

Deep Energy Makeover for POSS Camp

Tanadgusix
Corporation
St Paul Island, AK

DOE Office of Indian Energy
Program Review

Denver, CO

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merges its culture with
new technology



St. Paul Island, Alaska

Pribilof Islands
750 air miles from
Anchorage and 200 miles
north of the Aleutian Chain
Population 500

Tanadgusix Corporation (TDX)

- TDX is an Alaska Native Village Corp. with a mission to provide economic well-being for the shareholders and descendants who are the indigenous peoples of St. Paul.
- TDX is parent to 21 subsidiary companies. These companies employ over 600+ employees around the US and internationally.
- TDX has invested hotels, tourism, alternative energy, electric utilities, power plants, wireless and satellite technologies, environmental remediation, construction services and maritime industries.



TDX POWER

- TDX Power Group, has successfully developed, implemented and operates cost effective energy using diesel/natural gas, while integrating renewable energies. They provide these services in some of the harshest environmental conditions known, including the North Slope Oilfields, Aleutian Chain and Bering Sea.
- TDX Power has been and will be a major contributor to our current project, POSS Camp Energy Makeover Project.



*TDX Builds the First the
High Penetration Hybrid
Wind Diesel in the U.S.*

225 kW Wind Turbine

2 x 150 kW Diesel Gensets

Digital Engine Controls

System Controllers

Remote View™ Synchronous

Condenser Heating and

Thermal Plant

Smart Grid Switching

Secondary Load Regulator



Project Goals

- Reach 80% renewable generated power of all energy consumed by 2025
- Create energy efficient space at the POSS Camp for private and public users, including the US Coast Guard Search and Rescue Squadron, Commercial Greenhouse Project and air terminal operations for local air carriers
- Training, employment, and educational opportunities for community members and outside investment on St. Paul



POSS Camp

- “Petroleum Offshore Supply Camp”
- First Native-Owned and operated independent wind-diesel hybrid plant in the US.
- Can run “diesel’s off,” and store excess energy to use as heat



Specific Improvements

- 4th Vestas V27 Wind Turbine to be installed
- POSS Camp
 - Thermal system upgrades
 - Building envelope upgrades
 - Electrical retrofit
 - Wind to heat system
 - Energy efficiency upgrades





Accomplishments

- FAA and NEPA approval of project activities
- Focused scope and budget with the help of DOE representatives
- 75% of lighting upgrades completed



In Progress Activities

- 4th Wind Turbine to be installed summer 2020
- Shipping of Wind Turbine from California to St. Paul Island scheduled for after the first of the year
- Further engineering review of thermal system upgrades to be implemented
- LED Lighting improvements partially installed to decrease safety risk and increase electrical efficiency
- Reconsidering of envelope priorities to include the “drying in” of the three main high bays

Thermal System Upgrades

- Redesign of thermal storage tank in progress
- Additional insulation of lines
- Reconfiguration of heating elements
- Possible additional storage tank



USCG Bay Roof Challenges

The envelope upgrades and drying-in of roof has considerable challenges.



Overview of Energy Improvements

- Reduce electricity use by 54%
- Reduce thermal load by approximately 23%
- Almost double wind energy contribution (from 34% to 67%)
- Reduce diesel costs by an estimated \$239,000/year, net annual savings of nearly \$200,000
- Increased revenue from leasing 28,000 ft² of climate-controlled space

