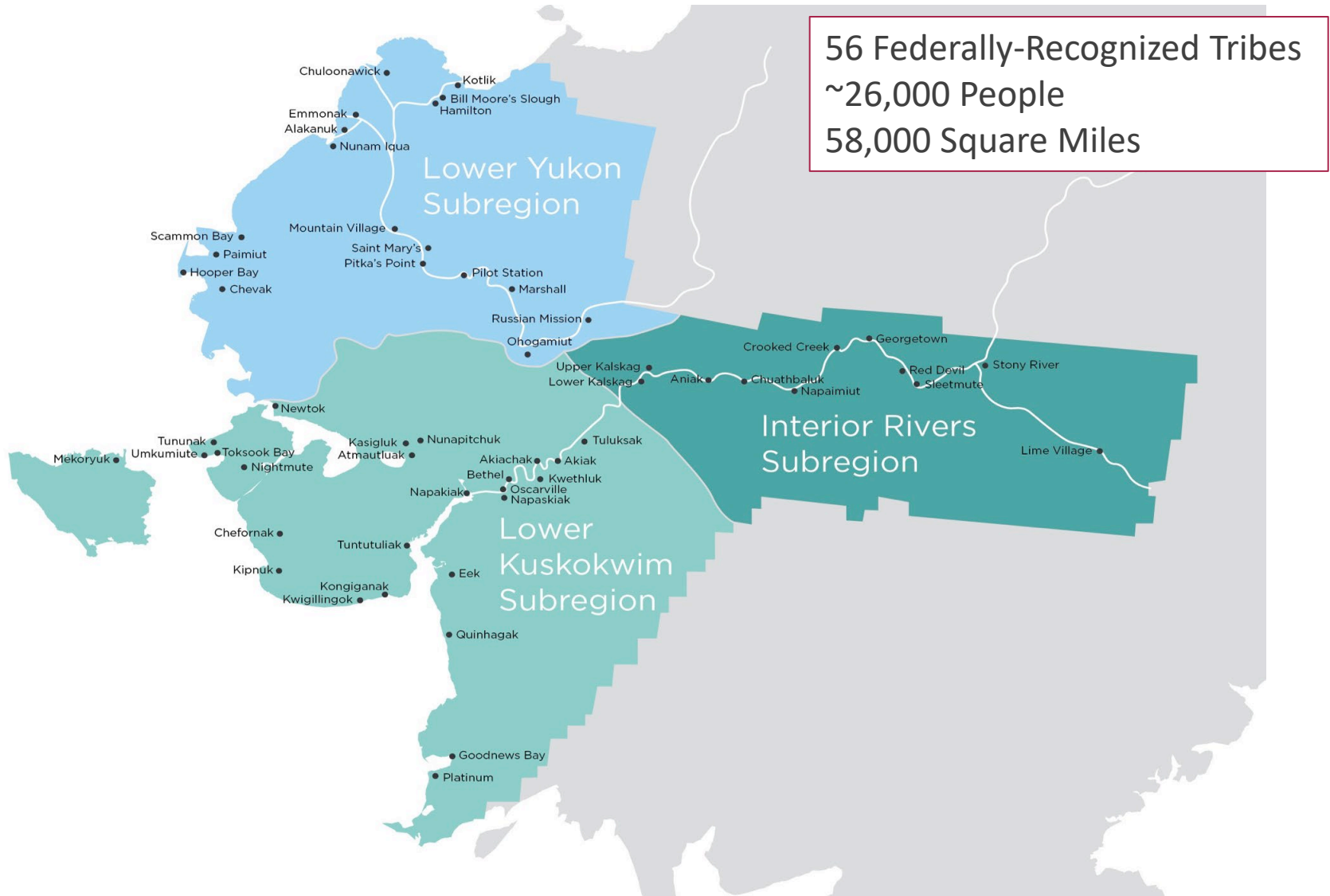
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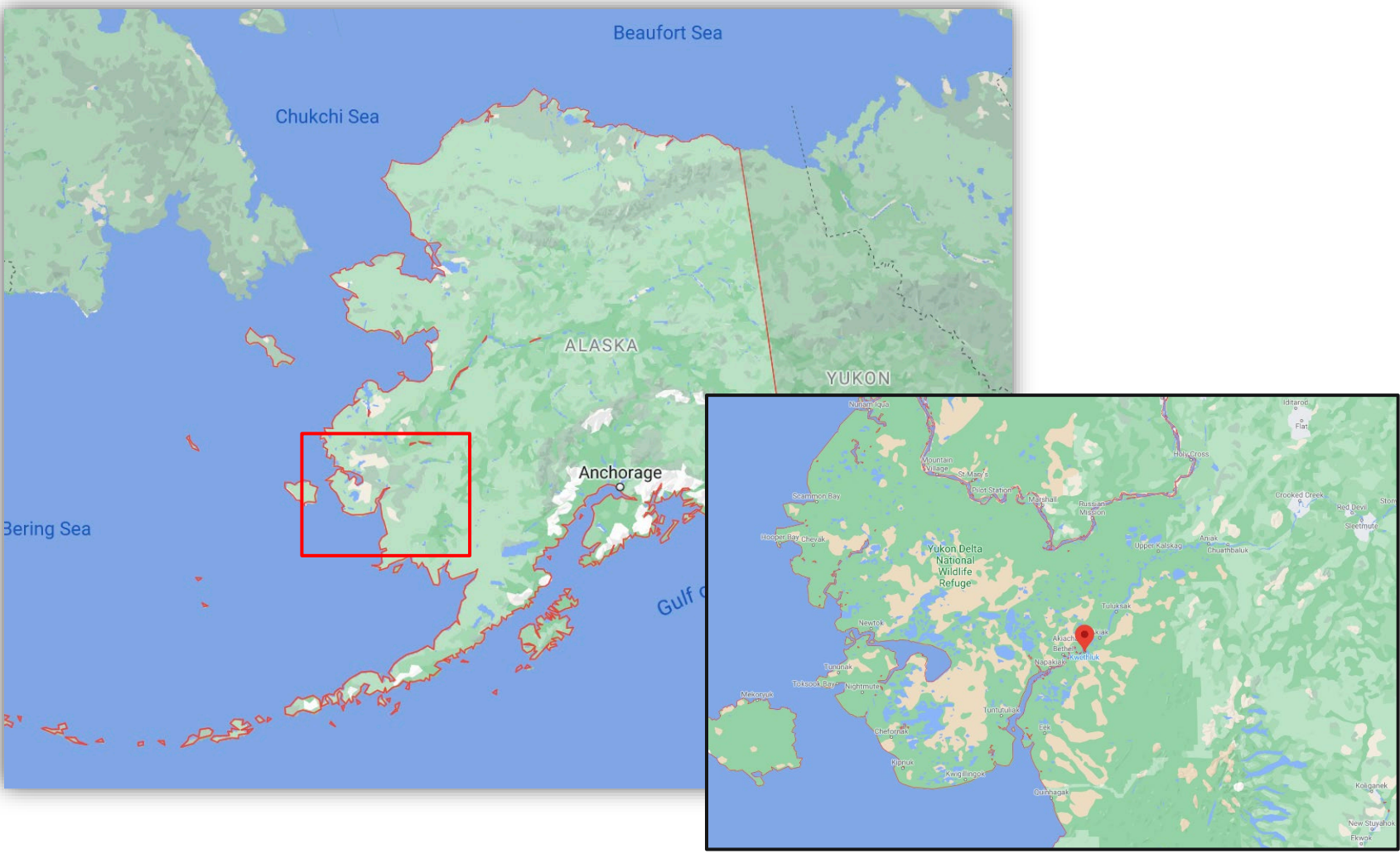
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Kwethluk, Alaska



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About Kwethluk



- Population: 756 (2018) and has grown 5% since 2000
- Median age of residents is 23.8 years old
- Median Household Income: \$47,500
- Unemployment rate: 26%
- Price of gasoline: \$7.12/gal, heating fuel: \$6.06/gal (Nov)



Project Overview

Integrate 250-kilowatts (kW) of solar photovoltaic array Installation into the existing Kwethluk wind-battery-diesel microgrid in Kwethluk, Alaska with 2 primary goals:

1. Improve the Tribal community's energy **resilience** and energy **security**
2. Leverage the existing BESS; displace 50% of diesel fuel for heat and power generation



Kwethluk's Electric System



- Kwethluk's current electrical system is a standalone diesel power plant with 3 generators
- Peak load is 450 kW
- Average load is 180 kW
- Kwethluk has an average of 9 outages per year
- **Project in progress:** finalize grant agreement with DOE



Energy Security & Resilience



The solar array will provide:

- 175,000 kWh/year of solar generated power to serve the primary community electric load
- Generate an additional 25,000 kWh/year to serve the secondary load (residential ETS stoves)
- Provide 900 hours of diesels off operation at the power plant

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Next Steps

- Request for Proposal for contractor
- Project kick-off meeting, engineering and site control
- Final design and drawings
- Solar and construction Installation Plan
- Procurement
- Mobilization and shipping
- Construction
- Commissioning
- O&M Planning
- Project monitoring and closeout



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