

Wind Energy Development

In the Aleutian Pribilof Islands

“The Birthplace of the Wind”

USDOE/Tribal Energy Projects Review

October 2005

By Connie Fredenberg

Aleutian Pribilof Islands Association

201 East 3rd Avenue

Anchorage, AK 99501





- Anchorage to Adak - 1,200 air miles for \$1,240
- Rich in renewable energy resources: wind, geothermal, hydro, tidal
- Home to 2,329 Unangan for over 10,000 years
- The richest marine ecosystem left in the world

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COLD HARD FACTS

- All Fossil Fuels are Imported
- Diesel up to \$2.80/gallon wholesale
- Electricity primarily produced by diesel generators
- Electricity costs between \$0.22/kWh to \$0.58/kWh to produce
- The State of Alaska's Power Cost Equalization (PCE) program subsidizes electric bills for residents
in qualifying communities

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OUR PARTNER

TDX POWER

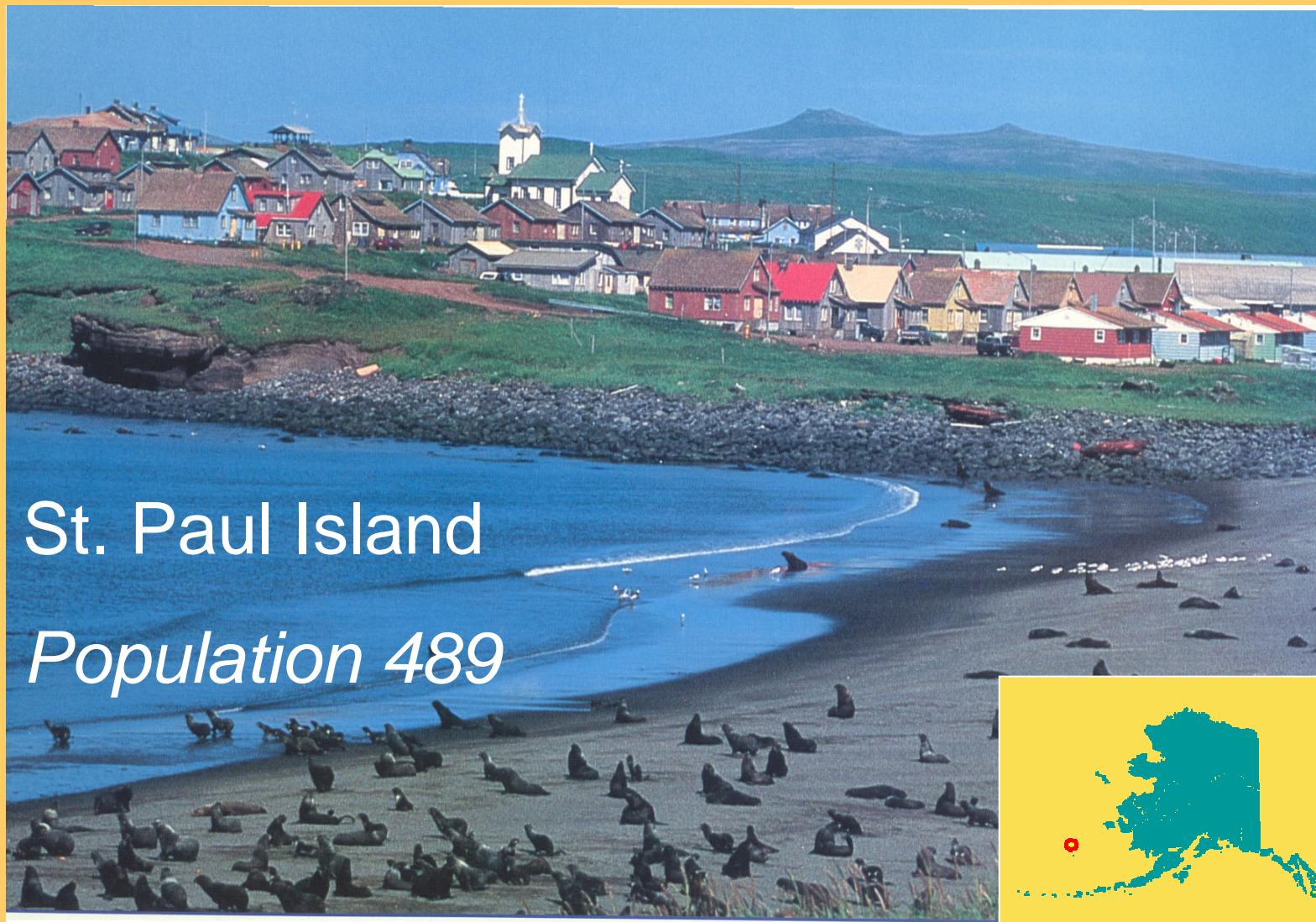
a subsidiary of
Tanadgusix Corporation
St. Paul Island, Alaska

CEO Ron Philemonof points to a still turbine. A rare site; the wind isn't blowing in St. Paul.

- North America's largest high penetration wind-diesel hybrid power plant
- \$1,000,000 cost; paid for in 5 years
- Excess electricity heats water to displace diesel heat
- Two more Vestas turbines to be installed May 2006 to help power the City

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St. Paul Island

Population 489



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It Is Not Always Winter On St. Paul

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Operator buy in and dedication is the single most important indicator of long term project success.

ST. PAUL ISLAND

Operator Paul Melovidov
Doing Winter and
Summer Maintenance



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PROJECT(ED) SCHEDULE

Village Utility Owner/Operator	Met Tower Installed (or to be installed)	Data Collection Complete	Completed Feasibility Study (Expected)	Apply for RUS Funding (Expected)	Projected Construction Dates
Sand Point TDX Power	05/2004	05/2005	10/2005	07/2005	05/2006
St. George City of St. George	08/2004	09/2005	12/2005	07/2005	????
King Cove City of King Cove	05/2005	05/2006	10/2006	????	????
False Pass City of False Pass	05/2005	05/2006	10/2006	????	????
Nikolski Nikolski IRA/TDX Power	10/2005	10/2006	12/2006	07/2005	????
Adak City of Adak	????	????	????	????	????

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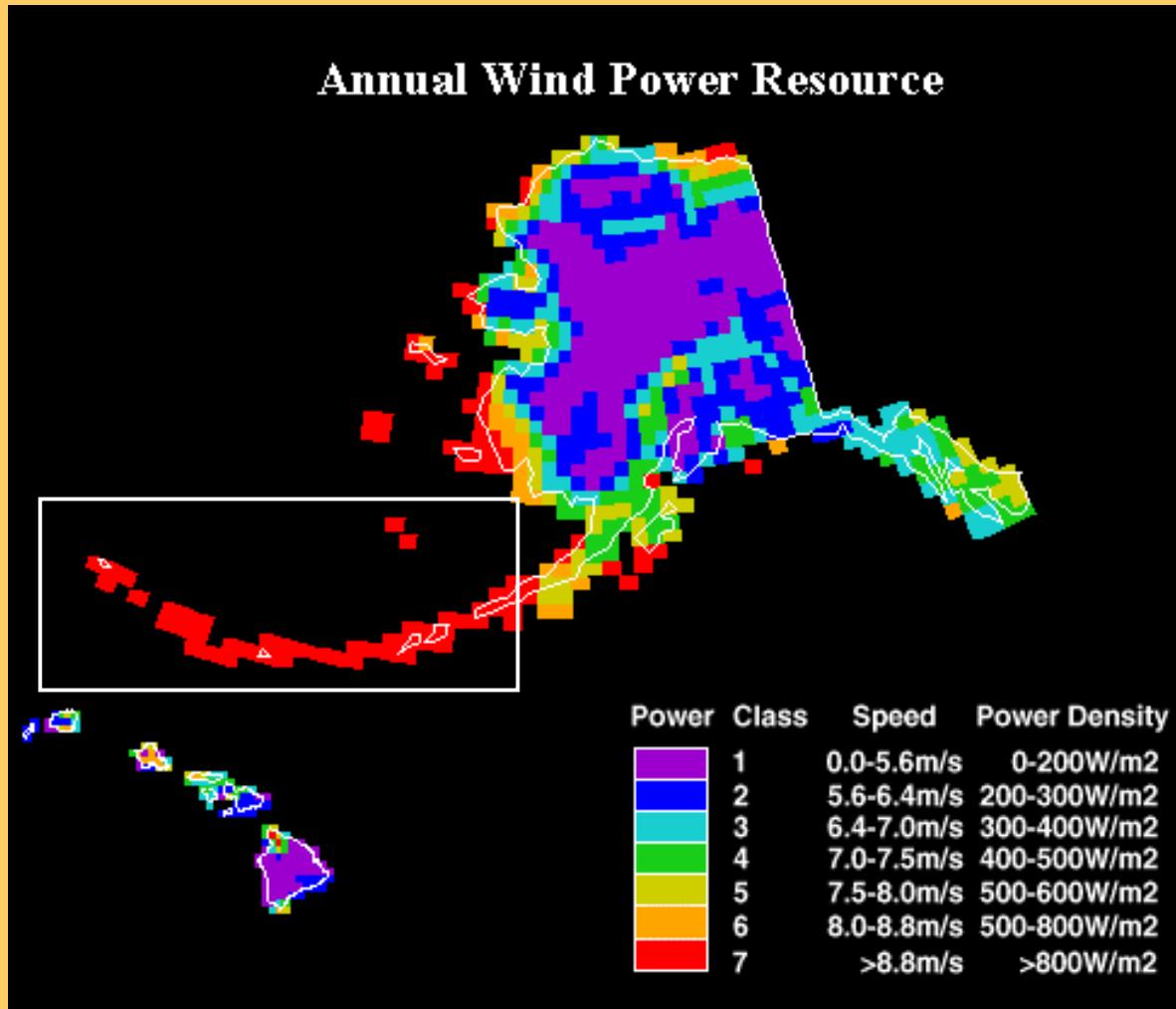


Site Selection Issues

- FAA approval
- USFWS approval
- Wind turbulence
- Excessive winds
- Soil conditions
- Proximity to powerhouse, power lines, houses, and animal trails



World Class Wind: A Mixed Blessing



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- 150 mph gusts
- Extreme Turbulence
- Corrosive Salt Spray





Millions of Migratory Birds

Largest breeding colony of
Red-legged Kittiwakes in
the world



Endangered Eiders

APIA works with local hunters, bird watchers, students , USFWS and power plant operators to prevent and monitor avian interaction.

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Avian Deterrent Devices



Before



After

A tubular turbine tower will eliminate much of the concern USFWS has with guyed met towers.

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ST. GEORGE ISLAND *Population 89* *“The Galapagos of the North”*

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Least Auklets

Red Legged Kittiwakes

ST. GEORGE ISLAND

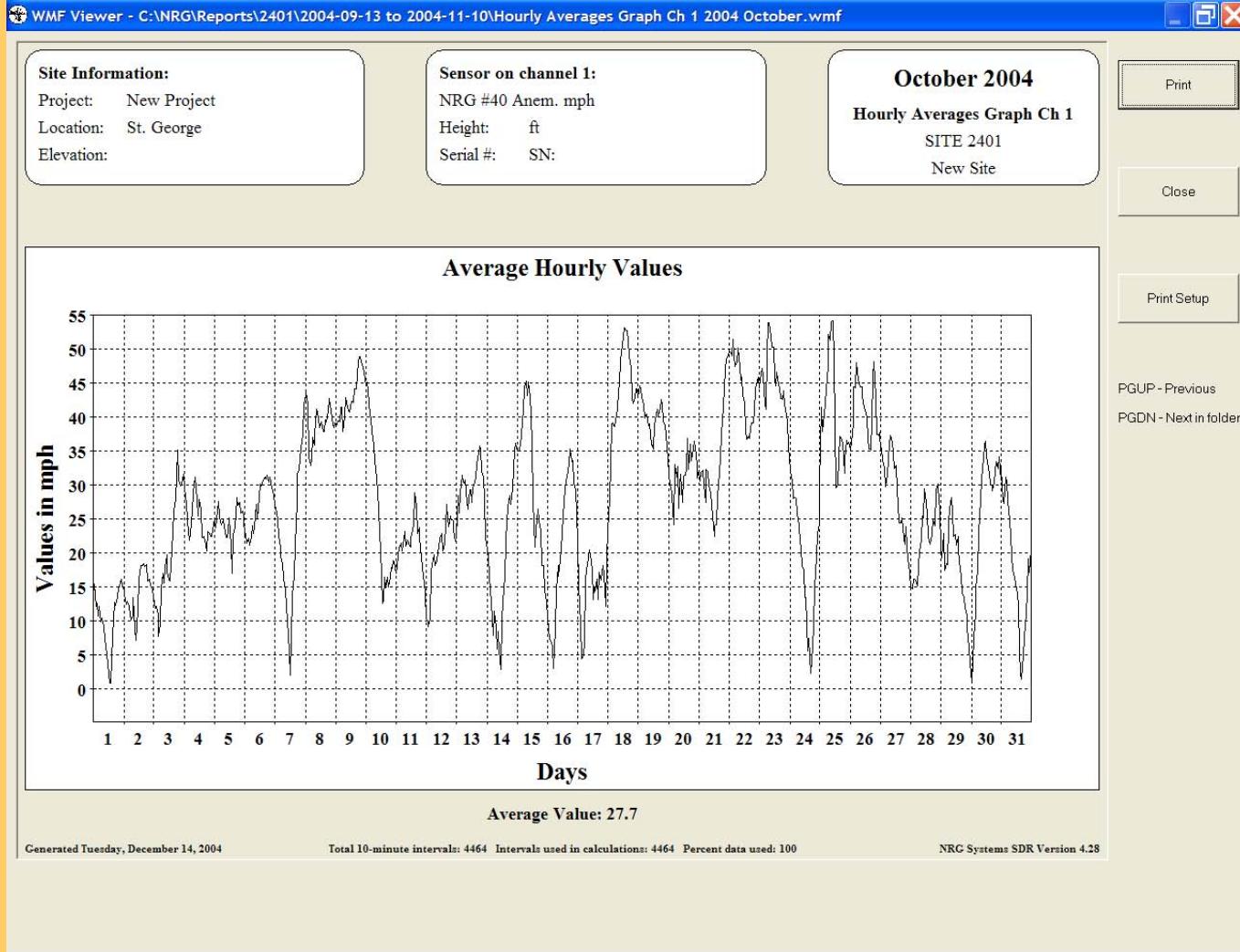


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Rodney Lekanof of
St. George Tanaq
Corporation
monitors wind and
avian interaction





St. George Wind Data

Courtesy of
AEA
Anemometer
Loan Program

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St. George Project

- Utility owned and operated by The City of St. George
- Average Electric Load is 225kW
- Peak Load is 280 kW
- Existing power plant has 2 Caterpillar 175 kW generators and a Detroit Series 60 350 kW generator
- Average Wind Speed in October 2004 was 27.7 mph



St. George Project Timetable and Progress

- September 2004
 - Anemometer installed during Community Visioning Meeting by AEA, TDX Power, Tanaq Corporation and APIA employees
- July 2005
 - Application submitted to USDA/RUS by APIA for funds to install a high penetration wind-diesel power plant
- September 2005
 - Wind Resource Data collection completed and being analyzed by the Alaska Energy Authority
- December 2005
 - Feasibility study to be completed by TDX Power
 - NEPA documents to be prepared by APIA

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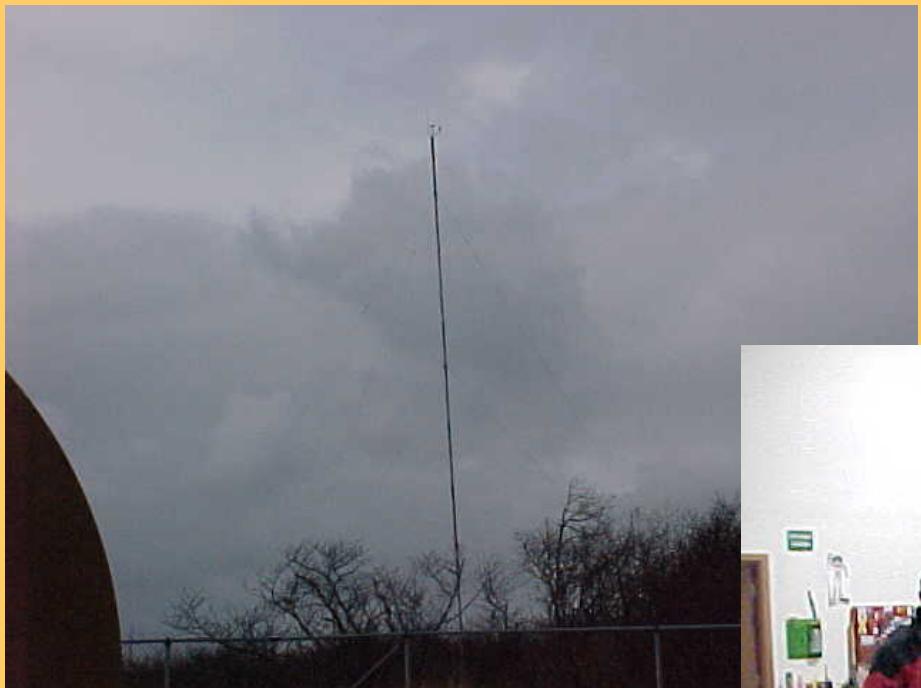
SAND POINT

Population 951



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Wind Data Collection
Completed May 2005

John Lyons, Justin
Godbehere and Art
Torres at Sand Point
Generating, Inc.



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Sand Point Project

- Utility owned and operated by TDX Power dba Sand Point Generating, Inc.
- Average Load is 600kW
- Peak Load is 900kW
- Average Wind Speed is 20 – 25 mph
- Caterpillar Diesel Generators: 2 350 kW (rarely used), 650 kW, 800 kW, 1200 kW



Sand Point Project Timetable

May 2004

- Anemometer on loan from USDOE/NREL Native Wind Program installed

April 2005

- Community Information Meeting sponsored by APIA with TDX Power

May 2005

- Wind Resource Data collection completed and being analyzed by TDX Power

July 2005

- Application submitted to USDA/RUS by APIA for funds to install a 1 MW wind turbine to integrate with the existing diesel powerhouse
- Community Information Meeting sponsored by APIA with AEA, TDX Power, USDOE/ WindPowering America, John Wade of Wind Consultants, LLC

October 2005

- Feasibility study to be completed by TDX Power
- NEPA documentation to be prepared by APIA

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KING COVE

Population 723



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King Cove
Kite flying
high
schoolers

Mama and cubs



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Ingenuity is a requirement in rural Alaskan communities.



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King Cove Project

- Utility owned and operated by the City of King Cove
- 850 kW Hybrid hydroelectric- diesel power plant
- Average Load is 500 kW
- Peak Load is 650 kW
- Glacier now feeding hydro is melting; a new stream is being studied as well as wind potential



King Cove Project Timetable

- May 2005
 - Anemometer on loan from AEA sited and installed by AEA, City of King Cove, and APIA employees
 - Agdaagux Tribal Office, Belkofski Tribal Office, King Cove Corporation Office and school principal informed and invited to watch installation
 - High School Science Class participated in Kite Flying Activity to demonstrate wind turbulence prior to installation
- May 2006
 - Wind Resource Data Collection will be completed and analyzed by AEA
- October 2006
 - Feasibility study to be completed by TDX Power
 - NEPA documentation to be prepared by APIA

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FALSE PASS

Population 50



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FALSE PASS



May 7, 2005 50 degrees F

No Wind, No Mosquitoes

And no bears...

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FALSE PASS

Will the Predator Proof Fence to be installed this month keep Mr. Bear out?



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False Pass Project

- Utility owned and operated by the City of False Pass
- Average Load is 36 kWh

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False Pass Project Timetable and Progress

May 2005

- Anemometer on loan from AEA sited and installed by AEA, City of False Pass, APIA employee and contractor

August 2005

- New modular diesel powerhouse installed by AEA
- Grizzly chewed through anemometer wires

October 2005

- AEA to take down met tower and repair grizzly damage
- City of False Pass to install Predator Proof Fence

May 2006

- Wind data collection completed and analyzed by AEA

October 2006

- Feasibility study completed by TDX Power
- NEPA documentation to be prepared by APIA

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Nikolski, Umnak Island

Continuously inhabited for over 10,000 years

Population 39

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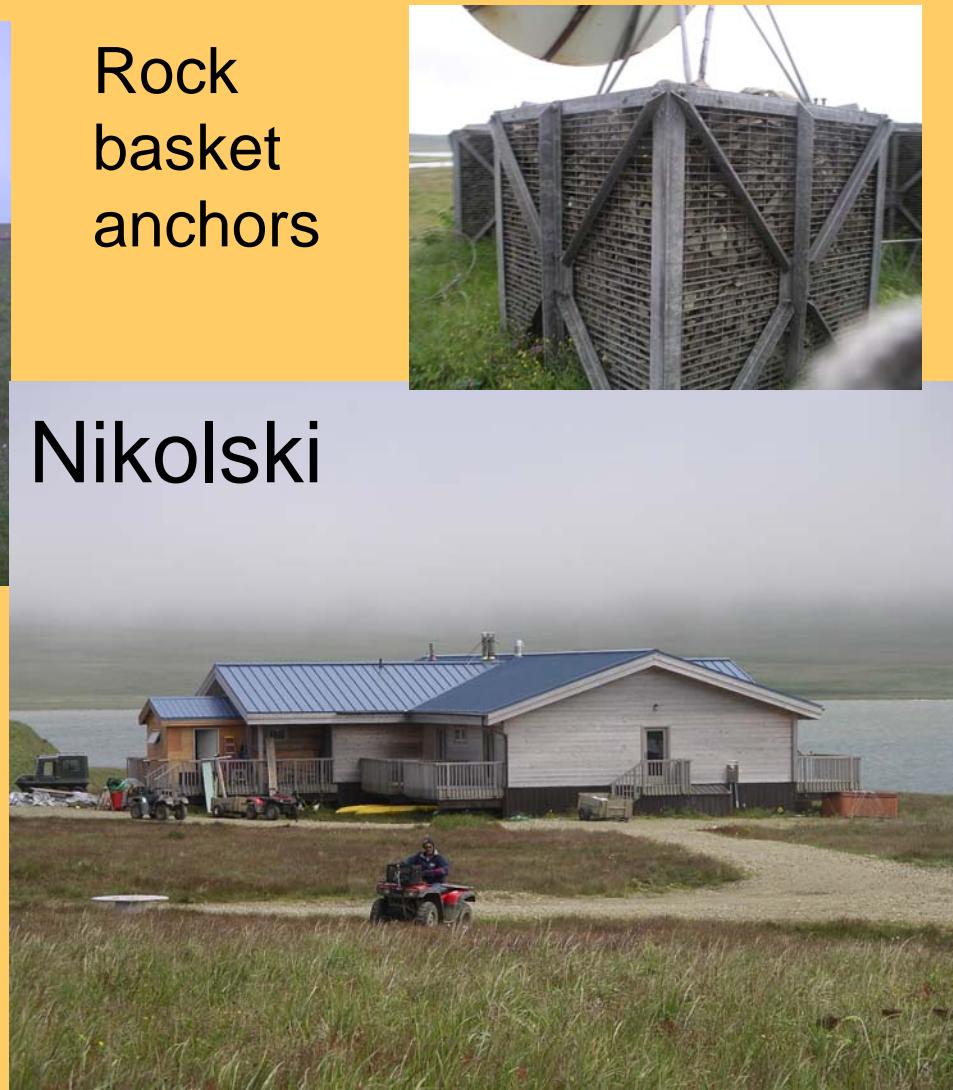


Wild horses, cattle
reindeer and sheep
wander the island

Lodge for fishermen and
duck hunters; weather
permitting

Rock
basket
anchors

Nikolski



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Nikolski Project

- Utility owned by Nikolski IRA / Primary Operator is TDX Power
- Average electric load is 25 kW
- Peak load is 50 kW
- AEA is currently installing a new diesel plant with 2 John Deere 70 kW generators and a 37 kW generator



Nikolski Project Timetable and Progress

- July 2005
 - Application submitted to USDA/RUS by APIA for funds to install a 30 kW Fuhrlaender wind turbine to integrate with the newly constructed diesel powerhouse
- November 2005
 - New modular diesel powerhouse being installed by AEA
 - Anemometer to be installed by AEA, APIA, Nikolski IRA
 - A Predator Proof Fence will surround the met tower
- November 2006
 - Wind resource data collection completed and analyzed by AEA
- December 2006
 - Feasibility study to be completed by TDX Power
 - NEPA documentation to be prepared by APIA





ADAK

Population 60

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Adak Project

- Utility owned by the City of Adak
- November 2005
 - Anemometer to be re-installed by AEA, City of Adak
 - Previous installation failed when anchors pulled out of the ground
- November 2006
 - Wind resource data collection completed and analyzed by AEA



Education and Training

Power Plant Operators have attended the following conferences and workshops thanks to the Aleutian Pribilof Islands Community Development Association (APICDA), TDX Power and the Bureau of Indian Affairs:

International Wind-Diesel Conference

Girdwood, Alaska October 2004

Wind Energy Application and Training Symposium

Anchorage, Alaska July 2005

Rural Energy Conference

Valdez, Alaska September 2005

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Renewable Energy Alaska Project

REAP

REAP's Mission: to facilitate the increased development of renewable energy in Alaska through collaboration, education, training and advocacy.

APIA joined REAP as one of 3 Native Interest Groups on the BOD in July 2005

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Made Possible with Funding and Assistance from:

Bureau of Indian Affairs / Economic Development / Training

Alaska Energy Authority / Anemometer Loan Program

USDOE / NREL / Anemometer Loan Program

USDOE / Renewable Energy on Tribal Lands

Tanadgusix Corporation / TDX Power Staff

USFWS / Stewardship Grant

Thank You Very Much

Aleutian Pribilof Islands Association, Inc.

