Pilot Point Wind Generation Analysis & Feasibility

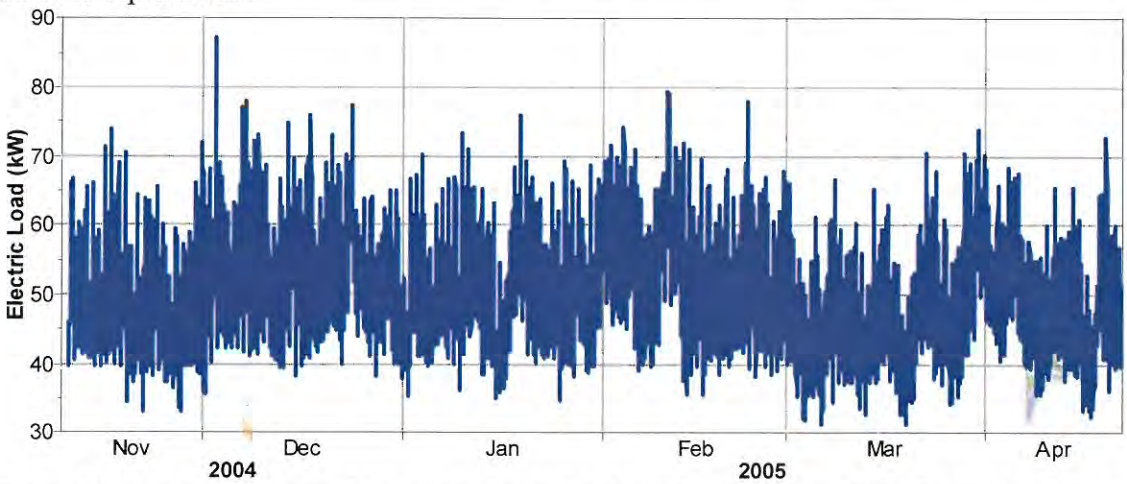
Basic Wind Plan

Introduction

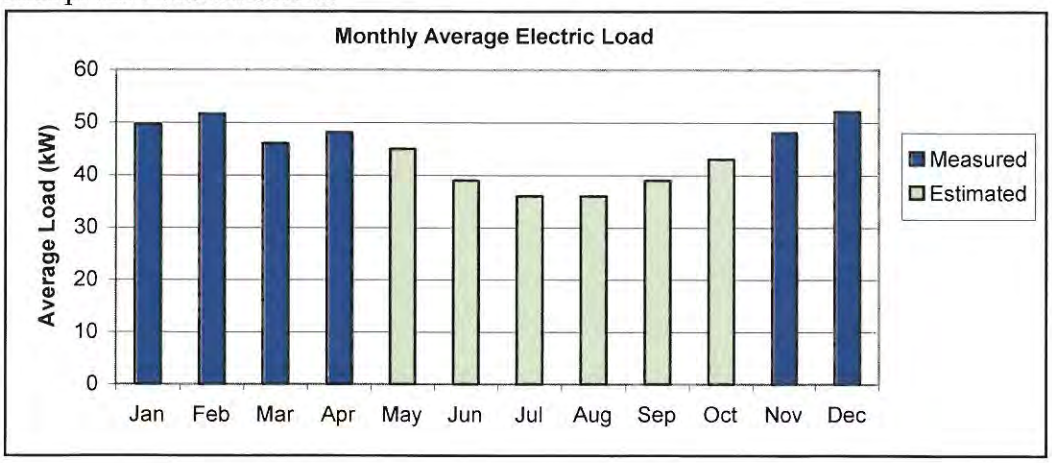
This document shows the results of a rough analysis of the options for retrofitting the existing diesel power system in Pilot Point, Alaska to a wind-diesel system. I used Windographer (www.mistaya.ca/windographer) to analyze the wind data, and HOMER (www.nrel.gov/homer) to model the wind-diesel systems.

Electric Load

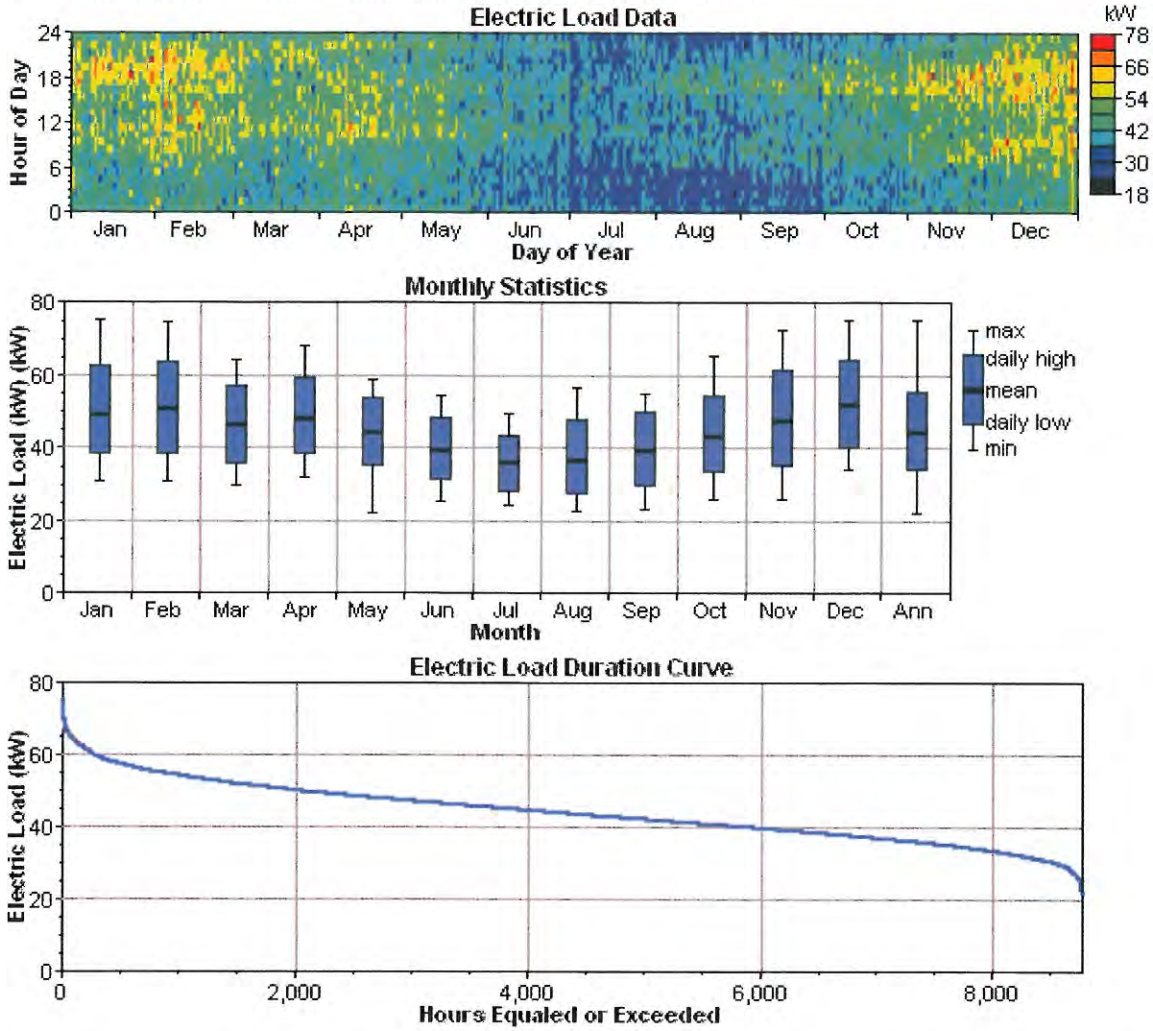
The graph below shows the measured real electric load at Pilot Point from November 2004 to April 2005:



From this measured data a 24-hour average load profile was calculated for each month then we filled in the missing May through October data by assuming that the April profile would apply to May, June, and July, and the November profile would include August, September, and November. The data was then scaled to the daily profiles to achieve the seasonal profile shown below.



The resulting electric load data appear in the graphs below:



This information indications that the wind diesel design with the current system should accommodate an electrical load of about 50 kW with a peak of less than 80 kW and minimum load of 20 kW.

Thermal Load

The AEA thermal load calculator was used to generate thermal load data with the inputs shown below. An assumed value of 46,000 gal/yr of fuel use for serving the thermal load (36,000 gal/yr for space heating and 10,000 gal/yr for domestic hot water) and with a boiler efficiency of 80%. Data from the National Climatic Data Center was for Port Heiden which was the closest reporting station having the monthly average temperatures. This data indicates that the thermal energy usage ranges from a high of 250 kW to a low of 80 kW. This thermal load requires more data collection and analysis but, is likely to coincide with the availability of wind energy.

Original spreadsheet developed by AE&E ("Recovered Heat Utilization Simulation Worksheet")
Modified by Mia Devine, Alaska Energy Authority
Last modified: March 2006

Instructions: User Inputs in BLUE
Calculated values in BLACK

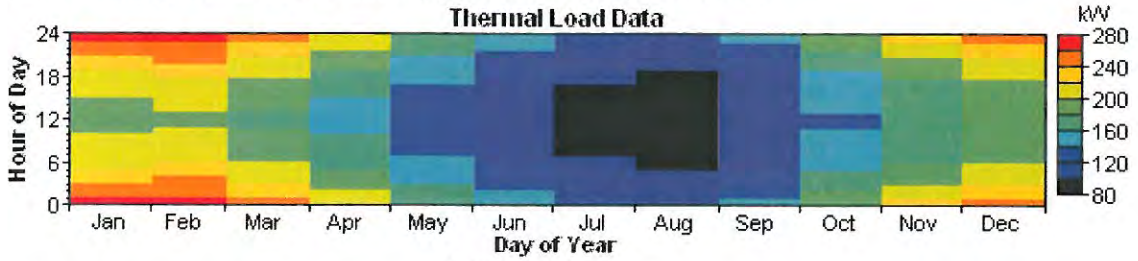
Facility:	Pilot Point	
Indoor Air Temp (F)	70	

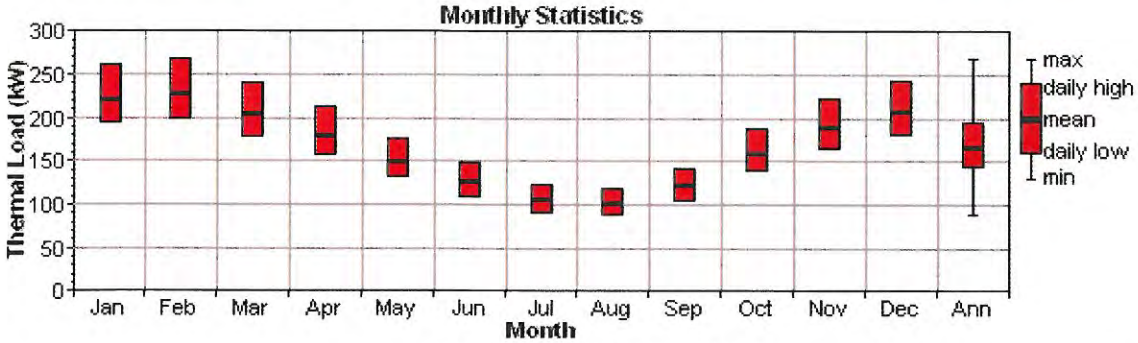
BUILDING HEATING FUEL USE:

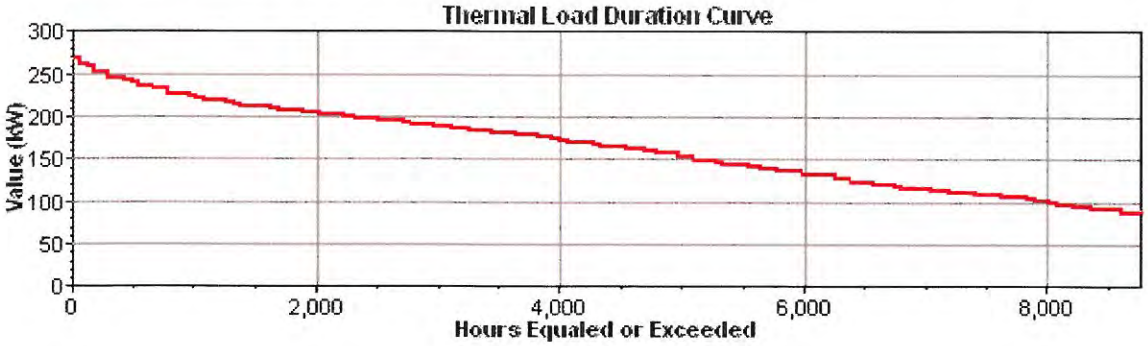
Seasonal	36,000	gal/yr
Non-Seasonal	10,000	gal/yr
Total	46,000	gal/yr
Boiler Efficiency	80%	
Fuel heat value	134,000	Btu/gal

Month	Days/Mo.	Weather Data Ave Temp (F)	Weather Data HDD/Month	Building in use? 1=yes, 0=no	Net HDD/mo	Building Heat Demand (Gal/mo)	Building Heat Demand (MBtu/mo)	Building Heat Demand (kWh/mo)	Building Heat Demand (Ave kW)
January	31	22.5	1473	1	1473	5,233	560,944	164,355	221
February	28	21.9	1347	1	1347	4,857	520,685	152,559	227
March	31	26.9	1336	1	1336	4,825	517,258	151,555	204
April	30	33.3	1101	1	1101	4,123	441,960	129,493	180
May	31	40.8	905	1	905	3,538	379,250	111,119	149
June	30	47.4	678	1	678	2,859	306,482	89,799	125
July	31	52.2	552	1	552	2,482	266,063	77,956	105
August	31	53.3	518	1	518	2,380	255,142	74,756	100
September	30	48.5	645	1	645	2,760	295,913	86,702	120
October	31	38.3	983	1	983	3,769	404,071	118,392	159
November	30	31.4	1158	1	1158	4,293	460,216	134,842	187
December	31	26.3	1355	1	1355	4,881	523,215	153,301	206
Annual		36.9	12050	12	12050	46,000	4,931,200	1,444,829	165

The resulting thermal load data appear in the graphs below.

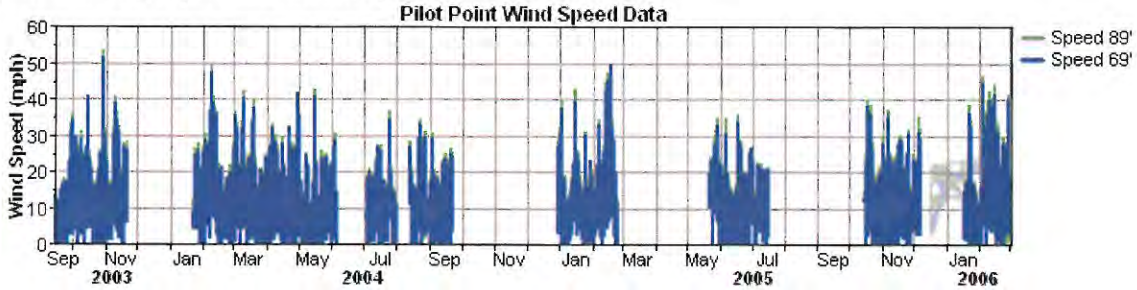




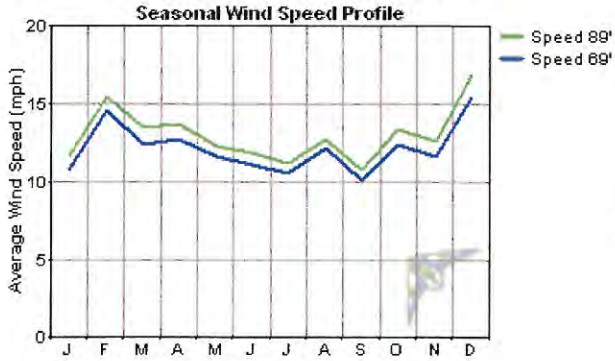


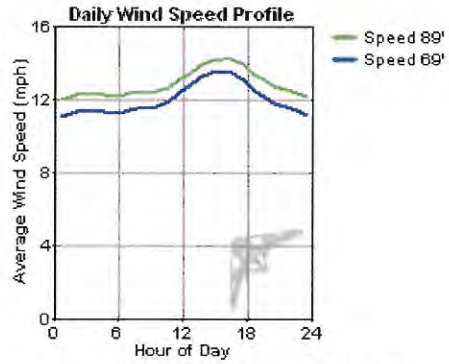
Wind Resource

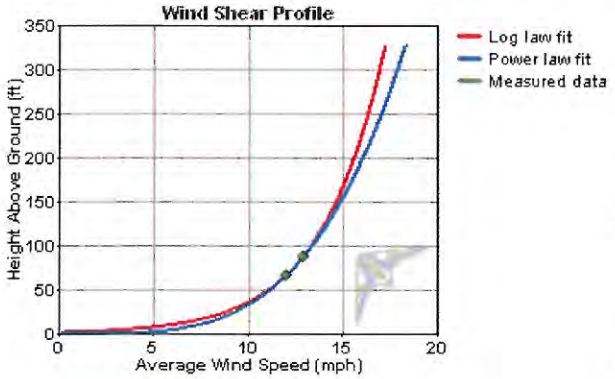
Myles O'Kelly provided a wind data set collected at Pilot Point between September 2003 and March 2006. This data set contains data from two anemometers at heights of 69 feet and 89 feet above ground. The data set contains many gaps however, it covers every month of the year and was sufficient to synthesize a year of data for use in HOMER. The time series graph and summary graphs appear below:

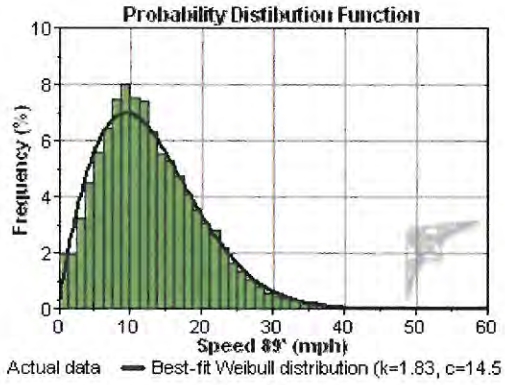


The summary graphs appear below.









This data set indicates an average wind speed of 12.1 mph at 69 feet above ground, and 12.9 mph at 89 feet above ground. From that data set, Windographer calculates that the average wind speed at 58 feet is 11.6 mph. This is much lower than the average wind speed at 58 feet of 15.3 mph reported for "the best site in Pilot Point" in the "Pilot Point Wind Speed Monitoring Project Summary Report" by David Blecker of Earth Energy Systems. Myles O'Kelly mentioned in an email that his data set was affected by tower shading, which might account for some of the discrepancy. Based on this information the data set was compared to Port Heiden data and reevaluated. While this data set will require further confirmation, an annual average of wind speed at 13.4 mph at 58 feet was

used for this report. This data translates to an average wind speed at 80 feet, the assumed hub height of the wind turbines, of 14.6 mph or 6.55 m/s. Windographer was then used to synthesize a one-year hourly data set of wind speed at 80 feet above ground from the data set that Myles O'Kelly sent, which was scaled to an average wind speed of 6.55 m/s. A sensitivity analysis from -10% to +10% of the wind speed was used to estimate annual energy output from candidate wind turbines.

Diesel Generators

Assumptions were made for the existing power plant and the new power plant appears in the tables below:

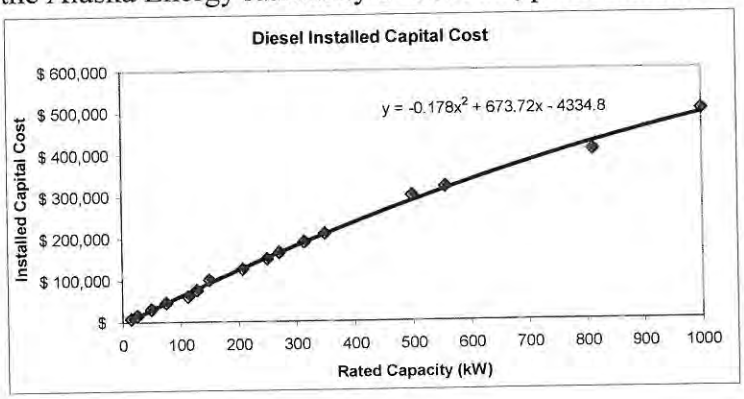
Table 1 –Assumptions for existing power plant

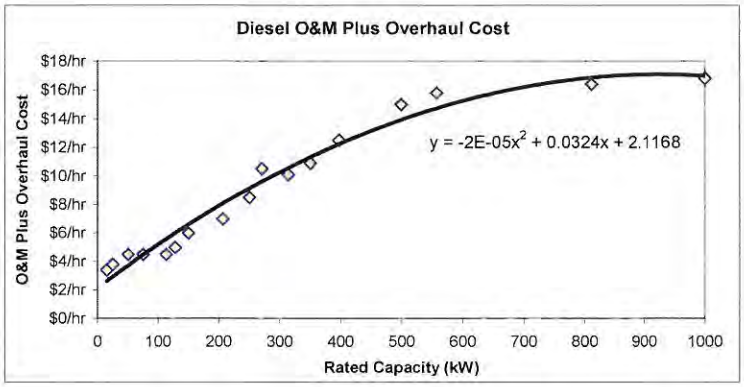
Generator	Capital Cost ($)	Replacement Cost ($)	O&M Cost ($/hr)	Lifetime (hrs)	Min. Load Ratio	Fuel Curve Intercept (L/kWh)	Fuel Curve Slope (L/kWh)
Cat 90 kW	0	55,000	4.90	80,000	30.0 %	0.0800	0.250
Cat 113 kW	0	70,000	5.60	80,000	30.0 %	0.0800	0.250
Cat 160 kW	0	99,000	6.90	80,000	30.0 %	0.0800	0.250

Table 2 – Assumptions for new diesel power plant

Generator	Capital Cost ($)	Replacement Cost ($)	O&M Cost ($/hr)	Lifetime (hrs)	Min. Load Ratio	Fuel Curve Intercept (L/kWh)	Fuel Curve Slope (L/kWh)
Existing 64 kW	0	38,000	4.10	80,000	30.0 %	0.0373	0.264
New 64 kW	38,000	38,000	4.10	80,000	30.0 %	0.0373	0.264
New 95 kW	58,000	58,000	5.00	80,000	30.0 %	0.0298	0.211

Fuel curve parameters were selected for each generator using data for the closest sized diesels generators listed on www.cat.com. Accurate information for John Deere generators was unavailable. Capital and operating costs for each generator were estimated using the Alaska Energy Authority's cost data, plotted below:





Wind Turbines

The wind turbine selected for this application was the Vestas V15. This machine is available in two generator sizes, the one rated 35 kW and the one rated at 65 kW; both were analyzed. The graph below shows a comparison between the two power curves. The table below shows the assumptions used for both turbines.

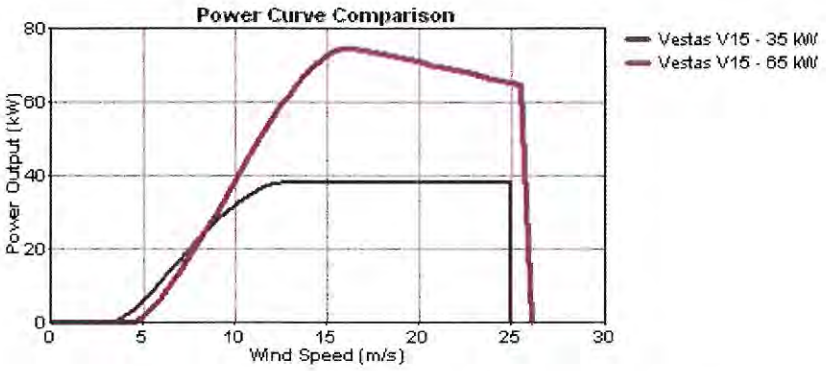


Table 3 – Wind Turbine Assumptions

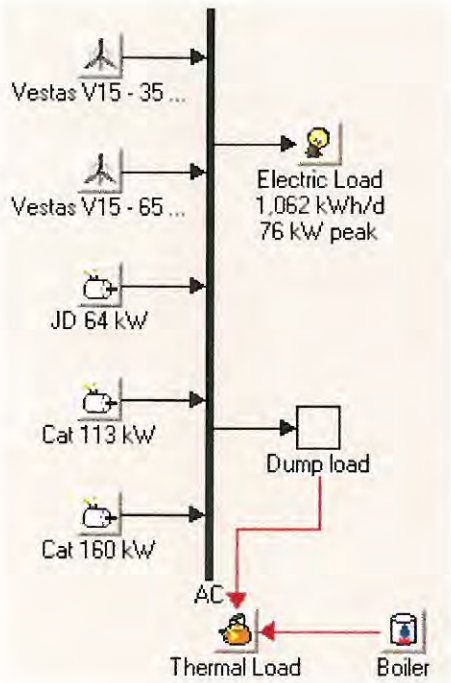
Turbine Model	Rated Power (kW)	Hub Height (m)	Lifetime (yr)	Installed Capital Cost ($)	O&M Cost ($/yr)
Vestas 15 – 35 kW	35	24.4	15	200,000	4,800
Vestas 15 – 65 kW	65	24.4	15	200,000	4,800

Economic Inputs

The economic inputs were analyzed using real discount rate of 6% and a project lifetime of 25 years. The base sensitivity analysis used a diesel fuel price of $3.50/gal and a heating fuel price of $4.50/gal. A sensitivity analysis was conducted varying those prices from -20% to +40%.

Systems Modeled

HOMER modeling was used to scope a number of system configurations. The schematic diagram of an optimized HOMER output appears below. In wind-diesel systems the excess wind power was modeled as serving a single thermal load via an electric boiler. Other options for using this energy are discussed in the more detail in the plan. The primary purpose of this analysis was to estimate the relative or energy available. For purposes of this analysis it was assumed a total capital cost of $200,000 for an energy recovery system was provided. This amount is generous and could include a number of components including an electric boiler, boiler-grid interface, some thermal electric storage, and the necessary controls.



Results

The following table compares the wind energy production and fuel savings resulting from the addition of 1, 2, or 3 wind turbines of three types: the Vestas V15 - 35kW, the Vestas V15 - 65 kW, and the Bergey Excel-S. These calculations are for the base sensitivity case, where the average wind speed at 80 feet is 6.55 m/s. All wind turbines are modeled with a hub height of 80 feet.

Table 4 – Wind Energy Production, Fuel Consumption, and Fuel Savings for Base Case Scenario

#	System Description	Wind Energy Prod.	Diesel Fuel Consumption			Diesel Fuel Consumption			Diesel Fuel Savings			Diesel Fuel Savings		
			Power	Heating	Total	Power	Heating	Total	Power	Heating	Total	Power	Heating	Total
		(MWh/yr)	(L/yr)	(L/yr)	(L/yr)	(gal/yr)	(gal/yr)	(gal/yr)	(gal/yr)	(gal/yr)	(gal/yr)	(%)	(%)	(%)
1	Existing system	n/a	125,751	183,571	309,322	33,224	48,500	81,723	n/a	n/a	n/a	n/a	n/a	n/a
2	Add 1 Excel-S	20	119,894	183,570	303,464	31,676	48,499	80,175	1,547	0	1,548	5%	0%	2%
3	Add 2 Excel-S	40	114,386	183,503	297,889	30,221	48,482	78,703	3,003	18	3,021	9%	0%	4%
4	Add 3 Excel-S	60	109,774	183,095	292,869	29,002	48,374	77,376	4,221	126	4,347	13%	0%	5%
5	Add 1 V15 - 35 kW	129	95,873	180,828	276,701	25,330	47,775	73,105	7,894	725	8,618	24%	1%	11%
6	Add 2 V15 - 35 kW	258	87,328	168,389	255,717	23,072	44,489	67,561	10,151	4,011	14,162	31%	8%	17%
7	Add 3 V15 - 35 kW	387	75,530	156,314	231,844	19,955	41,298	61,253	13,268	7,201	20,470	40%	15%	25%
8	Add 1 V15 - 65 kW	146	98,980	177,161	276,141	26,151	46,806	72,957	7,073	1,694	8,766	21%	3%	11%
9	Add 2 V15 - 65 kW	293	86,175	163,657	249,832	22,768	43,238	66,006	10,456	5,261	15,717	31%	11%	19%
10	Add 3 V15 - 65 kW	216	77,024	149,603	226,627	20,350	39,525	59,875	12,874	8,974	21,848	39%	19%	27%

The table above indicates that the maximum fuel savings would be derived from the installation of three V-15, 65 kW wind turbines. This system based on those assumptions would have the shortest payback. The following table on the next page shows the economic results for several sensitivity cases.

Table 5 – Economic Results and Fuel Consumption for Several Sensitivity Cases

#	System Description	Life Cycle Cost	Initial Capital Cost	Levelized Operating Cost	Cost of Energy	Simple Pay-back	Diesel Fuel Consumption			Total Fuel Savings
							Power	Heating	Total	
		($)	($)	($/yr)	($/kWh)	(yrs)	(gal/yr)	(gal/yr)	(gal/yr)	
	Base case: Diesel fuel $3.50/gal, heating fuel $4.50/gal, wind speed 6.55 m/s									
1	Existing system	4,738,560	0	370,682	0.393	n/a	33,224	48,500	81,723	n/a
2	Add 1 V15 - 35 kW	4,867,871	400,000	349,507	0.419	18.9	25,330	47,775	73,105	11%
3	Add 2 V15 - 35 kW	4,902,300	600,000	336,555	0.426	17.6	23,072	44,489	67,561	17%
4	Add 3 V15 - 35 kW	4,839,738	800,000	316,015	0.414	14.6	19,955	41,298	61,253	25%
5	Add 1 V15 - 65 kW	4,848,880	400,000	348,021	0.415	17.7	26,151	46,806	72,957	11%
6	Add 2 V15 - 65 kW	4,766,447	600,000	325,927	0.399	13.4	22,768	43,238	66,006	19%
7	Add 3 V15 - 65 kW	4,720,762	800,000	306,708	0.390	12.5	20,350	39,525	59,875	27%
	Sensitivity case #2: Fuel prices 20% above base case									
1	Existing system	5,594,456	0	437,636	0.453	n/a	33,224	48,500	81,723	n/a
3	Add 1 V15 - 35 kW	5,644,761	400,000	410,280	0.463	14.6	25,330	47,775	73,105	11%
4	Add 2 V15 - 35 kW	5,621,136	600,000	392,787	0.459	13.4	23,072	44,489	67,561	17%
5	Add 3 V15 - 35 kW	5,493,937	800,000	367,191	0.433	11.4	19,955	41,298	61,253	25%
6	Add 1 V15 - 65 kW	5,621,963	400,000	408,497	0.459	13.7	26,151	46,806	72,957	11%
7	Add 2 V15 - 65 kW	5,468,160	600,000	380,820	0.428	10.6	22,768	43,238	66,006	19%
8	Add 3 V15 - 65 kW	5,358,077	800,000	356,563	0.406	9.9	20,350	39,525	59,875	27%
	Sensitivity case #3: Fuel prices 40% above base case									
1	Existing system	6,448,005	0	504,406	0.513	n/a	33,224	48,500	81,723	n/a
3	Add 1 V15 - 35 kW	6,419,341	400,000	470,873	0.507	11.9	25,330	47,775	73,105	11%
4	Add 2 V15 - 35 kW	6,337,819	600,000	448,851	0.491	10.8	23,072	44,489	67,561	17%
5	Add 3 V15 - 35 kW	6,146,139	800,000	418,211	0.452	9.3	19,955	41,298	61,253	25%
6	Add 1 V15 - 65 kW	6,392,781	400,000	468,796	0.502	11.2	26,151	46,806	72,957	11%
7	Add 2 V15 - 65 kW	6,167,781	600,000	435,549	0.457	8.7	22,768	43,238	66,006	19%
8	Add 3 V15 - 65 kW	5,993,479	800,000	406,269	0.422	8.2	20,350	39,525	59,875	27%
	Sensitivity case #4: Fuel prices 20% below base case									
1	Existing system	3,882,665	0	303,728	0.333	n/a	33,224	48,500	81,723	n/a
3	Add 1 V15 - 35 kW	4,090,981	400,000	288,733	0.375	26.7	25,330	47,775	73,105	11%
4	Add 2 V15 - 35 kW	4,183,463	600,000	280,323	0.394	25.6	23,072	44,489	67,561	17%
5	Add 3 V15 - 35 kW	4,185,538	800,000	264,840	0.394	20.6	19,955	41,298	61,253	25%
6	Add 1 V15 - 65 kW	4,075,797	400,000	287,546	0.372	24.7	26,151	46,806	72,957	11%
7	Add 2 V15 - 65 kW	4,064,734	600,000	271,035	0.370	18.4	22,768	43,238	66,006	19%
8	Add 3 V15 - 65 kW	4,083,447	800,000	256,853	0.374	17.1	20,350	39,525	59,875	27%
	Sensitivity case #5: Average wind speed 10% above base case									
1	Existing system	4,738,560	0	370,682	0.393	n/a	33,224	48,500	81,723	n/a
3	Add 1 V15 - 35 kW	4,815,410	400,000	345,403	0.409	15.8	24,444	47,559	72,003	12%
4	Add 2 V15 - 35 kW	4,811,898	600,000	329,483	0.408	14.6	22,236	43,614	65,850	19%
5	Add 3 V15 - 35 kW	4,671,865	800,000	302,883	0.380	11.8	18,427	40,012	58,440	28%
6	Add 1 V15 - 65 kW	4,767,599	400,000	341,663	0.399	13.8	25,171	46,174	71,345	13%
7	Add 2 V15 - 65 kW	4,580,989	600,000	311,420	0.361	10.1	21,090	41,741	62,831	23%
8	Add 3 V15 - 65 kW	4,470,096	800,000	287,100	0.339	9.6	18,454	37,201	55,656	32%

continued…

Table 5 – continued

#	System Description	Life Cycle Cost	Initial Capital Cost	Levelized Operating Cost	Cost of Energy	Simple Pay-back	Diesel Fuel Consumption			Total Fuel Savings
							Power	Heating	Total	
		($)	($)	($/yr)	($/kWh)	(yrs)	(gal/yr)	(gal/yr)	(gal/yr)	
	Sensitivity case #6: Average wind speed 10% below base case									
1	Existing system	4,738,560	0	370,682	0.393	n/a	33,224	48,500	81,723	n/a
3	Add 1 V15 - 35 kW	4,924,064	400,000	353,903	0.431	23.8	26,312	47,982	74,294	9%
4	Add 2 V15 - 35 kW	4,998,486	600,000	344,079	0.446	22.6	24,023	45,387	69,410	15%
5	Add 3 V15 - 35 kW	5,010,299	800,000	329,358	0.448	19.4	21,502	42,676	64,178	21%
6	Add 1 V15 - 65 kW	4,930,364	400,000	354,396	0.432	24.6	27,233	47,368	74,601	9%
7	Add 2 V15 - 65 kW	4,945,832	600,000	339,960	0.435	19.5	24,501	44,636	69,137	15%
8	Add 3 V15 - 65 kW	4,972,264	800,000	326,383	0.440	18.1	22,388	41,750	64,138	22%

Definitions of Terms in Results Tables

The life cycle cost is the total discounted present value of all costs incurred over the 25-year project lifetime, including initial capital costs, component replacement costs, O&M costs, and fuel costs. The levelized operating cost is the annualized value of all non-capital costs. (Actual operating costs vary from year to year depending on whether, for example, a wind turbine needs replacement that year.) The levelized cost of energy is the average total cost per kWh produced by the system. The diesel savings is the percentage reduction in annual diesel fuel consumption compared to the existing system.
The simple payback of a system configuration is equal to its initial capital cost divided by its savings in levelized operating costs.

Appendix - HOMER Input Summary

File name: Pilot Point old diesels rev2.hmr
File version: 2.19
Author: Tom Lambert

AC Load: Electric Load

Data source:	Pilot Point electric rev2.dmd
Daily noise:	5.99%
Hourly noise:	8.75%
Scaled annual average:	1,062 kWh/d
Scaled peak load:	75.6 kW
Load factor:	0.585

AC Wind Turbine: Vestas V15 - 35 kW

Quantity	Capital ($)	Replacement ($)	O&M ($/yr)
1	200,000	200,000	4,800

Quantities to consider: 0, 1, 2, 3
Lifetime: 15 yr
Hub height: 24.4 m

AC Wind Turbine: Vestas V15 - 65 kW

Quantity	Capital ($)	Replacement ($)	O&M ($/yr)
1	200,000	200,000	4,800

Quantities to consider: 0, 1, 2, 3

Lifetime: 15 yr
Hub height: 24.4 m

Wind Resource

Data source: Pilot Point 80' synthetic.txt

Month	Wind Speed (m/s)
Jan	5.05
Feb	6.75
Mar	5.82
Apr	5.94
May	5.37
Jun	5.16
Jul	4.86
Aug	5.59
Sep	4.68
Oct	5.80
Nov	5.44
Dec	7.27

Weibull k: 1.817
Autocorrelation factor: 0.881
Diurnal pattern strength: 0.1054
Hour of peak wind speed: 15

Scaled annual average:	6.55, 5.24, 5.90, 7.21, 7.86 m/s
Anemometer height:	24.4 m
Altitude:	0 m
Wind shear profile:	Power law
Power law exponent:	0.14

AC Generator: JD 64 kW

Size (kW)	Capital ($)	Replacement ($)	O&M ($/hr)
64.000	0	38,000	4.100

Sizes to consider:	64 kW
Lifetime:	80,000 hrs
Min. load ratio:	30%
Heat recovery ratio:	0%
Fuel used:	Diesel
Fuel curve intercept:	0.0373 L/hr/kW
Fuel curve slope:	0.264 L/hr/kW

AC Generator: Cat 113 kW

Size (kW)	Capital ($)	Replacement ($)	O&M ($/hr)
113.000	0	70,000	5.600

Sizes to consider:	113 kW
Lifetime:	80,000 hrs
Min. load ratio:	30%
Heat recovery ratio:	0%
Fuel used:	Diesel
Fuel curve intercept:	0.08 L/hr/kW
Fuel curve slope:	0.25 L/hr/kW

AC Generator: Cat 160 kW

Size (kW)	Capital ($)	Replacement ($)	O&M ($/hr)
160.000	0	99,000	6.900

Sizes to consider: 160 kW
Lifetime: 80,000 hrs
Min. load ratio: 30%
Heat recovery ratio: 0%
Fuel used: Diesel
Fuel curve intercept: 0.08 L/hr/kW
Fuel curve slope: 0.25 L/hr/kW

Fuel: Diesel

Price: $ 0.925, 0.740, 0.832, 1.017, 1.110, 1.202, 1.295/L
Lower heating value: 43.2 MJ/kg
Density: 820 kg/m3
Carbon content: 88.0%
Sulfur content: 0.330%

Fuel: Diesel2

Price: $ 1.189, 0.951, 1.070, 1.308, 1.427, 1.546, 1.664/L
Lower heating value: 43.2 MJ/kg
Density: 820 kg/m3
Carbon content: 88.0%
Sulfur content: 0.330%

Economics

Annual real interest rate: 6%
Project lifetime: 25 yr
Capacity shortage penalty: $ 0/kWh
System fixed capital cost: $ 200,000, 0
System fixed O&M cost: $ 0/yr

Generator control

Check load following: Yes
Check cycle charging: No
Allow systems with multiple generators: Yes

Allow multiple generators to operate simultaneously: Yes
Allow systems with generator capacity less than peak load: Yes

Emissions

Carbon dioxide penalty: $ 0/t
Carbon monoxide penalty: $ 0/t
Unburned hydrocarbons penalty: $ 0/t
Particulate matter penalty: $ 0/t
Sulfur dioxide penalty: $ 0/t
Nitrogen oxides penalty: $ 0/t

Constraints

Maximum annual capacity shortage: 0%
Minimum renewable fraction: 0%
Operating reserve as percentage of hourly load: 10%
Operating reserve as percentage of peak load: 0%
Operating reserve as percentage of solar power output: 25%
Operating reserve as percentage of wind power output: 50%

DCED Mini-Grant Program
Pilot Point Wind Speed Monitoring Project Summary Report
Grant Number
Submitted by
Pilot Point Traditional Council
Mr. Gregory Kingsley
907-797-2273

Project Summary

Pilot Point Traditional Council initiated a wind speed monitoring program in March 2001 with the support of the Alaska DCED to evaluate if the village wind resource is viable and sufficient for the economic production of wind generated electricity and electricity cost reduction and environmental protection. Three 58 foot wind speed monitoring towers were installed in different locations throughout the village. Wind speed and other weather data were automatically recorded every 10 minutes for one year. The data were collected monthly by Pilot Point personnel and then analyzed to estimate potential annual wind energy production and wind energy costs. The results of this analysis indicate that wind energy is technically and economically viable energy resource for Pilot Point. Moreover, the wind speed monitoring project funded by DCED has had widespread positive impacts in Pilot Point and in neighboring villages such that the original DCED mini-grant was a catalyst for the formation of a regional sustainable energy collaborative between the Tribes, cities and utilities in the villages of Pilot Point, Chignik, Egegik, Port Heiden and Ugashik. This Collaborative, known as the Sustainable Energy Commission of the Alaska Peninsula or SECAP, has received financial support from the Administration for Native Americans, Environmental Protection Agency and the Alaska Conservation Fund. The work begun with the support of the DCED has blossomed into a viable regional community effort to implement sustainable energy solutions where technically feasible and economically beneficial.

Background

Pilot Point has long been interested in wind energy production as an alternative to our exclusive reliance on diesel fuel for electricity generation. The cost of diesel fuel, and hence our cost of electricity, has been marked by volatility and continually trends upward. This causes financial planning uncertainty since we can't accurately predict our energy budgets and acts as a cash drain on our local economy. That is, the more we spend on electricity, the less money we have for food, clothing, shelter and social services. The winds in Pilot Point have always been strong. We've suspected that wind turbines would work well in our community. However, without a quantitative assessment of the wind speed, we could not accurately estimate the economic and environmental benefits of wind power. We sought support from the DCED under the mini-grant program to initiate a wind resource evaluation for that purpose. We also knew that other communities in the Bristol Bay region faced similar situations as ours with respect to energy. Therefore, we hoped that our wind monitoring program would serve both as an impetus and model for other villages in the area to begin exploring sustainable energy resource development options.

Project Overview

Our wind speed monitoring project had three major objectives:

1. Evaluate and quantify the wind resource in Pilot Point to determine if wind energy would be an economic alternative to diesel electric production;
2. Involve other villages in the Bristol Bay area in our wind resource monitoring program to educate our neighbors and begin a discussion of regional sustainable energy development options; and,
3. Leverage DCED funding to gain support for additional sustainable energy planning and development efforts.

Each of these objectives was successfully accomplished and are discussed below.

Wind Speed Monitoring

In March of 2001, wind speed measuring equipment was installed at three separate sites throughout Pilot Point. Each site was selected based on a number of criteria including: land use and land ownership, proximity to power lines, topography and environmental issues. In order to maximize the effectiveness of the DCED grant, we opted to use three existing radio towers on which to install the wind measurement equipment rather than buy new towers. The radio towers, which were no longer in service, are only 48 feet tall. Optimally, we would install a 100 foot tower and measure the wind speed at 100 feet and 75 feet. These are the range of tower heights commonly used for a village scale wind turbine. Instead, we designed and installed a mast extension for the radio towers, resulting in a 58 foot effective tower height. While this is shorter than the ideal, there are well-established mathematical models for estimating the change in wind speed at any specified height.

Each tower was outfitted with two wind speed measuring devices (anemometers) located at 58 feet and 45 feet, a wind direction vane, temperature sensor and automatic data recorder with enough memory for 37 days of storage. The towers and equipment were installed over the course of four days by Pilot Pont personnel with supervision and instruction by Earth Energy Systems, Ltd., our energy planning experts. Our project personnel received training as to proper equipment operation and data collection techniques.

The data logger was programmed to record the average wind speed, wind direction and temperature on 10 minute intervals. At the end of a year, we would then have a detailed assessment of how the wind behaves on a daily, seasonal and annual basis to determine average wind speed, maximum wind speed, and the "steadiness" of the wind. Ideally, we want to see strong steady winds rather than gusty winds. A consistent wind resource allows for optimum wind energy production on a daily basis thereby allowing greater diesel fuel savings and also minimizes the stress on a wind turbine which translates into a longer operating life and lower maintenance costs.

Regional Initiatives & Outreach

The wind speed tower installation were held in conjunction with a sustainable energy project kick-off meeting in March 2001. Representatives from our neighboring villages traveled to Pilot

Point and attended a one-day workshop on wind energy facilitated by Earth Energy Systems. The workshop covered wind energy basics, site assessment, wind speed monitoring and energy project development planning. Attendees included: Chignik, Port Heiden, Ugashik, Egegik and Lake and Peninsula Borough. At the end of the workshop, all participants agreed to work together to develop and implement a regional sustainable energy program based on wind power and energy conservation.

That initial meeting has since led to the creation of the Sustainable Energy Commission of the Alaska Peninsula or SECAP. The guiding principles of SECAP are presented below.

The Sustainable Energy Commission of the Alaska Peninsula (SECAP) promotes the development of economically and environmentally sustainable energy resources for the common good of our communities.

The guiding principles of SECAP are to:

1. *Function as a community-driven representative organization and operate with full accountability to our people;*
2. *Increase our self-reliance and protect our environment through the use of local natural resources and decrease the use of imported fuels;*
3. *Partner with other entities where such collaboration will benefit the interests of our communities and our residents;*
4. *Advance and promote public policies that support our mission and our communities;*
5. *Obtain resources for the implementation of our objectives;*
6. *Create durable and skilled job opportunities in our communities through training for our residents;*
7. *Improve education and career opportunities for our residents, our youth and future generations;*
8. *Engage in outreach and education for the betterment of our residents;*
9. *Operate in a culturally sensitive manner;*
10. *Promote development of Memoranda of Agreements between appropriate entities addressing public power issues;*
11. *Coordinate spill response efforts and equipment sharing;*

SECAP has since held several meetings and its members have attended wind energy training workshops in the lower 48. Additionally, two SECAP villages – Egegik and Port Heiden – are scheduled to have wind speed monitoring towers installed in their communities this summer.

Additional Support

We have been able to leverage the DCED mini-grant funds into additional support for Pilot Point and the members of SECAP. To date, we have received a two-year grant from the

Administration for Native Americans that will support SECAP's development and assist with the technical and economic evaluation of sustainable energy resources in the SECAP communities. We have also received funding from the US EPA to support wind speed monitoring and resource evaluation in Egegik and Port Heiden. Finally, the Alaska Conservation Fund is supporting SECAP's organizational development efforts. We are grateful for DCED's initial support and believe that the mini-grant program was critical to the initiation and success of our regional efforts.

Wind Monitoring Results

Note: Our wind speed data was temporarily lost due to computer issues. This report provides a summary of the wind speed evaluation results and impact on electric costs based on preliminary data. We are working on retrieving the lost data and will provide a more detailed wind speed analysis as soon as it becomes available.

The best site in Pilot Point shows an average wind speed of 15.3 miles per hour (mph) as measured at the 58 foot anemometer height. At an installed wind turbine tower height of 80 feet, the estimated wind speed is 16.0 mph and at 100 feet, the wind speed would be 16.6 mph – an eight percent increase over the monitored height. These wind speeds correspond to a "Class 5-6" (with Class 7 as the highest or best) wind resource as defined by the industry standard Battelle wind classification system.

For evaluation purposes, we estimated the energy production and economics of a single 10 kilowatt (kW) wind turbine such as the Bergey Excel. A single 10 kW machine would be able to directly tie into to our existing electric system without modifications and without adverse impacts on the diesel plant. Based on the performance characteristics of the Excel, it would produce over 30,000 kWh on an 80 foot tower and over 33,000 kWh at 100 feet. This is equivalent to 5.8 percent and 6.4 percent of our 514,320 kWh annual energy needs respectively.

With an estimated $50,000 installed cost, a 10 kW turbine would save Pilot Point between $6,400 and $7,000 annually (depending on tower height) in avoided diesel fuel and diesel power plant operation and maintenance costs. Over its 20 year expected operational life, we would save between $127,000 and $140,000 and realize a simple payback period of just over seven years.

These estimates are based on a simple economic analysis, assuming Pilot Point pays the full cost of a turbine (i.e., grant availability was not considered) and do not include the effects of inflation and rising diesel fuel prices. Additional wind turbines, would have a significant positive effect. For example, two 10 kW wind machines would save us approximately $16,000 per year and have a simple payback period of about three years.

Additional Benefits

The wind speed monitoring program has resulted in additional benefits to our community and the people of Pilot Point and the Bristol Bay region. First is that as a result of our outreach activities, our youth are taking an interest in renewable energy and believe that its development can provide skilled jobs in the community. To further support our youth, we are looking into

options for renewable energy curricula in our schools and how to integrate the electrical and meteorological data from our wind energy development program into the classroom on a real time basis.

An additional benefit is that the people in our community have an increased awareness of energy issues and the relationship between power generation options and the economic and environmental impact in our villages. This awareness has led to full community support for sustainable energy development initiatives. This support is critical and necessary for the success of our ongoing and future efforts.

Finally, our sustainable energy efforts have resulted in increased cooperation and support among our tribal, city and borough governments. All parties recognize that each brings unique perspectives and abilities to the table and further realize that all of our people, regardless of intuitional or political affiliation, will benefit from increased cooperation and development of cleaner and less expensive sources of energy.

Next Steps

Now that the wind speed resource monitoring is completed, we have several tasks ahead of us. These include:

Decommission Wind Speed Monitoring Towers

Our intent is to shut down and remove two of the three monitoring stations. The equipment from the two decommissioned towers will be sent back to the factory for inspection and repair, if needed, and will then made available to other villages in our region. The third tower at the best wind site, will remain in operation in order to develop a long-term comprehensive wind speed data base for Pilot Point.

Install Wind Turbine(s)

Based on the results of the wind speed analysis, we now know that wind energy is a viable and economic alternative to our exclusive use of diesel fuel for electricity. We are actively seeking financial support for the installation of one or two small (10 kilowatt) wind turbines as a demonstration project as well as for the installation of detailed performance monitoring of the turbine(s) so that we can effectively share the results and impacts of wind energy on our fuel use and costs with all who are interested.

Continue SECAP Development

We will continue to support SECAP's principles and work to obtain support for SECAP's activities.

Institutionalize Energy Education

It is our goal to develop and/or obtain and implement energy education curricula for our schools. We will work with the other villages in Bristol Bay as well as the borough school district to achieve this objective for the benefit of our people and our youth.

Wind Generation for Lake and Peninsula Borough Communities

It is obvious in rural Alaska that our dependence on imported oils has left our survival as communities in serious doubt. Just as we are the first to experience global warming, we are also the first to feel the threat of living at the end of a long, unpredictable supply chain that is precariously at risk. Although we live in an oil rich state, our resources are piped over 800 miles, shipped several thousand, refined and are purchased at competitive prices to be shipped several thousand miles back. In western Alaska that shipment delivery length is doubled with the seasonally unpredictable and the physically unstable transfer and storage of relatively small loads of fossil fuels. These sales are dependent upon increasingly fewer shippers and paid for in advance by already financially stressed communities who must store enough fuel to last an unpredictably long winter. At a time when we have surpassed peak world oil production and now must compete on an open market with the developing economic giants of China and India as well as deal with the possible supply interruptions of hurricanes, war and increasingly unstable politics.

In the Lake and Peninsula Borough most of the coastal villages depend entirely upon oil for heat as well as power. At this time our most abundant, technologically advanced, and feasible form of alternative energy is wind power combined with diesel generation. Currently, the government funding opportunities are increasingly difficult to obtain with federal funds being diverted to war efforts and state funding reduced due to diminishing oil reserves this, at a time when interest and necessity in renewable energy is gaining nationwide attention. Many states are now providing tax breaks, energy credits, and economic incentives for companies who invest in renewable energy as well as carbon penalties for those who do not. Some of these companies are looking for outside investments to capitalize on these opportunities, especially in situations wherein they cannot change their own operations to qualify. These companies are interested in large scale, multiple community projects that can offer a sizable benefit and also provide a positive public relations reward. Alaskan villages are prime for both.

Given the similarity of most of the Lake and Peninsula communities in size, resources and interconnectedness, we are excellent candidates for an investment that could easily be reproduced in multiple villages, thus attaining uniformity in systems, economies of scale in purchasing, freight, and installation, as well as operation and maintenance streamlining. The benefits to the investors not only insures success by duplicating systems that can be managed jointly, but gives them the added promotion of assisting not only the numbers of communities but, also tribes, cities, and independent utilities over a large and attractive part of rural Alaska.

Before any such renewable energy project can be entertained, a thorough investigation of the resource at each site must be completed. For wind this includes multiple tower and anemometer installations with winds- speed and direction, measured over at least a one year period, preferably longer. Between a wind assessment project executed by BBNC for

the villages of Kokhanok and Perryville and, through the efforts of SECAP - Sustainable Energy Council of the Alaska Peninsula, the villages of Pilot Point, Port Heiden, Ugashik, Egegik and Chignik Bay all have complete wind anemometer studies. Although there are varying conditions, most of the studies have resulted in excellent resources for wind energy. Two of the villages have had small -10kWh installations in place for over three years with positive success.

The next step is to develop comprehensive energy plans for the communities interested in developing renewal energy, whether it be through wind, hydro, tidal, biomass or a new technology. This entails, among other things, an analysis of loads, existing and potential generation, varying conditions, existing infrastructure, and utility functioning evaluation. A very useful tool for calculating many of these components is the HOMER analysis. It is a free software program available on the Alaska Energy Authority website in which the utility's data is input into the program and the calculating template generates the necessary information with which an engineer can proceed with a feasibility study and preliminary system design. Discussions with the Bristol Bay Campus resulted in agreement upon the need for training in use of this program for each village interested in moving forward with developing renewables as a component to solving their own energy crisis.

Given the urgency of need, climate of interest, and stage of readiness that many of our villages are at, assistance from umbrella organizations, assisting agencies and governmental entities should move with expedience to solve this critical component to our survival.

Gregory Kingsley

Environmental Priorities:

Voted on and adopted by the Pilot Point Tribal Council at their 12-29-05 Special Meeting:

1. Pollution prevention though fossil fuel reduction.
2. Safe drinking water
3. Landfill upgrade with enclosed burnbox
4. Oil spill prevention and response
5. Toxic and hazardous waste removal and disposal
6. Quality of subsistence foods
7. Indoor air quality
8. Environmental education and recycling
9. Ugashik Watershed Protection
10. Fuel storage dams and liners

Priority one is being addressed through energy planning and developing our wind generation capacity. We may be funded next summer to increase our capacity by two more generators.
Priority two-Safe drinking water can be achieved through protection from spills and through the City's VSW project to install water filters in all the houses with poor water quality.
Priority three – The VSW project will address most of the solid waste issues however funding for an incinerator is not included at this time and monies won't be forthcoming for over a year from now. I will be writing a proposal to the Denali Commission for an incinerator due Jan. 31st.
Priority four – As well as a HAZWOP class this spring/fall we will have trainings for spill response as part of our emergency response training. There are funds in IGAP to purchase a zodiac to launch booms and an evaluation of all home tanks will be completed this spring.
Priority five – all the batteries will be stored in the cannery in battery totes. When a barge with backhaul capability to an affordable disposal is available, we can ship them out. I will be attending a Brownfields training to address the asbestos problem that the cannery may have.
Priority six – Pilot Point has been asked to volunteer as the control group for a Harvard Medical School Study to test Port Heiden for toxins in their diet. Any abnormalities found in subsistence foods should be reported and we can send in samples to be tested.
Priority seven – I will be attending a week long indoor air quality training in Juneau in March. Since most homes in Pilot Point have basements, testing for radon is necessary.
Priority eight – I'll be teaching a unit this spring at the school for stream/lake water quality assessment and environmental awareness.
Priority nine – Ugashik Watershed Council will have a meeting in March, has a newsletter coming out next week and will be doing watershed assessments on Ugashik Lakes (six sites) King Salmon River, Dog Salmon River, Meshik River, Cinder River and Dago Creek.
Priority ten - We may have to use our fuel tank liner if the Energy Authority does not fund the Bulk Fuel & Energy Upgrades that the City was scheduled to receive. They are proceeding with design and engineering however, the funding is not committed yet.

UAF/Bristol Bay Campus-Dillingham, March 19-21, 2006

Term: Spring 2006
Course Title: **EXPLORATION OF ALTERNATIVE ENERGIES**
Dept. & Num: **RD F193P B04**
Instructor: Todd Radenbaugh
Office telephone 907-842-5109
EMAIL: bftar@uaf.edu
Credits: 1
Prerequisites: None
Grading Policy: Pass/Fail
Dates: March 19th -21st (Sunday -Tuesday)
Times: Sun 6pm-9pm (available for student consults)
Monday & Tuesday 9:00am-6:00pm
Place: Dillingham UAF Bristol Bay Campus
Text and Materials: *Energy Power Shift* (ISBN: 0-9758500-0-6) Barry Hanson
Instructor Provided Handouts

Course Description: With rising fuel prices and limited oil reservoirs how much longer can rural Alaskan economies depend on fossil fuels? Renewable energy comes from sources that can be maintained without depletion. Five renewable energy sources are discussed: sun, wind, water, geothermal and biomass. This course provides an overview of renewable energy allowing participants to discuss with experts the practicalities of applying some of these energy resources in the Bristol Bay area. In our quest to satisfy our seemingly insatiable energy wants and needs, energy use always introduces some new environmental issues that need to be discussed.
Links to renewable energy information
Wind: http://www.nesea.org/energy/info/wind.html.
Solar Electricity: http:// www.nesea.org/buildings/info/solarelectricity.html.
Solar Hot Water: http://www.nesea.org/buildings/info/solarwater.html.
Geothermal: http:// www.geothermal.marin.org/pwrheat.html#Q2
Ground Source Heat Pumps: http://www.igshpa.okstate.edu/geothermal/geothermal.html.
Hydropower: http://www.eere.energy.gov/windandhydro/hydro_basics.html.
Biopower: http://www.nesea.org/energy/info/biopower.html.
Hydrogen Fuel Cells: http://www.eere.energy.gov/RE/hydrogen_fuel_cells.html.
Oregon State University: http://zebu.uoregon.edu/2001/phys162.html.
WI University's Focus on Energy: http://www.focusonenergy.com/page.jsp?pageID=566

Course Objectives: To help participants gain a fundamental knowledge about renewable energy and how to incorporate renewable energy into their daily lives and to understand the benefits and barriers of using renewable energy. Participants will gain insight into the renewable world by discussing case studies and talking directly with experts in renewable energy.

Teaching Methods: Lecture, demonstrations, and discussion.

Expectations of Course Participants: Participants will attend the entire course and participant in and contribute to the class discussions. The web sites of reference and reading materials will be reviewed before the class so participants can share their learning and insights during the course.

Evaluation:

Attendance – 20%, Participation – 40%, Asking questions – 40%

EXPLORATION OF ALTERNATIVE ENERGIES
Course Schedule

Sunday evening – 19.March.06

5:00 – Reception, introductions and computer demos.
6:00 – Presentation: Overview of energy current use and energy demands of the US and world - When will our oil run out? – Todd Radenbaugh
6:45 – Why we need a local alternative energy policy – Nels Andersen
7:00 – Personal carbon budget calculations.

Monday morning – 20.March.06

8:00 – Coffee
8:30 – Presentation: What is, and where do we find petroleum – Todd Radenbaugh
9:20 – Discussion "With all this Alaskan oil, how secure is our local petroleum supplies and what does it cost?" – Frank Corbin
10:40 – Break
10:50 – Presentation: How are Dillingham's current energy needs met? – Laural Sands
12:00 – Lunch break

Monday afternoon – 20.March.06

1:00 – Presentation: Overview of alternative energy sources for rural Alaska – Nels Anderson
2:00 – Basics of wind turbines, and lessons learned at Pilot Point – Greg Kingsley and Connie Fredenberg
4:00 – Break
4:10 – Presentation and discussion: Energy needs in Bristol Bay and the potential of geothermal energy using Iceland's experience. Suzanne Lamson
5:00 – Discussion: Culture and energy. Moderator: Connie Fredenberg
6:00 – Adjourn for the day

Tuesday morning – 21.March.06

8:00 – Coffee
8:20 – Presentation: Solar energy; active and passive – Todd Radenbaugh
9:20 – Presentation and demonstration: hydrogen power – Bill Rodawalt
10:20 – Discussion of using technologies on the edge in rural Alaska. Q & A with Barry Hanson (Author of Energy Power Shift)
12:00 – Lunch break

Tuesday afternoon – 21.March.06

1:00 – Reducing energy costs using alternative energy sources – Donna Vukich
2:30 – Feasibility of using alternative energies in rural Alaska – Chris Rose
4:00 – Discussion of Bristol Bay region energy and feasibly of sources other then petroleum. Moderator: Nels Anderson and Chris Rose
5:30 – Closing remarks – Todd Radenbaugh
6:00 – Final discussion/comments

Energy Class Presenters

Nels Andersen, Jr. – Chairman, Rural Energy Action Council, Dillingham, AK
Phone: 907.842.2366
Email: andora.nushtel.net

Frank Corbin – General Manager, Nushagak Cooperative, Dillingham, AK 99576
Phone: 907.842.5251
Email: jlamb@nushagak.coop

Connie Fredenberg – Aleutian - Pribilofs Association, Palmer, AK 99645
Phone: 919.222.422
Email: constancef@apiai.com

Barry Hanson
Phone: 715-373-5059
www:energypowershift.com

Greg Kingsley, Pilot Point Tribal Council, Environmental Planning, Box 448, Pilot Point, AK 99649.
Phone: 907.797.2273 or 907.797.2200
Email: gkingsleypip@yahoo.com.

Suzanne Lamson, Naknek Electric Association, Inc, P.O. Box 118, Naknek, AK 99633
Phone: 907.246.4261
Email: suzanne.lamson@gmail.com.

Todd Radenbaugh, Assistant Professor, UAF, Bristol Bay Campus, P.O. Box 1070, Dillingham, AK 99576.
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Donna Vukich, General Manager, Naknek Electric Association, Inc, P.O. Box 118, Naknek, AK 99633.
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Email: dvukich@bristolbay.com

Policies:
Attendance is mandatory. Late assignments are not accepted without prior approval of instructor. The instructor reserves the right to amend this course outline as needed. UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others.

Support and Disability Services:
UAF Disability Services for Distance Students
UAF has a Disability Services office that operates in conjunction with the College of Rural and Community Development (CRCD) campuses and UAF's Center for Distance Education (CDE). Disability Services, a part of UAF's Center for Health and Counseling, provides academic accommodations to enrolled students who are identified as being eligible for these services.
If you believe you are eligible, please visit http://www.uaf.edu/chc/disability.html on the web or contact a student affairs staff person at your nearest local campus. You can also contact Disability Services on the Fairbanks Campus at (907) 474-7043, fydso@uaf.edu

In Compliance with UAF Faculty Senate Resolution/2004

Wind Turbines in SECAP Villages:

Issues Regarding Ownership, Responsibility, and the Distribution of Renewable Energy's **Costs** and **Benefits**

Who will own the wind turbine?

- Who determines ownership?
- Can SECAP influence decision on ownership?
- Can there be multiple owners?

Possible owners might include:

1. Native Council
2. City government
3. Electric utility
4. SECAP
5. funding groups, or other '*investors*' ?

- Ownership <u>may</u> depend upon understandings about ownership that may exist between entities that won funding and groups that funded equipment purchase.
- Ownership <u>may</u> depend upon which groups' funds are marked as spent on purchase of turbine equipment.

What are the *financial* Benefits and Costs?

Primary Costs

1. liability insurance in case of injuries or damage from blades flying off or tower falling in a storm
2. O&M labor and materials for tower, turbine, inverter, and other components
3. component replacement insurance (optional)

Primary Benefits

1. owner(s) of wind turbine have option to sell it
2. owner(s) of wind turbine 'sell' wind energy to utility
3. utility buys less diesel fuel for generators

Why is ownership important?

Responsibility for:

1. managing and funding long-term operation and maintenance (O&M) **COSTS**
2. funding insurance **COSTS**
3. demonstrating **BENEFITS** to 'investors' (eg: funding groups, the community, SECAP, future funding groups, etc)

Multiple entities could share these responsibilities, and yet not all be owners.
But entities responsible for financial COSTS deserve equal amounts of financial BENEFITS.

Can *financial* Costs and Benefits be measured so they can be distributed?

Costs

1. liability insurance:
   - 👎 cost may depend upon existing liability insurance policies of owner(s)
   - 👍 once purchased, cost may vary from year to year but can be known
   - 👍 possible to maintain an insurance fund from benefits
2. O&M:
   - 👎 labor and material amounts may vary from year to year
   - 👎 labor costs depend upon who does actual maintenance work
   - 👍 possible to estimate costs and maintain an O&M fund from benefits
3. replacement insurance:
   - 👍 cost quotes can be sought and decision to insure or not can be made
   - 👍 possible to maintain an insurance fund from benefits

Can *financial* Costs and Benefits be measured so they can be distributed? (cont.)

Benefits

1. value of wind turbine:
   - 👍 can be determined from actual material and labor costs
   - 👍 non-issue if sale or transfer not likely with multiple owners
   - 👍 non-issue if sale or transfer restricted by covenant with owner(s)
2. value of wind energy:
   - 👍 wind energy measurement practical & useful
3. value of less diesel fuel use:
   - 👎 diesel costs change with each delivery to village
   - 👎 daily diesel use measurements not practical
   - 👎 diesel use not strictly dependent on wind energy
   - 👍 possible to estimate gallons saved per unit of wind energy produced

How will *financial* Costs and Benefits be distributed?

Costs

- owner(s) with largest existing liability insurance policies may have lowest insurance rates
- owner(s) with existing O&M budgets may not have lowest labor rates or necessary skills, but may have existing financial mechanisms to manage O&M budgeting and scheduling
- owner with largest costs may be most appropriate to receive largest benefits directly, and to distribute excess benefits

How will *financial* Costs and Benefits be distributed? (cont.)

Benefits

- multiple owners may be less likely to sell turbine
- partial sale or transfer of ownership could be made to an entity with lower insurance rates
- owner(s) carrying costs must receive benefits
- owner with largest costs may be most appropriate to receive largest benefits directly, and to distribute excess benefits
- measurement, valuation, and distribution of benefits must be acceptable to all who receive them
- entities putting large efforts into wind turbine project may expect to receive some benefits

Example Scenario in Simple Matrices

		Costs			Benefits			
	Owner	Replacement Insurance	Liability Insurance	O&M	Lower elec. bill	Eqpt. Value	Fee per kWh	Lower fuel cost
Native council	✓				✓	✓		
City govt.								
Electric utility	✓	✓	✓	✓		✓		✓
SECAP								

- Native council has partial ownership and shares value of system equipment
- Native council has monthly electric bill lowered by turbine output

- Electric utility has partial ownership and shares value of system equipment
- Electric utility handles all costs, reduces Native council's monthly electric bill, and has lower fuel costs

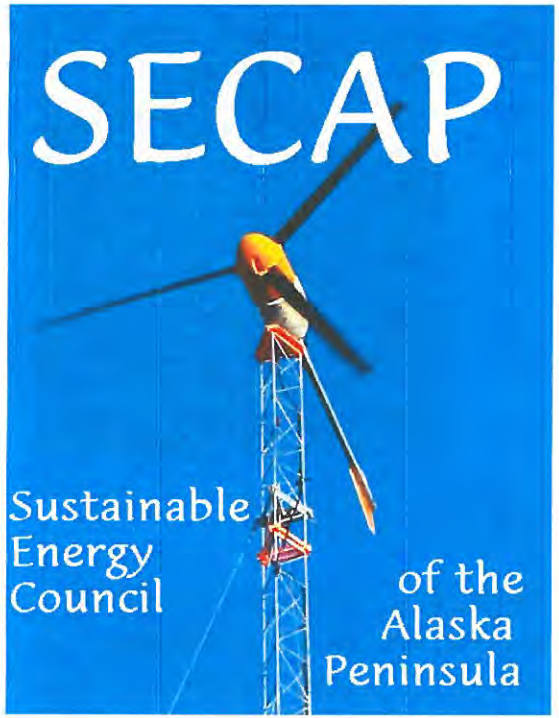
Example Scenario in Simple Matrices (cont.)

		Costs			Benefits			
	Owner	Replacement Insurance	Liability Insurance	O&M	Lower elec. bill	Eqpt. Value	Fee per kWh	Lower fuel cost
Native council	✓	✓				✓	✓	
City govt.	✓		✓	✓			✓	
Electric utility								✓
SECAP				✓			✓	

- Native council has partial ownership and shares value of system equipment
- Native council pays replacement insurance for system equipment
- Native council receives quarterly fee payment from utility based on turbine output
- City govt has partial ownership and shares value of system equipment
- City govt pays liability insurance and pays O&M labor costs to SECAP
- City govt receives quarterly fee payment from utility based on turbine output
- Electric utility has lower fuel costs
- SECAP performs O&M labor and pays for O&M materials
- SECAP receives quarterly fee payment from utility based on turbine output

Who Will Decide What?

- SECAP may decide how it wants to position itself among the communities regarding such issues as:
  - turbine ownership
  - distribution of costs and benefits
  - provision of services such as O&M or measurement and valuation of benefits
- Funding agreements may decide initial turbine ownership
- Individual communities may decide how they prefer to handle ownership issues in general
- Individual community utilities likewise may decide how they prefer to handle ownership, O&M, measurement of benefits, and budgeting issues



2004 Spring Newsletter

Within the means of our communities to develop and maintain

Developing cooperative relationships to promote renewable energy development

Two New Bergey Turbines Flying

(story on P. 2)

Egegik Winds Being Recorded

(story on P. 2)

Chignik Bay Met Tower Going Up

(story on P. 3)

Youth Profile: Learning & Doing

(story on P. 4)

Avian Issues and Endangered Species

(story on P. 5)

Rural Energy Conference

Seven members of SECAP were able to attend the second Rural Energy Conference held in Talkeetna, April 27th to 29th. SECAP was also well represented at the SW Alaska Wind Energy Meeting held last September in Dillingham, the SWAMC Meetings in Anchorage and the ANTHC Environmental Conference held in Anchorage last fall. We have presented at all these statewide meetings and look forward to networking with other organizations and persons who are interested in renewable energy for small communities.

We certainly appreciate the recognition of SECAP by Larry Flowers of the National Renewable Energy Lab at the Rural Energy Conference.

SECAP has a Website!

Although in its infancy, we are developing a website and can be accessed at: `secapak.org`

Two New Bergey Turbines Flying

Two 10kw Bergey turbines were installed last summer, one in Port Heiden, the other in Pilot Point. The two villages used monies from BBEDC Community Infrastructure Seed Program, Generous donations from the Alaska Conservation Foundation and other grants and local utility funds.

Figure 1:Ray's Place and the Bergey turbine in Port Heiden.

SECAP is a council of the five villages of Ugashik, Port Heiden, Egegik, Chignik Bay & Pilot Point working towards renewable energy solutions

Figure 2: The Bergey turbine and power shed in Pilot Point

Egegik Winds Being Recorded

October 2003 saw the raising of a meteorological (met) tower in Egegik. SECAP rep Scott Olsen and technical assistant, Myles O'Kelly leaned into the wind and the anchor screws to start the wind resource assessment. Ellen Lance of the USF&WS visited the installation in March 04 and expressed confidence that steller's eiders were in little danger. Spring

Figure 3: Scott Olsen prepares the Egegik met tower for raising.

Migration, however, might be a problem so we will be on watch for avian impacts. The site near the village office has registered monthly average speeds of from 15.8 to 20.1 mph at 100 ft. That puts it solidly into a class 5 wind resource, and approaching class 6. The Alaska Energy Authority has used this site as an example of wind resource assessments. In a village where a private utility charges .56 a kWh. Wind has exciting potential!

Chignik Bay Met Tower Going Up

Nestled in scenic mountains Chignik has unique challenges with high winds in the mountains. Through a meeting with Polly Aleck of Chignik and John Wade, a world renown wind "prospector" and meteorologist, a site in which prevailing winds would allow for steady generation was selected. The tower is ready to be erected and data will be collecting by this summer. The site is behind the City Office on a knoll. Chignik also has an excellent hydro potential at the Indian Creek dam above the village.

Tornado in Pilot Point?

Yessir. July 28 at 1:40 p.m. The two pictures below were taken at the turbine site. The funnel cloud lasted all of 5 minutes after first being noticed. The Bergey turbines are from Oklahoma, so maybe they brought some weather with them.

Wind-powered utility for Ugashik?

SECAP is conducting a feasibility study to assess the sustainability benefits with both a renewable energy system and without. Ugashik has a unique situation in which there is no central power system in place and power needs vary greatly from the winter and summer due to the commercial fishing season. This is contrary to the wind in which the best winds(over 12 mph) are in the winter when the load is the lightest. Tim Enright, the SECAP representative for Ugashik, has two solar panels that generate 320 watts/6.8 amps. With an 8 kWh Northern Lights diesel generator. The solar panels charge his battery for a 1.5 kWh inverter that converts 12 volts DC to 120 volts AC. SECAP has had one meeting in Ugashik and the Ugashik Traditional Council has been very generous in allowing SECAP to have meetings at their Anchorage office.

RD 193 – Introduction to Alternative Energy

Five high school students from Pilot Point and Port Heiden worked hard on the installation of both wind turbines last summer. They helped dig holes, pour cement, anchor guide wires, erect towers and wire turbines into the public grid systems. All that and class time, homework and tests!

Figure 4: The Pilot Point Crew with concrete forms

Figure 5: Assembling the tower in Port Heiden

The students each earned five college credits. The class was coordinated through Kim Williams at the College of Rural Development in Dillingham and taught by Myles O'Kelly of Independence Power and Energy. SECAP is planning to co-sponsor a week long hybred /co-generational wind turbine systems class tentatively planned for November at the Vocational Center in King Salmon. Contact Greg Kingsley @ gkingsleypip@yahoo.com 907-797-2273

Turbines and Birds: SECAP looking out for Steller's Eiders

SECAP is working with Ellen Lance of the USF&WS Endangered Species Department to determine the effect of wind turbines and birds. Katya Kramer, a student at Pilot Point School has been instrumental in doing daily checks at the turbine to monitor and record any activity around the turbine. Both turbines were sited in areas not on the typical flight paths of migrating birds. We will be fencing the turbines and placing bird deterrent devices on the towers and guide wires. Of primary concern is the Steller's Eider which is on the endangered species list. Although rarely seen in the Pilot Point area, we want to make sure that our towers do not negatively impact this or any species.

SECAP Guiding Principals

1. Function as a community-driven representative organization and operate with full accountability to our people;

2. Increase our self-reliance and protect our environment through the use of local natural resources and decrease the use of imported fuels;

3. Partner with other entities where such collaboration will benefit the interests of our communities and our residents;

4. Advance and promote public policies that support our mission and our communities for our residents;

5. Obtain resources for the implementation of our objectives;

6. Create durable and skilled job opportunities in our communities for our residents;

7. Improve education and career opportunities for our residents, our youth and future generations;

8. Engage in outreach and education for the betterment of our residents;

9. Operate in a culturally sensitive manner.

SECAP Contact Information

President:
Bob Kramer 797-2213

Vice President:
Scott Anderson 837-2441

Secretary:
Jim Brewer 749-2232

Members:

Scott Olsen

Polly Aleck

Tim Enright

Greg Kingsley

SECAP WOULD LIKE TO THANK THE FOLLOWING DEDICATED PROFESSIONALS FOR THEIR HARD WORK AND PATIENCE: (IN ORDER OF APPEARANCE)

- Robert Kramer – Pilot Point Utility
- David Blecker – 7th Generation Energy Systems
- Brian Hirsch – Earth Energy Systems
- Myles O'Kelly – Independence Power & Energy

Pilot Point Traditional Council
2200 Main Street * P O Box 449 * Pilot Point, Alaska 99649
Telephone (907) 797-2208 * Fax (907) 797-2258 * Internet *PIPCouncil@aol.com*

October 2000

We, the undersigned residents of the village of Pilot Point, petition the Federal, State, and local government agencies to seriously consider funding our efforts to develop wind energy as a viable alternative to the ever increasing costs and environmentally unsafe system of diesel fuel generation.

NICK NEKETA
TED MATSON
Gregory Kingsley
Desiree F. Griechen
Arthur Condarely, Jr.
Steven C Kramer
Harold Griechen
Gust Griechen
Gust Griechen J.
Robert D. Kramer
Martha Kalmakoff
Michael N. Achayok
Pauline Supsoak
Sophie Abyo
Caroline K.
Bruce Anderson
Jackie Kalmakoff
Douglas Finney
Eunice Kalmakoff
Brenda Kalmakoff
Debbie Matson

John Kalmakoff
Lorraine Abyo
Maggie Abyo
Jane M Griechen
Amanda D. Griechen
Bob McDonald
Mathura Christensen
Byron Kalmakoff
Leon Neketa
Breanna Griehn
Wanda Griechen
Marilyn Jennings
Chrissa Evanoff
Natalie McCoy
Suzanne Evanoff
Jack Dee Ruhl
Rick Reynolds
Eunice E Ruhl
Michelle D. Abyo
Mike Abyo
Diane W Griechen
Ryan Kalmakoff

CITY OF PILOT POINT
CAPITAL IMPROVEMENT PRIORITY LIST

RESOLUTION NO. 11-06-01

A resolution of the Pilot Point City Council adopting the Capital Improvement Program Priority List for Fiscal Year FY07

WHEREAS, the Pilot Point City Council reviews the Priorities of the City annually; and

WHEREAS, the Pilot Point City desires to maintain an accurate record of the City's current priorities for the Capital Improvement Program, therefore

BE IT RESOLVED: By the Pilot Point City Council that the priorities of the City of Pilot Point for the Fiscal year 2007 are as follows:

1. Addressing the Pilot Point Energy Crisis.
2. Dago Creek Road Relocation.
3. Dago Creek Bulk Head.
4. Lower Bristol Bay Test Fisheries Study/Fisheries Infrastructure Development.
5. Ugashik river road access.
6. Address Safety & Environmental/Structural issues of old Cannery Buildings.
7. Emergency Response Generator Upgrade.
8. Airport Extension.
9. Community Ball Field/Athletic Park.
10. Wind Powered Community Green House.

Page 1 resolution N0 11-06-01 FY07 Capital Improvement Program Priority list for FY07.

Pilot Point Traditional Council
2200 Main Street * P O Box 449 * Pilot Point, Alaska 99649
Telephone (907) 797-2208 * Fax (907) 797-2258 * Internet *PIPCouncil@aol.com*

Resolution 01-05-01

A Resolution in support of the formation of an Alaska Peninsula Renewable Energy Commission and Pilot Point's ANA application to support the Energy Commission's Goals.

WHEREAS, the Native Village of Pilot Point is an isolated village dependent upon expensive and environmentally damaging diesel generated power; and,

WHEREAS, the Native Village of Pilot Point has initiated the wind energy monitoring, feasibility studies and hosted an environmental conference to develop renewable power; and,

WHEREAS, given the similarities in size, climate and culture it is in the interest of all the Native Villages of the Alaska Peninsula to combine resources, expertise and political capability to develop clean and affordable power infrastructure; and,

WHEREAS, the villages of the Alaska Peninsula have been severely impacted economically due to failing commercial fishing runs and now face escalating kilowatt rates with increasing fuel costs and decreasing State assistance; and,

WHEREAS, the Native Villages of the Alaska Peninsula are facing extinction due to a lack of economic development and necessity for residents to move from their Native homes to seek employment elsewhere.

NOW THEREFORE BE IT RESOLVED: that the Pilot Point Traditional Council urges the Administration for Native Americans (ANA) Social and Economic Development Strategies (SEDS) Program, Area 2 Alaska specific, to support our grant request to develop the infrastructure of the Native Villages of the Alaska Peninsula.

BE IT FURTHER RESOLVED: that the Pilot Point Traditional Council make available all financial and planning reports to the base coalition villages of Port Heiden, Ugashik, Egegik, Chignik Bay, Chignik Lagoon and Perryville.

CERTIFICATION

It is therefore certified that this resolution was discussed and passed unanimously by a quorum of the Pilot Point Traditional Council.

Signed Ruby Moore
Ruby Moore, Vice President

Attest Jackie Kalmakoff
Jackie Kalmakoff, Administrator

PILOT POINT NATIVE CORPORATION

P.O. Box 487, Bristol Bay / Pilot Point, Alaska 99649
Telephone: (907) 797-2206

To Whom It May Concern: October 3, 2000

The Pilot Point Native Corporation supports the Pilot Point Traditional Council, Pilot Point Electrical Utility and City of Pilot Point's efforts to establish alternative energy for the people of Pilot Point. We have discussed this matter and are willing to permit wind generation data collection towers on Pilot Point Native Corporation lands.

Cecilia Christensen, President

Andrew Abyo, Vice President

Alaska State Legislature
Representative Carl E. Moses

Member
House Finance Committee

SESSION
State Capitol Building
Juneau, Alaska 99801-1182
Phone: (907) 465-4451
800-898-4451
Fax: (907) 465-3445

INTERIM
P.O. Box 730
Unalaska, Alaska 99685
Phone: (907) 581-2275
Fax: (907) 581-4949

April 16, 2001

TO WHOM IT MAY CONCERN:

Affordable, sustainable, clean rural energy generation remains a priority of mine for Alaska House District 40, and indeed, for all of rural Alaska. The success of vital health, safety, and economic development programs are each absolutely dependent upon well-strategized and implemented clean energy production.

I strongly recommend a favorable decision on behalf of Port Heiden's and the Egegik Village Council's application for their 2001 EJP2 grant for a Wind Energy Development Study, sponsored by the U. S. Environmental Protection Agency, and submitted by Earth Energy Systems. This study project would focus precisely on local needs and an eventual alternative to the consumption and pollution created by diesel-generated electricity.

As you may know, the level of cooperation between Port Heiden and the village of Egegik is substantial, and will lend to the success of this undertaking. I applaud the efforts of the parties involved, and remain ready to assist in the success of this project in any way possible.

Sincerely,

Carl E. Moses

Carl E. Moses
House District 40

Lake and Peninsula Borough
P.O. Box 495
King Salmon, Alaska 99613

Telephone: (907) 246-3421
Fax: (907) 246-6602

May 10, 2001

U.S. Department of Health and Human Services
Administration for Children and Families
Office of Grants Management
370 L'Enfant Promenade, S.W.
Mail Stop HHH Room 326-F
Washington, D.C. 20447

Re: Administration for Native Americans FY2001 Grant Program Competition Area 2
Alaska-Specific Social and Economic Development Strategies (SEDS) Program

To Whom it May Concern

In accordance with the priorities of the Overall Economic Development Plan for the Lake and Peninsula Borough we strongly support the Pilot Point Traditional Council application for development of a renewable energy project.

The communities of the Lake and Peninsula Borough are continuing to experience a downturn in their economies due to fishery disasters and now also have to contend with the high costs of energy. Therefore the villages and the Borough are communally cultivating innovative initiatives to assist in lowering energy costs as well as assisting development of supplemental economic resources. Increased energy costs continue to be a barrier against sustainable economic development in the region and in order to take advantage of developing technologies it is acknowledged that a comprehensive voice for affected communities is advantageous. A renewable energy commission will enable the combined villages to share information and resources as well as provide a forum for planning and implementation.

Thank you for your time and consideration of the application for a leadership project for development of renewable energy from the Pilot Point Traditional Council. Please do not hesitate to contact us if you have any further questions or need additional information.

Sincerely,

Helen Allen Ph.D

Helen Allen Ph.D
Economic Development Coordinator

A resolution in support of utilizing wind power as an alternative energy source

Whereas; the Community of Pilot Point is located in a remote region of Alaska; and

Whereas; access to Pilot Point is limited to air freight and seasonal barge service; and

Whereas, the current electrical system generates electricity solely with diesel engines; and

Whereas, operating costs are increased because of the freight charges for barging in fossil fuels; and

Whereas, petroleum products are inherently environmentally hazardous in their transportation, storage and, consumption; and

Whereas, the State of Alaska Power Cost Equalization program has suffered repeated cutbacks and is in jeopardy of being eliminated completely; and

Whereas, the Community of Pilot Point is actively seeking alternative energy sources; and

Whereas, the potential of wind energy resources have been shown to be a viable alternative energy source as determined by wind data collection studies; so therefore

BE IT RESOLVED:

that the Pilot Point City Council supports all efforts to obtain funding for feasibility studies, and any other activities related to the establishment and implementation of a supplemental wind power generation program.

Vote:	YES	Dennis Griechen	ABSENT	Gust Griechen Jr.
	ABSENT	Harold Griechen	YES	Greg Kingsley
	YES	Robert Kramer	YES	Steve Kramer
	YES	Mayor Griechen		

Mayor Gust Griechen III

ATTEST:

City Clerk Valerie Orloff

THE CITY OF PILOT POINT ALASKA CORPORATE SEAL STATE OF ALASKA INC. 1-22-1992

City of Pilot Point, Alaska

Adopted: 03/14/2000

Pilot Point Electric Utility

A Public Consumer Owned Utility

Resolution

A resolution in support of the Alaska Energy Authority Cost Reduction Program.

WHEREAS, The Pilot Point Utility is working with the City of Pilot Point, Pilot Point Traditional Council, and Pilot Point Native Corporation to provide the residents of the economically distressed village of Pilot Point affordable and high quality power; and

WHEREAS, Based upon community and council meetings and individual surveys, Pilot Point has selected alternative power, namely wind generated electricity, as their highest priority for community development; and

WHEREAS, Pilot Point has in place a wind resource study, formed a renewable energy commission of seven villages, and is developing plans to design a small village system that can be effectively installed in Western Alaska; and

WHEREAS, The small villages of Western Alaska are severely impacted by not only the poor fish returns but the higher costs of fuel and transportation; and

WHEREAS, Development of efficient co-generational or battery storage systems for small communities will provide economic relief and promote self sufficiency in rural Alaska; so therefore

BE IT RESOLVED:

That the Pilot Point Electric Utility authorizes this application to the Alaska Energy Authority for project financing and designates Robert Kramer as the representative of the project.

BE IT FURTHER RESOLVED:

That the applicant, Pilot Point Utility & the City of Pilot Point is in good standing with all present and past creditors as well as being current with all federal tax obligations with no record of delinquency nor default.

Adopted on this 31st day of July, 2001 by a quorum of the Pilot Point Utility Board

Pilot Point Electric Utility Chairman: Robert D. Kramer
Robert Kramer

Pilot Point Electric Utility Administrator: Janice R. Ball
Janice Ball

Resolution 08-2002-29-1

To Support, and Become a Member of The Sustainable Energy Commission of the Alaska Peninsula

Whereas the Pilot Point City Council is the governing body of the City of Pilot Point;

Whereas the Sustainable Energy Commission of the Alaska Peninsula (SECAP) is an organization that was formed in February 2002 to address the energy needs of communities from Egegik to Ivanof Bay;

Whereas SECAP has a Mission Statement and Guiding Principles that state:

> The ***Sustainable Energy Commission of the Alaska Peninsula (SECAP)*** promotes the development of economically and environmentally sustainable energy resources for the common good of our communities.
>
> The Guiding Principles of SECAP are to:
>
> 1. Function as a community-driven representative organization and operate with full accountability to our people;
> 2. Increase our self-reliance and protect our environment through the use of local natural resources and decrease the use of imported fuels;
> 3. Partner with other entities where such collaboration will benefit the interests of our communities and our residents;
> 4. Advance and promote public policies that support our mission and our communities;
> 5. Obtain resources for the implementation of our objectives;
> 6. Create durable and skilled job opportunities in our communities through training for our residents;
> 7. Improve education and career opportunities for our residents, our youth and future generations;
> 8. Engage in outreach and education for the betterment of our residents;
> 9. Operate in a culturally sensitive manner;
> 10. Promote development of Memoranda of Agreements between appropriate entities addressing public power issues;
> 11. Coordinate spill response efforts and equipment sharing;

Now Therefore Be It Resolved that this governing body supports SECAP and its Mission Statement and Guiding Principles;

Therefore Be it Further Resolved that by passing this joint resolution, this governing body will become a member of SECAP;

Therefore Be it Further Resolved that as a member of SECAP, this governing body will demonstrate its support by attending SECAP organizational meetings and participating in SECAP activities wherever possible; and

Therefore Be it Further Resolved that this governing body will appoint one (1) representative to attend SECAP meetings and activities.

Signed on this 29th day of 2002.

Vote: yes Wanda Griechen

yes Steve Kramer

Absent Dennis Matson

Absent Micarlo Kalmakoff

yes Mayor Dennis Griechen

yes Greg Kingsley

yes Victor Seybert

Mayor Dennis Griechen

City of Pilot Point

ATTEST:

Gregory Kingsley, Notary

NOTARY PUBLIC
GREG KINGSLEY
STATE OF ALASKA
My Commission Expires Oct. 23, 2004

Adopted: 08/29/02

Alaska Industrial Development and Export Authority

AIDEA/AEA

Alaska Energy Authority

August 20, 2004

Ms. Janice Ball
Utility Administrator
Pilot Point Electric Utility
P.O. Box 470
Pilot Point, AK 99649

Subject: Alaska Energy Cost Reduction Solicitation

Dear Ms. Ball:

Thank you for submitting application(s) for funding under the Alaska Energy Cost Reduction (ECR) Solicitation. Funding for the ECR program is provided by the Denali Commission and the program is administered by the Alaska Energy Authority.

During the proposal period we received 64 applications for project funding requests totaling $19,252,860. The Alaska Energy Authority and its contractors assessed net savings over the life of each proposed project and evaluated how well the proposal met other criteria described in the solicitation. Based on review of the proposals, the Alaska Energy Authority has recommended grant and loan financing for 16 projects with economic benefit to cost ratios greater than one (see attached summary).

We anticipate that the Denali Commission and the Alaska Energy Authority will make funding available for similar grant and loan solicitations in the future. Although the project proposal you submitted was not chosen for funding in this solicitation, you are welcome to revise the proposal for submission in future solicitations. Please contact Peter Crimp (269-4631 or pcrimp@aidea.org) at the Alaska Energy Authority office after August 26 if you would like information regarding our review of other proposals you submitted or you have additional questions.

Thank you for your time and effort.

Sincerely,

Mike Harper
Deputy Director, Rural Energy

813 West Northern Lights Boulevard • Anchorage, Alaska 99503
907 / 269-3000 • FAX 907 / 269-3044 • Toll Free (ALASKA ONLY) 888 / 300-8534 • www.aidea.org

Pilot Point Traditional Council
2200 Main Street * P O Box 449 * Pilot Point, Alaska 99649
Telephone (907) 797-2208 * Fax (907) 797-2258 * Internet *PIPCouncil@aol.com*

Resolution 04-01-06

A RESOLUTION SUPPORTING HB 445 FUNDIND FOR ALTERNATIVE ENERGY

WHEREAS, the Pilot Point Tribal Council is a governing body of Pilot Point and,

WHEREAS, the Village Council has been working with the City of Pilot Point and Lake & Peninsula Borough to address the urgent need for affordable and accessible energy and,

WHEREAS, Pilot Point has succeeded in developing a renewable energy program with the completion of two years of data collection, the installation of one 10kWh Bergey wind turbine, as well as organizing a consortium of villages to develop renewable energy goals and,

WHEREAS, we have had limited funding success in developing these critical goals due to the lack of available funding sources assigned to small rural applications and,

WHEREAS, reliance on fossil fuels has reached a crisis of survival given the necessity to heat and generate power entirely with fuel oils in areas rich in alternative sources such as wind and hydro.

NOW THEREFORE BE IT RESOLVED: that the Pilot Point Tribal Council requests the Alaska Legislative Body to support HB 445 committing funds from oil revenues to a specific renewable energy fund supporting high energy cost areas in the State to develop their own alternative sources and,

NOW THEREFORE BE IT FURTHER RESOLVED: that the Pilot Point Tribal Council requests that a special council be developed representative of energy and regional factions to act as an advisory selection committee thus allowing for equal access to projects and funding.

CERTIFICATION:

This resolution was duly considered and adopted at a meeting of the Pilot PointTribal Council in Pilot Point, Alaska on this 5th day of April, 2006 at which a quorum of Council members were in attendance:

Authorized Representative:

04-05-06

Victor Seybert, President Date

Attest:

4-5-06

Dennis Matson, Vice President Date

BRISTOL BAY NATIVE ASSOCIATION
P.O. BOX 310
DILLINGHAM, ALASKA 99576
PHONE (907) 842-5257

Tribal Councils Served by BBNA:

Aleknagik
Chignik Bay
Chignik Lagoon
Chignik Lake
Clarks Point
Curyung
Egegik
Ekuk
Ekwok
Igiugig
Iliamna
of Bay
Kanatak
King Salmon
Kokhanok
Koliganek
Levelock
Manokotak
Naknek
New Stuyahok
Newhalen
Nondalton
Olsonville
Pedro Bay
Perryville
Pilot Point
Port Heiden
Portage Creek
South Naknek
ak
Twin Hills
Ugashik

May 10, 2001

U.S. Department of Health and Human Services
Administration for Children & Families
Office of Grants Management
370 L'Enfant Promenade, S.W.
Mail Stop HHH, Room 326-F
Washington, D.C. 20447

To Whom It May Concern:

I am writing in support of Pilot Point's project proposal to establish a program that focuses on wind energy and other alternative energy sources for the communities along the Alaska Peninsula.

The Alaska Peninsula is ideally suited for wind generation of electrical power. Pursuing renewable energy sources will enable the core communities that are part of this project - Pilot Point, Ugashik, Port Heiden, Egegik, Chignik Bay, Chignik Lagoon, and Perryville – to transition from dependence upon petroleum products to cost-effective renewable resource based energy systems.

These communities share similar characteristics in terms of population, culture and lifestyles as well as an increased recognition and awareness of environmental concerns with air pollution from diesel generators and spills at fuel tank farms and transportation of fuel products. They have demonstrated their commitment to the proposed project and long range goal of developing alternative energy sources by forming the Alaska Peninsula Renewable Energy Commission.

Previous studies have concluded that Bristol Bay wind velocities justify a monitoring program to identify specific locations for wind power projects. In addition to benefiting the communities along the Alaska Peninsula, the proposed project would also provide a model program for other communities in the region with potential for wind power generation.

Sincerely,

Susan Flensburg
Environmental Coordinator

Cc: Pilot Point Tribal Council

GARY WILKEN
SENATOR
Fairbanks

Interim:
1851 Fox Ave.
Fairbanks, Alaska 99701
Tel: 451-5501 (from Fbks)
Tel: (907) 465-3709 (outside Fbks)
Fax: (907) 465-4714

Alaska State Legislature
Senate

During Session:
State Capitol Building
Juneau, Alaska 99801-1182
Tel: 451-5501 (from Fbks)
Tel: (907) 465-3709 (outside Fbks)
Fax: (907) 465-4714
Website: www.garywilken.com
E-Mail: Senator.Gary.Wilken@legis.state.ak.us

May 9, 2006

Mr. Victor Seybert, President
Pilot Point Traditional Council
P.O. Box 449
Pilot Point, Alaska 99649

Dear ~~Mr. Seybert~~ Vic,

I appreciated receiving Pilot Point Traditional Council resolution #04-01-06, supporting HB 445 funding for alternative energy.

It's important to me to hear from various representative bodies, as well as from individual citizens, on matters that are of particular interest to you. I assure you that when the time comes, I'll take your position into careful consideration.

Thank you for your resolution. Please stay in touch.

Sincerely,

Gary Wilken
Senator, Fairbanks