

Performance of Renewable Energy Fund Projects in Operation

Table 2.

Technology Type	Fuel Displaced Type	Grantee	Project Name	Operation Start Date	2011				2012				2013				Cumulative Total (2009-2013)			
					Energy Production		Fuel Displaced		Energy Production		Fuel Displaced		Energy Production		Fuel Displaced		Energy Production		Fuel Displaced	
					Electrical (MWh)	Thermal (MMBtu)	Diesel Equivalent (Gal x 1000)	Savings (\$ x 1000)	Electrical (MWh)	Thermal (MMBtu)	Diesel Equivalent (Gal x 1000)	Savings (\$ x 1000)	Electrical (MWh)	Thermal (MMBtu)	Diesel Equivalent (Gal x 1000)	Savings (\$ x 1000)	Electrical (MWh)	Thermal (MMBtu)	Diesel Equivalent (Gal x 1000)	Savings (\$ x 1000)
LANDFILL GAS	Natural Gas	Municipality of Anchorage	Anchorage Landfill Gas Electricity	2012 Aug	-	-	-	\$ -	-	-	-	\$ -	46,714	-	4,451	\$ 4,050	46,714	-	4,451	\$ 4,050
HYDRO	Distillate Fuel Oil	City of Atka	Chuniisax Creek Hydroelectric	2012 Dec	-	-	-	\$ -	-	-	-	\$ -	389	-	30	\$ 162	389	-	30	\$ 162
HYDRO	Distillate Fuel Oil	Cordova Electric Cooperative	Humpback Creek Hydroelectric Project Rehabilitation	2011 Jul	1,563	-	115	\$ 410	3,510	-	270	\$ 1,051	3,509	-	270	\$ 964	8,582	-	655	\$ 2,425
HYDRO	Distillate Fuel Oil	Gustavus Electric Company	Falls Creek Hydroelectric Construction	2009 Jul	1,933	-	138	\$ 483	1,956	-	150	\$ 645	1,913	-	147	\$ 612	8,466	-	616	\$ 2,274
HYDRO	Distillate Fuel Oil	City of Pelican	Pelican Hydroelectric Upgrade Project	2013 Mar	-	-	-	\$ -	-	-	-	\$ -	709	-	51	\$ 230	709	-	51	\$ 230
SOLAR	Distillate Fuel Oil	Alaska Village Electric Cooperative	Kaitag Solar Construction	2012 Oct	-	-	-	\$ -	-	-	-	\$ -	9	-	1	\$ 2	9	-	1	\$ 2
TRANSMISSION	Distillate Fuel Oil	Alaska Power and Telephone	North Prince of Wales Island Intertie Project	2011 Sep	311	-	16	\$ 67	940	-	60	\$ 218	989	-	60	\$ 216	2,240	-	136	\$ 501
TRANSMISSION	Distillate Fuel Oil	Nome Joint Utility System	Nome Banner Peak Wind Farm Transmission	2010 Oct	-	-	54	\$ 152	995	-	61	\$ 193	1,173	-	72	\$ 234	4,513	-	265	\$ 826
WIND	Naphtha	Alaska Environmental Power	Delta Area Wind Turbines	2010 Sep	1,641	-	96	\$ 256	989	-	64	\$ 133	1,563	-	101	\$ 266	4,782	-	290	\$ 712
WIND	Distillate Fuel Oil	Alaska Village Electric Cooperative	Toksook Wind Farm	2009 Aug	560	-	38	\$ 129	131	-	10	\$ 39	122	-	9	\$ 34	948	-	66	\$ 246
WIND	Distillate Fuel Oil	Alaska Village Electric Cooperative	Mekoryuk Wind Farm	2010 Nov	239	-	14	\$ 50	147	-	10	\$ 41	198	-	14	\$ 53	588	-	39	\$ 144
WIND	Distillate Fuel Oil	Alaska Village Electric Cooperative	Quinhagak Wind Farm	2010 Nov	409	-	29	\$ 106	500	-	38	\$ 161	539	-	41	\$ 162	1,520	-	113	\$ 444
WIND	Distillate Fuel Oil	Alaska Village Electric Cooperative	Emmonak/Alakanuk Wind	2011 Sep	63	-	5	\$ 18	505	-	36	\$ 142	506	-	36	\$ 139	1,075	-	76	\$ 299
WIND	Distillate Fuel Oil	Alaska Village Electric Cooperative	Shaktolik Wind Construction	2012 Apr	-	-	-	\$ -	116	-	9	\$ 36	223	-	17	\$ 67	339	-	26	\$ 102
WIND	Naphtha	Golden Valley Electric Association	GVEA Eva Creek Wind Turbine Purchase	2012 Oct	-	-	-	\$ -	13,091	-	922	\$ 1,973	71,619	-	5,044	\$ 13,302	84,710	-	5,966	\$ 15,275
WIND	Distillate Fuel Oil	Kodiak Electric Association, Inc.	Pillar Mountain Wind Project	2010 Sep	12,448	-	871	\$ 2,873	16,201	-	1,141	\$ 4,212	25,438	-	1,791	\$ 6,134	72,538	-	5,103	\$ 17,598
WIND	Distillate Fuel Oil	Kotzebue Electric Association	Kotzebue High Penetration Wind-Battery-Diesel Hybrid	2012 May	-	-	-	\$ -	2,177	-	148	\$ 550	2,686	-	183	\$ 649	4,863	-	331	\$ 1,198
WIND	Distillate Fuel Oil	Nome Joint Utility System	Banner Peak Wind Farm Expansion	2013 Jul	-	-	-	\$ -	-	-	-	\$ -	612	-	37	\$ 122	612	-	37	\$ 122
SUBTOTAL - Electricity Only					20,122	-	1,375	\$ 4,544	41,259	-	2,919	\$ 9,393	158,908	-	12,355	\$ 27,397	243,596	-	18,252	\$ 46,612
WIND	Distillate Fuel Oil	Aleutian Wind Energy	Sand Point Wind	2011 Aug	196	-	14	\$ 65	792	-	58	\$ 266	772	19	57	\$ 263	1,759	19	129	\$ 594
WIND	Distillate Fuel Oil	Kwigillingok Power Company	Kwigillingok High Penetration Wind-Diesel Smart Grid	2012 Feb	-	-	-	\$ -	-	-	-	\$ -	113	138	10	\$ 46	113	138	10	\$ 46
WIND	Distillate Fuel Oil	Puvuruaq Power Company	Kongiganak High Penetration Wind-Diesel Smart Grid	2010 Dec	88	-	7	\$ 30	185	-	14	\$ 63	314	626	30	\$ 140	586	626	50	\$ 233
WIND	Distillate Fuel Oil	Tuntutuliak Comm Svcs Assoc	Tuntutuliak High Penetration Wind-Diesel Smart Grid	2013 Jan	-	-	-	\$ -	-	-	-	\$ -	193	312	15	\$ 67	193	312	15	\$ 67
WIND	Distillate Fuel Oil	Unalakleet Valley Electric Co	Unalakleet Wind Farm	2009 Dec	958	-	58	\$ 211	938	-	68	\$ 248	955	316	72	\$ 276	3,580	316	251	\$ 874
SUBTOTAL - Electricity and Heat					1,242	-	79	\$ 306	1,914	-	140	\$ 577	2,347	1,411	183	\$ 792	6,232	1,411	456	\$ 1,814
BIOMASS	Distillate Fuel Oil	Alaska Gateway School District	Tok Wood Heating	2010 Oct	-	3,217	24	\$ 92	-	4,595	44	\$ 147	-	3,950	38	\$ 103	-	13,180	121	\$ 393
BIOMASS	Distillate Fuel Oil	Chilkoot Indian Association	Haines (Chilkoot) Central Wood Heating System Construction	2011 Oct	-	-	-	\$ -	-	212	2	\$ 7	-	231	2	\$ 6	-	443	4	\$ 12
BIOMASS	Distillate Fuel Oil	Delta/Greely School District	Delta Junction Wood Chip Heating	2011 Sep	-	-	-	\$ -	-	3,977	38	\$ 107	-	3,048	29	\$ 94	-	7,025	68	\$ 201
BIOMASS	Distillate Fuel Oil	Gulkana Village Council	Gulkana Central Wood Heating	2010 Oct	-	780	6	\$ 24	-	780	7	\$ 29	-	1,040	10	\$ 28	-	2,880	26	\$ 92
BIOMASS	Distillate Fuel Oil	Native Village of Eyak	Cordova Wood Processing Plant	2011 Dec	-	1,500	11	\$ 42	-	600	5	\$ 25	-	720	5	\$ 14	-	3,540	30	\$ 110
HEAT PUMPS	Distillate Fuel Oil	City and Borough of Juneau	Juneau Airport Ground Source Heat Pump	2011 May	-	5,117	37	\$ 131	-	5,400	45	\$ 159	-	6,400	46	\$ 159	-	16,917	128	\$ 449
HEAT PUMPS	Distillate Fuel Oil	City and Borough of Juneau	Juneau Aquatic Ctr. Ground Source Heat Pump	2011 Apr	-	-	-	\$ -	-	1,740	15	\$ 54	-	4,382	37	\$ 104	-	6,122	52	\$ 158
HEAT PUMPS	Distillate Fuel Oil	City of Seward	Alaska Sealife Center Ph II Seawater Heat Pump Project	2011 Nov	-	-	-	\$ -	-	-	-	\$ -	-	5,521	53	\$ 143	-	5,521	53	\$ 143
HEAT RECOVERY	Naphtha	Golden Valley Electric Association	North Pole Heat Recovery	2009 Nov	-	5,249	62	\$ 172	-	3,349	33	\$ 91	-	2,883	32	\$ 132	-	12,478	138	\$ 417
HEAT RECOVERY	Distillate Fuel Oil	Inside Passage Electric Cooperative	Hoonah Heat Recovery Project	2012 Aug	-	-	-	\$ -	-	-	-	\$ -	-	5,837	52	\$ 213	-	5,837	52	\$ 213
HEAT RECOVERY	Distillate Fuel Oil	McGrath Light & Power Company	McGrath Heat Recovery	2010 May	-	2,896	23	\$ 157	-	2,617	25	\$ 97	-	2,500	24	\$ 178	-	9,175	85	\$ 477
HEAT RECOVERY	Distillate Fuel Oil	City and Borough of Wrangell	Wrangell Hydro Based Electric Boilers	2011 Feb	-	6,889	66	\$ 230	-	7,711	79	\$ 135	-	7,329	76	\$ 130	-	21,929	221	\$ 495
SOLAR	Propane	Golden Valley Electric Association	McKinley Village Solar Thermal	2010 Jun	-	134	2	\$ 7	-	130	2	\$ 8	-	108	1	\$ 7	-	433	5	\$ 23
SUBTOTAL - Heat Only					-	25,782	231	\$ 854	-	31,111	295	\$ 858	-	43,949	406	\$ 1,310	-	105,480	982	\$ 3,182
TOTAL					21,364	25,782	1,685	\$ 5,703	43,172	31,111	3,355	\$ 10,829	161,255	45,361	12,944	\$ 29,499	249,828	106,892	19,689	\$ 51,607

Electrical Electrical and Heat Heat

Notes

Savings are equal to the value of the displaced fossil fuel minus the cost of the renewable energy fuel, where appropriate (e.g. the cost of wood for a biomass project). For projects with no renewable fuel costs (e.g. wind, hydro), savings are equal to the value of the fossil fuel displaced. These savings estimates do not account for changes in operation and maintenance costs or additional costs associated with purchasing and/or selling renewable energy through an independent power producer.

The energy production data provided for years 2012 and 2013 is net renewable energy produced by REF projects. All previous years reflect gross renewable energy.

All values represent 12 months of data unless specifically stated. However, some projects are seasonal (e.g. biomass) and only operate a portion of the year. Production during closure periods is counted as zero.

Savings for the Anchorage Landfill project are the cost of the electricity that would have otherwise been purchased. The project grantee, Solid Waste Services (SWS), sells the landfill gas to Doyon Utilities, LLC. SWS revenue from the sale of landfill gas was almost \$2 million in 2013. Savings to Doyon Utilities, LLC. after purchasing the landfill gas from SWS were about \$2.2 million.

Data for the wind turbines in Toksook Bay represent only the portion covered by the REF grant in years 2012 and 2013. In year 2011, the data represents production from all wind turbines; the REF program funded only one of the four wind turbines installed, however individual turbine data was not available that year.

Delta Wind turbines needed repairs in 2013 and were not in operation for a period of time.

The Nome Banner Expansion and the Kwigillingok Wind projects became operational in July and June 2013, respectively.

Data previously reported for Sand Point Wind for 2013 included an error of magnitude in the production reported by the grantee for the month of August 2013. The grantee provided corrected values and the data presented in this report reflect the correction.

Tok Wood Heating produces energy used for space heating and electricity production. The REF program funded the space heating system. The values reported in 2013 represent only the space heating production. The electrical system was funded separately by the Alaska Legislature. Production for years prior to 2013 include both space heating and electricity.

The Pelican Hydroelectric Upgrade project produces energy for electricity and space heating. Data regarding space heating is not available for 2013.

Data for the following projects in operation is not reported:

- City of Akutan Town Creek Hydro Repairs and Upgrade did not report performance data in 2013.
- Cordova Electric Cooperative Heat Recovery was commercialized but shut down one week after start-up. The Organic Rankine Cycle commenced the start-up process on June 1, 2012. Cordova Electric operates on hydroelectric power throughout the summer and fall. The ORC was not fully commissioned until late fall 2013. Initial runs show that the system is operating as designed.
- Lake and Peninsula Borough Wood Boilers data were not available.
- The Southeast Island School District -Thorne Bay School, Wood Fired Boiler Project started generating energy in the 4th Quarter of 2012. The system was not operational in 2013 due to wet wood.



City of Pelican Hydroelectric Upgrade during construction
Alaska Energy Authority

Table 2 Source: Fay, G., Villalobos Meléndez A., and Saylor B. 2014. Institute of Social and Economic Research, University of Alaska Anchorage, prepared for the Alaska Energy Authority.

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