

Alaska Renewable Energy Fund
Projected Energy Production and Cost Savings from Round 1-5 Projects
February 1, 2013



Resource	ID	Project Name	Community	Population	Energy and Fuel					Cost Savings										In Operation 2012	
					Energy Production		Fuel Displaced (x 1000)			Project Cost (\$ x 1000)		Savings (\$ x 1000/yr)				Cost / Savings Payback Time (Years)		Return on Investment (Lifetime Savings - Cost) / Cost			Project Life (Years)
					Electrical (MWh/yr)	Thermal (mmBtu/yr)	Diesel (gal/yr)	Natural Gas (MCF/yr)	Diesel Equivalent (gal/yr)	Total Cost	REF Funding	Fuel Savings	O&M Net Cost	Net Savings	Lifetime Savings	Total Cost	REF Funding	Total Cost	REF Funding		
BIOMASS	2	Gulkana Central Wood Heating Construction	Gulkana	119		2,031	15	0	15	\$500	\$500	\$28	\$5	\$23	\$458	22	22	-8%	-8%	20	x
	15	Chistochina Central Wood Heating Construction	Chistochina	93		1,832	13	0	13	\$512	\$500	\$26	-\$9	\$35	\$709	14	14	38%	42%	20	
	26	Cordova Wood Processing Plant	Cordova	2,239		1,803	13	0	13	\$138	\$138	\$41	-\$1	\$43	\$856	3	3	521%	521%	20	x
	33	Haines Central Wood Heating Construction	Haines	1,713		5,320	38	0	38	\$225	\$189	\$152	\$3	\$149	\$2,978	2	1	1223%	1479%	20	
	49	Tok Wood Heating Construction	Tok	1,258		6,990	50	0	50	\$3,260	\$3,245	\$175	-\$8	\$183	\$3,653	18	18	12%	13%	20	x
	53	Biomass-fired Organic Rankine Cycle System	North Pole	2,117	3,098	1,035	201	0	201	\$4,613	\$2,000	\$520	\$0	\$520	\$10,400	9	4	125%	420%	20	
	68	Anchorage Landfill Gas Electricity Construction	Anchorage	291,826	24,183		0	311,378	2,301	\$7,395	\$2,000	\$1,714	\$495	\$1,219	\$24,371	6	2	230%	1119%	20	
	112	Delta Junction Wood Chip Heating	Delta Junction	958		7,282	53	0	53	\$2,868	\$2,000	\$153	\$3	\$151	\$3,017	19	13	5%	51%	20	x
	211,636	Thorne Bay Wood Boiler	Thorne Bay	471		2,427	18	0	18	\$580	\$478	\$36	\$4	\$32	\$645	18	15	11%	35%	20	
	445	District Wood Heating in Fort Yukon	Fort Yukon	583		19,040	137	0	137	\$3,606	\$2,318	\$589	\$51	\$538	\$10,768	7	4	199%	364%	20	
	476	City-Tribe Biomass Energy Conservation	Tanana	246		1,609	12	0	12	\$508	\$413	\$53	\$1	\$52	\$1,041	10	8	105%	152%	20	
	605	Biomass Fuel Dryer Project	Craig	1,201		6,621	48	0	48	\$600	\$350	\$150	\$21	\$129	\$2,579	5	3	330%	637%	20	
	623	Susitna Valley High School Wood Heat	Talkeetna	876		2,885	21	0	21	\$756	\$750	\$47	\$7	\$40	\$798	19	19	6%	6%	20	
	649	Kenny Lake School Wood Fired Boiler	Kenny Lake	355		2,774	20	0	20	\$565	\$565	\$42	-\$4	\$46	\$912	12	12	61%	61%	20	
	681	Lake and Peninsula Wood Boilers	Bristol Bay Region			541	4	0	4	\$493	\$370	\$25	\$1	\$24	\$476	21	16	-4%	29%	20	
GEO-THERMAL	820	Design & Construction of Wood Heating in Interior Alaska	Interior Communities			19,562	20	0	20	\$1,215	\$1,215	\$129	\$80	\$50	\$994	24	24	-18%	-18%	20	
	840	Kobuk Biomass Design & Construction Project	Kobuk	151		4,200	4	0	4	\$401	\$356	\$29	\$9	\$20	\$394	20	18	-2%	11%	20	
	881	Tanacross Woody Biomass Community Space Heating Project	Tanacross	136		25,300	25	0	25	\$590	\$420	\$11	-\$30	\$41	\$826	14	10	40%	97%	20	
	111	Juneau Aquatic Ctr Ground Source Heat Pump Constr	Juneau	31,275		15,140	109	0	109	\$1,950	\$1,450	\$126	-\$16	\$141	\$2,828	14	10	45%	95%	20	
	453	Alaska Sealife Center Ph II Seawater Heat Pump	Seward	2,693		7,196	52	0	52	\$287	\$287	\$117	\$0	\$117	\$2,346	2	2	719%	719%	20	
HEAT RECOVERY	705	Japonski Island Boathouse Heat Pump	Sitka	8,881		374	3	0	3	\$165	\$125	\$9	\$0	\$9	\$182	18	14	10%	46%	20	
	999	Juneau Airport Ground Source Heat Pump	Juneau	31,275		5,143	37	0	37	\$1,026	\$513	\$140	-\$7	\$148	\$2,957	7	3	188%	476%	20	x
	9	Wrangell Hydro Based Electric Boilers Construction	Wrangell	2,369		11,903	86	0	86	\$2,082	\$2,000	\$374	\$0	\$374	\$18,685	6	5	797%	834%	50	x
	22	Cordova Heat Recovery Construction	Cordova	2,239		7,874	57	0	57	\$3,770	\$1,780	\$255	-\$1	\$256	\$5,113	15	7	36%	187%	20	
	61	McGrath Heat Recovery Construction	McGrath	346		4,438	32	0	32	\$954	\$712	\$196	\$0	\$196	\$3,921	5	4	311%	450%	20	x
	105	North Pole Heat Recovery Construction	North Pole	2,117	1,476		92	0	92	\$1,050	\$840	\$237	\$0	\$237	\$4,738	4	4	351%	464%	20	x
	235	Kotzebue Electric Heat Recovery Construction	Kotzebue	3,201	1,213	12,649	185	0	185	\$1,216	\$916	\$978	\$0	\$978	\$19,562	1	1	1509%	2036%	20	
	244	Point Lay Heat Recovery Construction	Point Lay	189		15,199	110	0	110	\$4,257	\$396	\$702	\$8	\$694	\$13,876	6	1	226%	3405%	20	
	271	Unalaska Heat Recovery Construction	Unalaska	4,376	1,662		128	0	128	\$1,920	\$1,300	\$529	-\$18	\$546	\$10,927	4	2	469%	741%	20	
	307	Ambler Heat Recovery Construction	Ambler	258		1,229	9	0	9	\$500	\$435	\$49	\$1	\$47	\$946	11	9	89%	117%	20	
	448	Saint Paul Fuel Economy Upgrade	Saint Paul	479		2,501	18	0	18	\$98	\$98	\$103	\$3	\$100	\$2,003	1	1	1941%	1941%	20	
	687	Hoonah Heat Recovery Project	Hoonah	760		7,905	57	0	57	\$1,005	\$475	\$220	\$0	\$220	\$4,402	5	2	338%	827%	20	
	823	Tatitlek Heat Recovery Project	Tatitlek	88		6,000	6	0	6	\$296	\$265	\$35	\$1	\$34	\$680	9	8	130%	157%	20	
	844	Russian Mission Heat Recovery System	Russian Mission	312		12,000	12	0	12	\$582	\$555	\$6	-\$33	\$39	\$775	15	14	33%	40%	20	
	848	Sleetmute Heat Recover Power Plant to Water Plant	Sleetmute	86		1,779	2	0	2	\$133	\$127	\$11	\$0	\$11	\$220	12	12	65%	73%	20	
856	Shishmaref Heat Recovery Project	Shishmaref	563		7,900	8	0	8	\$327	\$311	\$42	\$0	\$42	\$840	8	7	157%	170%	20		
858	Togiak Waste Heat Recovery Project	Togiak	817		13,700	14	0	14	\$486	\$443	\$74	\$3	\$71	\$1,428	7	6	194%	222%	20		
HYDRO	10	Falls Creek Hydroelectric Construction	Gustavus	442	1,766		118	0	118	\$8,400	\$750	\$540	\$0	\$540	\$26,998	16	1	221%	3500%	50	x
	21, 407	Humpback Creek Hydroelectric Construction	Cordova	2,239	3,764		290	0	290	\$21,300	\$8,000	\$1,248	\$37	\$1,211	\$60,564	18	7	184%	657%	50	x
	23	North Prince of Wales Island Intertie Project	Coffman Cove/Naukati Bay	287	1,356		104	0	104	\$6,155	\$3,752	\$450	\$171	\$279	\$13,950	22	13	127%	272%	50	x
	37, 620	Whitman Lake Project	Ketchikan	8,050	7,926		528	0	528	\$25,000	\$700	\$2,170	\$57	\$2,113	\$105,656	12	0	323%	14994%	50	
	58	Chuniisax Creek Hydroelectric Construction	Atka	61	568		44	0	44	\$5,500	\$996	\$261	\$22	\$239	\$11,971	23	4	118%	1102%	50	x
	104, 629	Reynolds Creek Hydroelectric Project	Hydaburg	376	7,351		565	0	565	\$27,000	\$4,000	\$1,877	\$0	\$1,877	\$93,868	14	2	248%	2247%	50	
	469	Akutan Hydroelectric System Repair and Upgrade	Akutan	1,027	420		32	0	32	\$1,491	\$1,391	\$125	\$12	\$113	\$5,634	13	12	278%	305%	50	x
	653	Terror Lake Unit 3 Hydroelectric Project	Kodiak	6,130	6,456		455	0	455	\$15,908	\$3,752	\$2,097	\$92	\$1,997	\$99,864	8	2	528%	2562%	50	
	672	Snettishsham Transmission Avalanche Mitigation	Juneau	31,275	936		72	0	72	\$3,344	\$2,000	\$276	\$18	\$258	\$12,903	13	8	286%	545%	50	
	688	Pelican Hydroelectric Upgrade Project	Pelican	88	1,000		77	0	77	\$5,521	\$1,897	\$283	\$14	\$270	\$13,482	20	7	144%	611%	50	
OCEAN/RIVE	836	Packer's Creek Hydroelectric Project	Chignik Lagoon	78	521		521	0	521	\$2,516	\$1,993	\$233	-\$50	\$283	\$14,160	9	7	463%	610%	50	
OCEAN/RIVE	660	Cook Inlet TidGen Project	Nikiski/Railbelt	4,493	1,840		0	23,484	174	\$8,051	\$2,000	\$134	\$91	\$43	\$649	186	46	-92%	-68%	15	

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					Electrical (MWh/yr)	Thermal (mmBtu/yr)	Diesel (gal/yr)	Natural Gas (MCF/yr)	Diesel Equivalent (gal/yr)	Total Cost	REF Funding	Fuel Savings	O&M Net Cost	Net Savings	Lifetime Savings	Total Cost	REF Funding	Total Cost	REF Funding		
SOLAR	108	McKinley Village Solar Thermal Construction	McKinley Park	185	32		2	0	2	\$194	\$190	\$11	\$0	\$11	\$331	18	17	71%	74%	30	x
	641	Kaltag Solar Construction	Kaltag	190	7,351		1	0	1	\$100	\$90	\$3	\$0	\$3	\$103	29	26	3%	15%	30	
WIND	47	Nome Banner Peak Wind Farm Transmission Constr	Nome	3,598	1,030		69	0	69	\$890	\$801	\$333	\$21	\$311	\$6,229	3	3	600%	678%	20	x
	50	Unalakleet Wind Farm Construction	Unalakleet	688	1,200		80	0	80	\$4,223	\$4,000	\$421	\$24	\$396	\$7,926	11	10	88%	98%	20	x
	52	Newton Peak Wind Farm	Nome	3,598	4,267		328	0	328	\$4,444	\$4,000	\$1,553	\$83	\$1,470	\$29,399	3	3	561%	635%	20	
	70	Quinhagak Wind Farm Construction	Quinhagak	669	649		50	0	50	\$4,839	\$3,882	\$251	\$13	\$237	\$4,747	20	16	-2%	22%	20	x
	71	Toksook Wind Farm Construction	Toksook	590	166		13	0	13	\$1,253	\$1,038	\$61	\$3	\$58	\$1,159	22	18	-8%	12%	20	x
	72	Mekoryuk Wind Farm Construction	Mekoryuk	191	478		34	0	34	\$4,031	\$3,156	\$188	\$23	\$165	\$3,296	24	19	-18%	4%	20	x
	85, 518	High Penetration Wind-Battery-Diesel Hybrid	Kotzebue	3,201	4,267		328	0	328	\$10,809	\$8,000	\$1,710	\$83	\$1,627	\$32,547	7	5	201%	307%	20	x
	90	St. George Wind Farm Construction	Saint George	102	511		39	0	39	\$2,000	\$1,500	\$163	\$10	\$154	\$3,070	13	10	54%	105%	20	
	102	Delta Area Wind Turbines-Construction	Delta Junction/Railbelt	958	1,750		117	0	117	\$2,802	\$2,000	\$504	\$36	\$468	\$9,366	6	4	234%	368%	20	x
	103, 803	Pillar Mountain Wind Project - Construction	Kodiak	6,130	21,000		13,800	0	13,800	\$44,550	\$12,800	\$4,936	\$300	\$4,636	\$92,717	10	3	108%	624%	20	x
	107	Kwigillingok High Penetration Wind-Diesel	Kwigillingok	321	743		69	0	69	\$3,200	\$1,600	\$363	\$14	\$348	\$6,963	9	5	118%	335%	20	
	110	Kongiganak High Penetration Wind-Diesel	Kongiganak	439	1,167		90	0	90	\$3,300	\$1,700	\$515	\$23	\$493	\$9,851	7	3	199%	479%	20	x
	273	Tuntutuliak High Penetration Wind-Diesel	Tuntutuliak	408	518		63	0	63	\$3,360	\$1,760	\$203	\$10	\$193	\$3,860	17	9	15%	119%	20	
	302	Emmonak/Alakanuk Wind Design and Constr	Emmonak/Alakanuk	762	637		45	0	45	\$10,733	\$8,000	\$184	\$27	\$157	\$3,137	68	51	-71%	-61%	20	x
	303	Shaktoolik Wind Construction	Shaktoolik	251	360		33	0	33	\$2,728	\$2,466	\$160	\$7	\$153	\$3,053	18	16	12%	24%	20	
	317	Sand Point Wind Construction	Sand Point	976	1,855	2,122	158	0	158	\$1,078	\$640	\$922	\$38	\$884	\$17,688	1	1	1541%	2665%	20	x
	503	St. Paul Wind Diesel Project	Saint Paul	479	1,600		123	0	123	\$2,100	\$1,900	\$659	\$31	\$628	\$12,565	3	3	498%	561%	20	
	616	GVEA Eva Creek Wind Turbine Purchase	Healy, Fairbanks, Railbelt	31,535	55,510		3,469	0	3,469	\$93,300	\$1,463	\$8,770	\$1,880	\$6,890	\$137,804	14	0	48%	9318%	20	
	839	Nome Renewable Energy Expansion/Optimization	Nome	3,598	1,899		237	0	237	\$6,737	\$4,069	\$921	\$40	\$881	\$17,627	8	5	162%	333%	20	
	870	Surplus Wind Energy Recovery for Mekoryuk Water System Heat	Mekoryuk	191		5,332	5	0	5	\$278	\$264	\$25	\$0	\$25	\$505	11	10	82%	91%	20	
	871	Shaktoolik Surplus Wind Energy Recovery for Water System Heat	Shaktoolik	251		10,171	10	0	10	\$253	\$240	\$52	\$0	\$52	\$1,043	5	5	312%	334%	20	
	875	Chevak Wind Energy Recovery -Chevak Water System Heat	Chevak	938		8,603	9	0	9	\$253	\$240	\$37	\$0	\$37	\$742	7	6	193%	209%	20	
	876	Gambell Wind Energy Recovery for Gambell Water System Heat	Gambell	681		7,326	10	0	10	\$253	\$240	\$43	\$0	\$43	\$859	6	6	239%	258%	20	
TOTAL					172,527	277,736	23,696	334,862	26,171	\$388,823	\$128,104	\$40,801	\$3,700	\$37,101	\$1,028,592	10	3	165%	703%		

- Notes:**
- Fuel savings and operation & maintenance (O&M) net cost figures are total present value over 20 years divided by 20. A real discount rate of 3% is assumed.
 - Estimated performance of projects is based on assumptions of round 1- economic analyses coordinated by ISER and modified by AEA given updated information.
 - Performance assumptions are subject to adjustment as new performance and actual price information becomes available.
 - Fuel prices are estimated based on updated Energy Information Administration Annual Energy Outlook 2012 Early Release. See http://www.iser.uaa.alaska.edu/Publications/Fuel_price_projection_2011-2035_final.pdf for methods