The background image shows a vast landscape with a range of mountains in the distance, some with patches of snow. In the foreground, there is a large, dark, rocky outcrop or island in a body of water. The sky is filled with large, dramatic clouds, with some light breaking through, suggesting a sunset or sunrise. The overall color palette is dominated by blues, greys, and earthy tones.

Kenaitze Indian Tribe Kenai, Alaska

Department of Energy
Renewable Energy Feasibility Study
2005 Report

Tribal Context

- ~1000 Tribal members; Dena'ina Athabascan traditional culture
- Involved in commercial and subsistence fishing (salmon)
- Surrounded by oil and gas development
- Very little Tribal land (corporation land)
- Municipalities and federal land (Kenai National Wildlife Refuge)

Tribal Context (Cont'd)

- Tribal Programs:
 - Housing
 - Cultural
 - Environmental
 - Elders
 - Head Start
 - Health
 - General Assistance
- Currently over 100 employees



Creating Relationships



U.S. Department of Energy

Alaska Energy Authority

Energy Technicians: Brian Hirsch and David Mogar

Homer Electric Association

Alaska Tribes

Project Goals

1. Study wind and solar energy in Kenai, Alaska
2. Conduct energy usage study of tribal office and buildings.
3. Plan energy development for the future; Tribal offices, clinics and housing.

Studying the wind...

We included our elders and families in a Renewable Energy gathering in 2004.

Alaska Energy Authority gave us help About wind technology and the tower.

Site Selection

- Bluff causes wind turbulence
- Raptor and endangered species issues
- Public use lands (dipnetting)
- Proximity to power lines
- Accessibility/constructability
- Applications (small-scale vs. industrial)
- Land ownership

Help from Alaska Energy Authority

- Why measure the wind?
- How to measure the wind
- Analyzing the wind data
- Power production from wind turbines



State Anemometer Loan Program

AEA provides:

- Tower kit
- Installation assistance
- Technical assistance

Community provides:

- Land use for 1 year of monitoring
- Installation assistance
- Maintenance
- Data collection



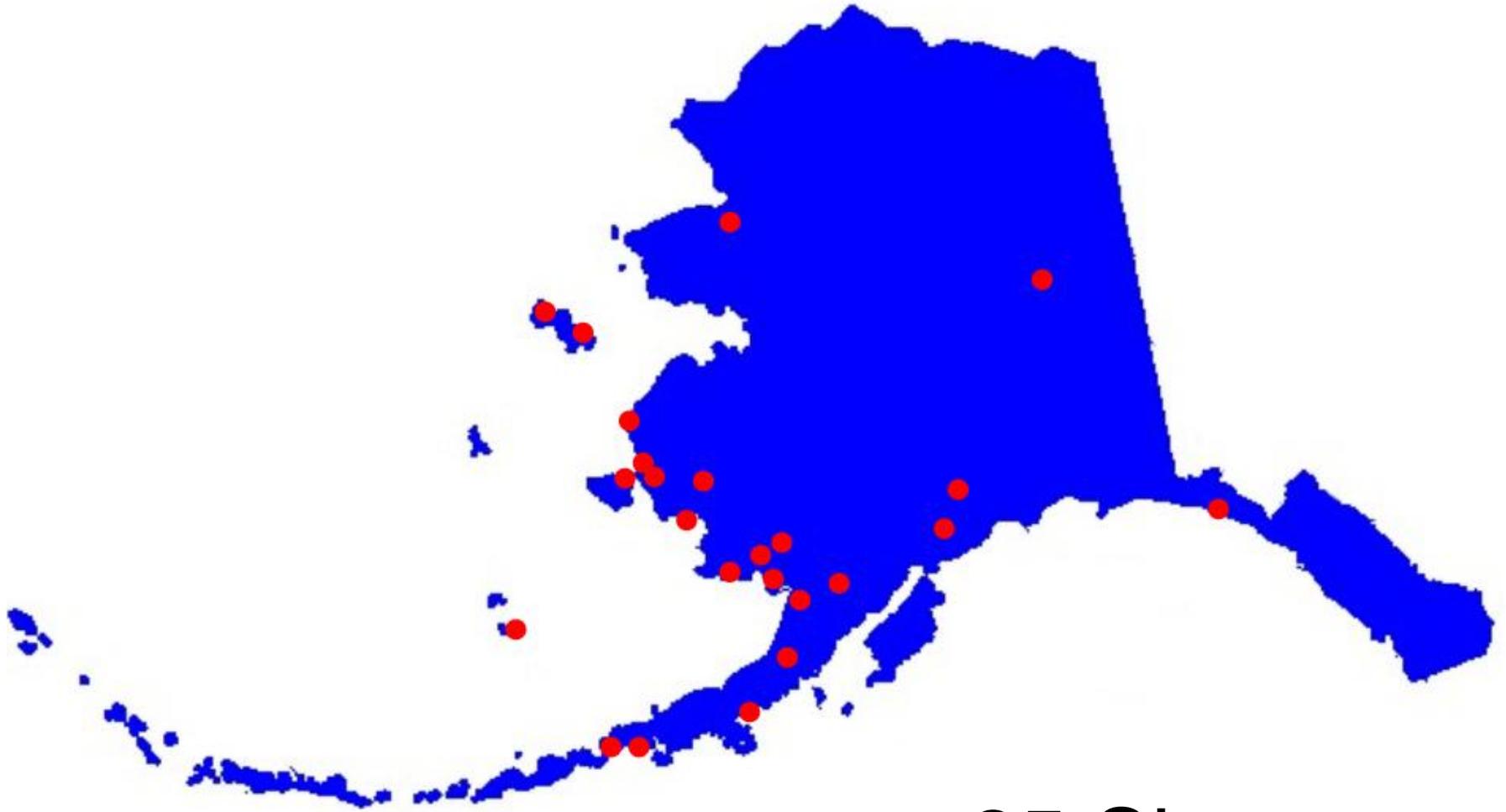
Anemometer Loan Program

Met tower kit includes:

- Anemometers
- Wind vane
- Temperature sensor
- Data logger
- 100-foot tower

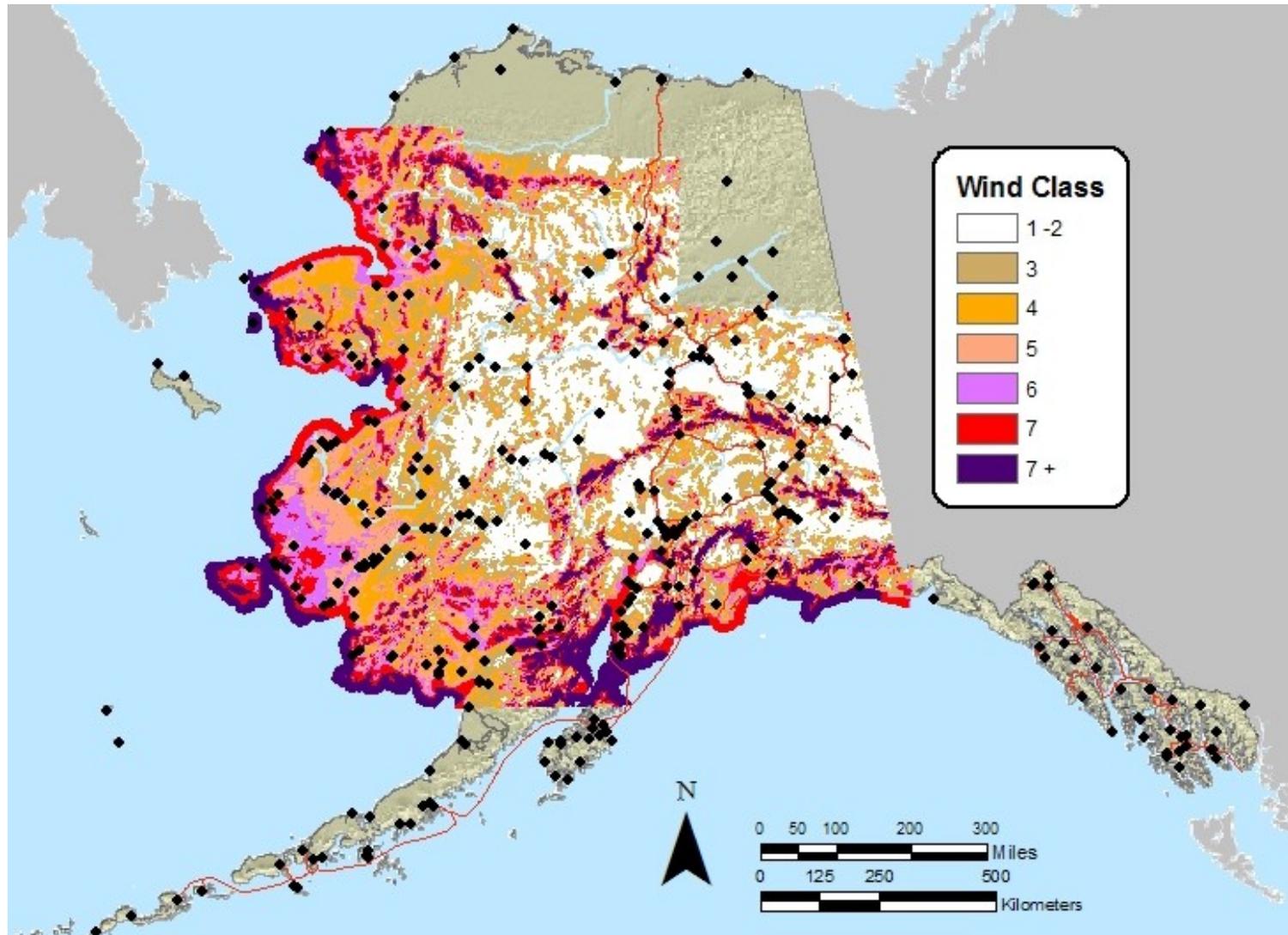


Location of Met Towers



25 Sites

Wind Map of Alaska





06/20/2005



03/29/2005



03/29/2005

Site Information:

Project: New Project
Location:
Elevation: 90

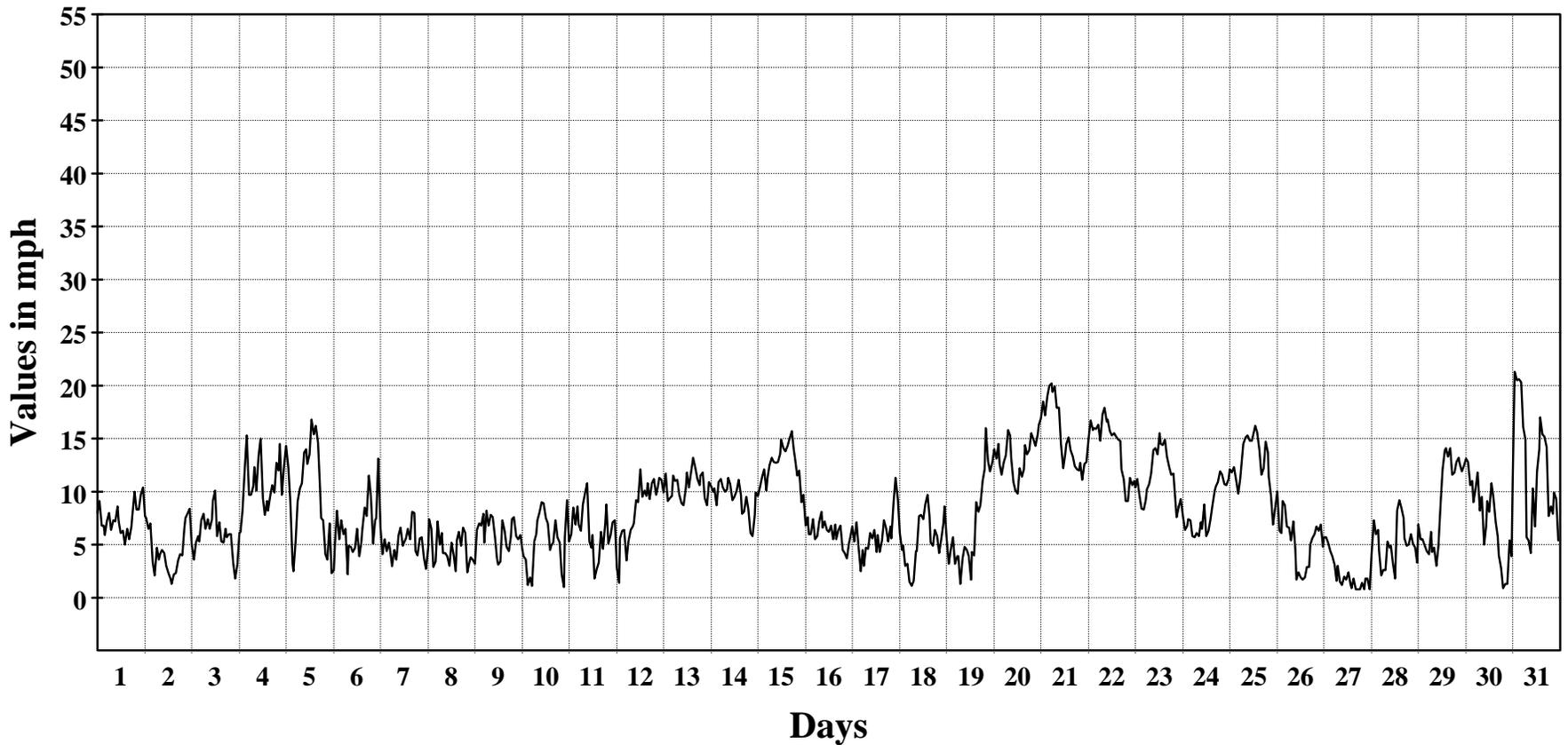
Sensor on channel 1:

NRG #40 Anem. mph
Height: ft
Serial #: SN:

January 2005

Hourly Averages Graph 2 Ch 1
SITE 5042
Kenaitze 1

Average Hourly Values



Average Value: 8.2

Wind Power Classes

1-2	3	4	5	6	7
Palmer	Naknek		Bethel	Nightmute	Kokhanok
Whitestone	Perryville		Toksook Bay		Chevak
Yakutat	Togiak			King Cove	Savoonga
Kenaitze	Dillingham			Kongiganak	St. George
Chignik Lagoon	New Stuyahok			Port Heiden	Gambell
	False Pass				

Potential Wind Power Production

Village	Production from a NW100 Wind Turbine	Capacity Factor	Potential Fuel Savings* per Turbine
Kenaitze (Nov 04- Mar05)	70 MWh/yr	8%	5,000 gal/yr
King Cove (May-July 05)	175 MWh/yr	20%	13,500 gal/yr
Kokhanok	307 MWh/yr	35%	23,600 gal/yr
Kongiganak (Oct 04 – Jul 05)	315 MWh/yr	36%	24,000 gal/yr
Gambell (Sept04-May05)	500 MWh/yr	57%	38,400 gal/yr

*Assumes diesel generator efficiency of 13 kWh/gallon.
Based on a partial year of wind data.

What have we learned?

We learned how important the feasibility study is. Original wind tower site was near the beach: windy but too “swirling” and the estuary was a protected habitat – birds and wetlands.

We needed permits from FAA and Fish and Wildlife. The site location is very important, and complicated!

Accomplishments

Increased understanding of benefits and limits of renewable energy

Completed permits and research for tower site.

Raised tower and began collecting data.

Conducted energy usage study for tribal offices.

On-going data collection for wind and solar energy.

Future Plans

Collect more data! The anemometer had to be repaired and the tower was re-set.

Work on draft feasibility study final report.

Work with our Council to include renewable energy
In new building plans and Indian housing projects.

Investigate solar thermal hot water on-site for
fossil fuel reduction (space heating and water)

Special thanks...

Lizana Pierce, our DOE Project Officer
Brian Hirsch and David Mogar, Technicians
Mia Devine, Alaska Energy Authority

Douglas James Gates, Beluga Summer photo

