

Renewable Energy Fund: Round 14 Application Summaries



Nuyakuk River Hydroelectric Project (Run of River Project)

App #14001

Standard Application

Project Type: Hydro**Energy Region:** Bristol Bay**Applicant:** Nushagak Electric & Telephone Cooperative**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

The proposed Project is a new 10-12 MW run of river hydropower project consisting of an intake structure, power conduit, powerhouse forebay, powerhouse, and tailrace channel approximately 4 miles downstream of the Tikchik Lake outlet above a natural fall on the Nuyakuk River. Power from the Project would be available to the customers of the Cooperative and potentially other areas in the region. The renewable power provided by the Project would represent a significant upgrade to the current distribution system and minimize the reliance of local communities on fossil fuels as their primary source of electricity. Currently, the population that would be served by this Project relies wholly on diesel generation, which is barged upstream through the Nushagak River drainage to requisite locations. The reduction (or elimination) of water transport of fuels will reduce the potential for negative environmental impacts due to spills. The primary industry in the Project service area is related to commercial harvest and processing of salmon. The long-term demand for more reliable, efficient, and cost-effective renewable electric power, dispatchable renewable thermal heat, high-speed broadband, along with the likely limited resource impacts makes this Project a highly viable opportunity. Initially this project will replace up to 1.5 million gallons of diesel fuel annually displacing current generation. Annualize power production modeling shows significant energy (approximately 30,000 MWh). Eventually, up to 2.5 million gallons per year of diesel fuel will be replaced with renewable hydro energy which will provide electric power, heating, or thermal conversion to other useful energy needs. We believe the combination of renewable energy and increased broadband access will provide the basis for economic and social improvement and growth in the region for generations to come.

DNR/DMLW Feasibility Comments

"RADS - The project area is within Wood-Tikchik State Park, which is an LDA. AS 41.21.161 would have to be amended by legislation to remove the project area from the LDA. The Bristol Bay Area Plan will have to be amended to allow permitting, etc. for the project and change the area to a land classification and management intent that would be compatible with the proposed use. Any associated regulations will also have to be changed. PAAD - Nuyakuk River determined navigable by both the BLM and the State. Any activities within the river bed will require permit. Existing portage trail exists within the project area; continued public access for both ends of the portage for portage purposes will need to be maintained at the project site. Aerial and satellite imagery shows boats at both ends of the current portage. The river file shows boats of various lengths running up and down this (falls) as well as lining through. This river provides access for multiple native allotments on multiple lakes and rivers upstream from this location; that access by boat must be maintained or viable alternative route constructed; therefore all boats must be able to portage or go around the project. Proposed transmission routes cross the navigable Nushagak River, Klutuk Creek, Lower Lutuk Creek, Wood River, Muklung River, Oksuguokok (Haht-luk) Lake and Kokwok River. SCRO- Portions of the Project Area include DMLW-managed lands. Currently the lands are within State Park boundaries, though one they are no longer with the State Park the proposed infrastructure would likely require an easement(s) and/or lease(s) from DMLW-SCRO. Additionally, the proposed project description mentions requiring gravel resources so a material site designations(s) and contract(s) would be needed should they opt to extract materials from state land. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization." DPOR: The proposed project is within Wood-Tikchik State Park. Studies have been authorized by permit. AS 41.21.161 will need to be amended to remove the project area including utility easement corridors from the park before DNR can issue leases, easements, and related authorizations needed for construction. OHA: The project area has not been surveyed for cultural resources. These inventory efforts need to be completed prior to issuing licenses, permits, and/or other authorizations.

DNR/DOF Feasibility Comments

N/A

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DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments**Renewable Energy Fund: Round 14 Application Summaries****Nuyakuk River Hydroelectric Project (Run of River Project)**

App #14001

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	12.31	Stage 2 Tech & Econ Score (100)	79.75
2. Matching Resources (15)	9.00	Benefit/Cost Ratio	0.97
3. Stage 2 Feasibility (20)	19.94		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	4.38	Statewide (of 36 Standard applications)	6
6. Local Support (5)	5.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	65.63
Total Stage 3 Score (100)	65.63		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$154,598,624	\$	Cost of Electricity	\$0.45/kWh
REF9 Grant Funds	\$2,000,000	\$	Price of Fuel	\$4.67/Gal
Matching Funds	\$200,000	\$	Household Energy Cost	\$6,262

AEA Review Comments & Recommendation**Partial Funding**

\$2M project cap for REF "high cost area" projects. This project was awarded \$1M in Rd 13, and is thus only eligible for \$1M in this Rd 14.

Highest flows & energy is during the time of year with highest loads so energy production match's load.

Grantee working on FERC required timeline/schedule.

Team very experienced with large hydro development projects.

NETC can operate completed system.

Potential cost reductions and resiliency to be gained by consolidating those small utilities within the serving area. Centralized power management and ability to leverage NETC linemen and engineers for potential issues related to transmission or distribution lines. Likely that all served communities will retain diesel generators for emergency power applications.

Election District: 37-S

Renewable Energy Fund: Round 14 Application Summaries



Holy Cross Solar Energy and Battery Storage Feasibility Study Project

App #14002

Standard Application

Project Type: Storage**Energy Region:** Yukon-Koyukuk/Upper Tanana**Applicant:** Alaska Village Electric Cooperative, Inc.**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

Alaska Village Electric Cooperative, Inc. (AVEC) is requesting \$135,000 through an Alaska Energy Authority (AEA) Renewable Energy Fund (REF) grant to conduct a feasibility study for local solar energy and battery storage potential in Holy Cross, Alaska. The proposed project involves analyzing solar data, examining potential location alternatives, and creating a conceptual design for local solar energy and battery storage. Like many communities in Alaska, Holy Cross experiences high and unstable energy costs. The community depends on diesel fuel to power the three local generators responsible for all available energy in Holy Cross. Solar energy has proven a viable energy resource through projects in the similar communities of Eagle and Kaltag. Dependent on the results of the proposed feasibility study, AVEC would secure funding to prepare a final design, complete permitting, and develop solar energy in Holy Cross.

DNR/DMLW Feasibility Comments

PAAD - this is for a feasibility study; no specific location provided. Multiple RST within the vicinity. Yukon River and its interconnected channels navigable waters of the State, per BLM and State determinations. RADS - not within an area plan or on state land. RSS - Possibly over school site lands, deed issued to DEED. OHA - There is no indication that the area has been surveyed for cultural resources. These inventory efforts need to be completed prior to issuing licenses, permits, and/or other authorizations.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Holy Cross Solar Energy and Battery Storage Feasibility Study Project

App #14002

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	20.74	Stage 2 Tech & Econ Score (100)	71.50
2. Matching Resources (15)	9.00	Benefit/Cost Ratio	0.88
3. Stage 2 Feasibility (20)	17.88		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	1.75	Statewide (of 36 Standard applications)	3
6. Local Support (5)	5.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	69.37
Total Stage 3 Score (100)	69.37		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$1,000,000	\$	Cost of Electricity	\$0.50/kWh
REF9 Grant Funds	\$135,000	\$	Price of Fuel	\$6.05/Gal
Matching Funds	\$15,000	\$	Household Energy Cost	\$10,548

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy: The possible displacement of diesel fuel used for power generation in Holy Cross could be approximately 12,772 gallons per year. Using AEA's community fuel oil price projections, this project could save \$55,302 during the first year of operation. Over the 25-year life of the project, the estimated savings would be \$1,484,745.

Concerns and Risks:

- Economic Risks:** High startup costs and viability over the life of the project are the main economic risks.
- System Upgrades:** The feasibility study will help AVEC identify existing system upgrades requirements needed and their costs. AVEC will then address those needs before installation of a PV array with battery storage.
- Site Control:** Sometimes site control for the placement of solar sites is difficult; however, because AVEC expects to use their existing power plant location, gaining site control may not be needed.
- Environmental Risks:** All appropriate agencies will be consulted, and necessary permits applied for prior to installation to address the following potential environmental risks: threatened or endangered species, wetlands and other protected areas, archaeological and historical resources, aviation considerations, and community meetings will address visual impact of the solar array.

Election District: 37-S

Renewable Energy Fund: Round 14 Application Summaries



Point MacKenzie Solar

App #14003**Standard Application****Project Type:** Solar**Energy Region:** Railbelt**Applicant:** Point MacKenzie Solar, LLC.**Proposed Phase(s):** Recon, Feasibility, Design, Construction**Applicant Type:** IPP**Recommended Phase(s):** Recon, Feasibility

Project Description

This will be a Solar PV Facility, with installed capacity of 5.9 MW, highly reliable and most available in the summer months, with 500 MWh average to be delivered each month. A 6 MegaWatt DC/5 Megawatt AC utility-scale solar farm is planned for the proposed system. The system will be interconnected to the CEA power grid via a medium-voltage line extension to the site feeding the two Y-Y 2.5 MVA transformers. Each of the two transformers will feed one of the two 4,000 Amp service MDP's with backfeed rated circuit breakers for collecting solar inverters. The 5 Megawatt of AC rated inverters will be interconnected to the MDP's by 480V 3 phase. The solar inverters will collect the 6 MegaWatt of 480 Watt solar modules for conversion to AC power. The solar modules will be mounted in a fixed position on a ground-mounted racking system positioned in rows to maximize the use of the land available for the greatest overall efficiency. The DC wiring will be operating at approximately 1,200 Volts DC per string providing 6 million KWh annually.

DNR/DMLW Feasibility Comments

PAAD - No Comment
RADS - Project is within the Southeast Susitna Area Plan. Uplands are not classified, a determination will be required prior to permitting.
OHA - Survey information for the area is old and may not overlap all of the project area. A cultural resource inventory should be completed prior to issuing licenses, permits, and/or other authorizations.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Point MacKenzie Solar

App #14003

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.01	Stage 2 Tech & Econ Score (100)	56.00
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.63
3. Stage 2 Feasibility (20)	14.00		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	2.25	Statewide (of 36 Standard applications)	22
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	4.67	Stage 3 Ranking Score (100)	47.10
Total Stage 3 Score (100)	47.10		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$9,420,288	\$	Cost of Electricity	\$0.20/kWh
REF9 Grant Funds	\$1,000,000	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$250,000	\$	Household Energy Cost	\$3,058

AEA Review Comments & Recommendation

Partial Funding

Interconnection will be difficult to the High Voltage Power Lines, but not impossible. More detail will be provided with an Integration Study. The power provided by the sun will be based on daylight and intensity. More sun is available in the summer months than in winter. Solar is known for low maintenance, but the Project would have a plan in place with people ready to work in case of a loss of power. The Project notes no known environmental or economic risks.

Election District: D-8

Renewable Energy Fund: Round 14 Application Summaries



Pilot Station Wind Feasibility and Conceptual Design

App #14004**Standard Application****Project Type:** Wind**Energy Region:** Lower Yukon-Kuskokwim**Applicant:** Alaska Village Electric Cooperative, Inc.**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

Alaska Village Electric Cooperative, Inc. (AVEC) is requesting \$229,500 and will provide a match of \$25,500 to conduct a wind power and wind-to-heat feasibility and conceptual design project for the community of Pilot Station. AVEC, with the cooperation of the community, would assess the feasibility of wind resources suited to provide power to the community and prepare a conceptual design of a wind facility.

DNR/DMLW Feasibility Comments

PAAD - this is for a feasibility study; no specific location provided. Multiple RST within the vicinity. Yukon River and its interconnected channels navigable waters of the State, per BLM and State determinations. RADS - this region is not within an area plan. A site specific plan would be needed should this project move forward. OHA - The project area should be surveyed for cultural resources once an area is selected for the project.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Pilot Station Wind Feasibility and Conceptual Design

App #14004

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	16.18	Stage 2 Tech & Econ Score (100)	75.50
2. Matching Resources (15)	9.00	Benefit/Cost Ratio	0.41
3. Stage 2 Feasibility (20)	18.88		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	3.25	Statewide (of 36 Standard applications)	8
6. Local Support (5)	3.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	65.30
Total Stage 3 Score (100)	65.30		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$5,605,000	\$	Cost of Electricity	\$0.49/kWh
REF9 Grant Funds	\$229,500	\$	Price of Fuel	\$6.51/Gal
Matching Funds	\$25,500	\$	Household Energy Cost	\$8,225

AEA Review Comments & Recommendation

Full Funding

Technical risks for this project are believed to be minimal due to AVEC's successful history of past wind project implementation. Some of the risks identified include site control, turbine selection and weather concerns. It is possible that weather delays could impact the schedule of the project. The St. Mary's project is a reasonable offset for the development and implementation of this project in Pilot Station. Environmental Risk mitigation will involve AVEC working with various state and federal agencies. There are no endangered or listed species in Pilot Station. The feasibility project will not have habitat impacts. It is likely that a non-reporting "nationwide permit" will be sufficient if the LIDAR station is placed in wetlands. Compliance with the National Historic Preservation Act will occur during the design phase. The LIDAR and wind project will be placed in a location that will not interfere with telecommunications services. LIDAR will not interfere with aviation, however the wind site will be based on the FAA's criteria. Economic Risks are primarily realized from high startup costs. Economic viability depends on AVEC's long term success operating and maintaining the wind system. Wind energy has proven to be economically viable in other nearby communities including Stebbins and St. Mary's. The economic benefits of this project are numerous and include possible wind to heat options, reduction of the community's dependence on costly diesel fuel for electrical generation as well as heating needs. The population of Pilot Station has been increasing, and that trend is expected to continue. The cost of fuel in Pilot Station is also expected to increase for the foreseeable future. Pilot Station does not currently have an operational heat recovery loop in their community. Therefore there is no adverse impact related to the loss of recovered heat from the powerhouse expected as a result of this project.

Election District: T-39

Renewable Energy Fund: Round 14 Application Summaries



Ouzinkie Wind Feasibility Study Project

App #14005**Standard Application****Project Type:** Wind**Energy Region:** Kodiak**Applicant:** City of Ouzinkie**Proposed Phase(s):** Feasibility**Applicant Type:** Local Government**Recommended Phase(s):** Feasibility

Project Description

The City of Ouzinkie is requesting \$172,600 to conduct a wind power feasibility and conceptual design project for the community of Ouzinkie. The City proposes to assess the feasibility of wind resources suited to provide power to the community and to prepare a conceptual design of a wind facility. The City would provide an in-kind match of \$14,400 and Ouzinkie Tribe will provide \$50,000 cash match for the project. Ouzinkie Native Corporation (ONC) would provide contracting and project management assistance at no cost.

DNR/DMLW Feasibility Comments

PAAD - this is for a feasibility study; no specific location provided. Single RST within the vicinity. Tidelands from mean low water oceanward 3 miles. RADS - Located within the Kodiak Area Plan. The need for classification actions would depend on final location. OHA - The project area should be surveyed for cultural resources once an area is selected for the project.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Ouzinkie Wind Feasibility Study Project

App #14005

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	13.65	Stage 2 Tech & Econ Score (100)	68.75
2. Matching Resources (15)	13.00	Benefit/Cost Ratio	0.58
3. Stage 2 Feasibility (20)	17.19		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	2.38	Statewide (of 36 Standard applications)	11
6. Local Support (5)	3.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	64.21
Total Stage 3 Score (100)	64.21		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$3,087,000	\$	Cost of Electricity	\$0.40/kWh
REF9 Grant Funds	\$172,600	\$	Price of Fuel	\$3.61/Gal
Matching Funds	\$64,400	\$	Household Energy Cost	\$6,942

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-
Cost overruns: ONC will cover small cost overruns

Stakeholder engagement: the City, Tribe and Corporation have scheduled tri-council where this project has been discussed and agreed upon.

Site Control: the tribe, city and corporation have been working together to determine the tower location. Community meetings will continue in order to garner support.

Integration: much of the work will involve how the wind will integrate with the hydro and diesel system. Ouzinkie plans to base their system off of the Kodiak model. The technical risks and mitigations listed here are thoughtful and will likely be addressed in the CDR. There appears to be agreement and support within the community and various community organizations.

Environmental Risk: The applicant addresses all areas of environmental risk and appears to have a plan to address the risks should they present challenges. These areas will all be addressed in the development of the CDR.

Economic Risks: Risks are primarily realized from high startup costs. Economic viability depends on the city's long term success operating and maintaining the wind system. Wind energy has proven to be economically viable in other nearby communities such as Kodiak. The city has successfully implemented and maintained other energy infrastructure projects. Improvements will need to be made to the Ouzinkie distribution system. The extent of the improvements is unknown at this time and may present a risk to the project economics. One of the goals stated in the community energy plan from 2017 includes an expansion of the waste heat recovery system. The project covered heat as a result of this project should be discussed and considered both in the technical and economic sections of this application. There may be an adverse impact related to the loss of recovered heat from the powerhouse if the community is in fact planning to go diesels-off. This should be examined in the CDR. Application states there is currently no waste heat recovery system, however the energy plan says that the community has utilized waste heat from the generators to heat the firetruck garage.

Election District: P-32

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Renewable Energy Fund: Round 14 Application Summaries



Homer Energy Recovery Project

App #14006**Standard Application**

Project Type: Hydro
Applicant: City of Homer
Applicant Type: Local Government

Energy Region: Railbelt
Proposed Phase(s): Design, Construction
Recommended Phase(s): Design, Construction

Project Description

In the City of Homer, there exist three pressure control facilities located in the City's distribution system. This is a mission-critical pipeline where the City manages pressure for the potable water supply from the treatment plant to residences and business customers. These pressure control facilities are currently venting excess pressure that the City wants to recover and use to produce renewable energy. The proposed project will create a flow bypass around the existing pressure control valve at each site to flow through an energy recovery system. This system shall utilize an integrated solution, a pressure recovery valve that will generate a new source of renewable energy, reduce Homer's carbon footprint, save water and extend the life of its infrastructure. The proposed project shall have a capacity of 19 kW and generate 93,000 kwh that will be used to reduce operating costs for the City's Department of Public Works.

DNR/DMLW Feasibility Comments

PAAD - No comments. SCRO- Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. RADS - Location is within the Kenai Area Plan. Any activities on state land would need to be consistent with the management intent for that area. OHA - If the existing infrastructure is older than 45 years then it should be assessed for NRHP eligibility. If new ground disturbance is planned then the area should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Homer Energy Recovery Project

App #14006

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	72.33
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.45
3. Stage 2 Feasibility (20)	18.08		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	1.17	Statewide (of 36 Standard applications)	19
6. Local Support (5)	3.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	54.99
Total Stage 3 Score (100)	54.99		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$584,500	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$492,500	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$107,000	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Partial Funding

Contribution to Lower the Cost of Energy:

The economic benefit is the electricity savings (consisting of the combined energy, COPA, and regulatory cost components that make up HEAs combined rate that is charged to the City of Homer).

Concerns and Risks:

A primary technical risk is the limited dimensions of the hatch and vault in terms of space to perform assembly tasks. This will require a process that installs piping and system components in subassemblies at the surface above each vault. Additionally, the materials choices and installation of the pipe fittings connecting the system components will need to take into account the low temperatures present at the sites to assure long-term reliability (30 yrs.+).

There are no known environmental risks.

Election District: P-31

Renewable Energy Fund: Round 14 Application Summaries



NWAB Design and Permitting for Solar PV and Battery Storage for Ambler, Kiana, Noorvik, and Selawik

App #14007

Standard Application

Project Type: Solar, Storage**Energy Region:** Northwest Arctic**Applicant:** Northwest Arctic Borough**Proposed Phase(s):** Design**Applicant Type:** Local Government**Recommended Phase(s):** Design

Project Description

The Northwest Arctic Borough (NAB) is requesting \$590,000 for the Phase III Final Design and Permitting for four high penetration distributed solar PV, Battery, and diesel hybrid systems for the communities of Ambler, Kiana, Noorvik, and Selawik. The intent of this project is to leverage the economies of scale for the design of the systems to significantly reduce the project development costs and improve the project economics. The economies of scale will also be leveraged in the future construction phase of the systems through equipment procurement and construction contracts. Based on Hybrid Optimization for Multiple Energy Resources (HOMER) software modeling and AEA's B/C Ratio model, when constructed these systems will displace about 102,099 gallons of imported diesel fuel annually and will result in about 3717 hours of diesels-off operation in the communities, saving the communities about \$486,152 during the 1st year of operation. Lifetime savings for the project are estimated at \$13,458,097. In addition to reducing the cost of electrical generation, the installation of the batteries will dramatically increase the efficiency and resilience of the power generation system by providing spinning reserve and significantly reducing brown-outs and black-outs. This project will leverage the key learnings from other high penetration systems operating and in development in the Northwest Arctic Borough, including Kotzebue, Deering, Buckland, Shungnak, and Noatak.

DNR/DMLW Feasibility Comments

PAAD: Ambler - No comments; Kiana - No comments; Noorvik - No Comments; Selawik - RST 639 crosses the area and will need to be re-routed. NRO Lands: Ambler - no comment; Kiana - no comment; Noorvik - no comment; Selawik - no comments in addition to the PAAD comment on RS2477. RADS: Ambler, Kiana, Noorvik, and Selawik fall within the Northwest Area Plan. Project location and land status should be confirmed for all areas. Projects located on state land in Ambler, Kiana, and Noorvik will need to be classified. State land in Selawik is classified appropriately and this type of project is consistent with the management intent for that unit. OHA: All locations: no known cultural resources, but cultural resources surveys have likely not been completed. Recommend completing a cultural resource survey for each project area.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



NWAB Design and Permitting for Solar PV and Battery Storage for Ambler, Kiana, Noorvik, and Selawik

App #14007

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	18.36	Stage 2 Tech & Econ Score (100)	72.08
2. Matching Resources (15)	7.00	Benefit/Cost Ratio	0.35
3. Stage 2 Feasibility (20)	18.02		
4. Project Readiness (5)	4.83	Project Rank	
5. Benefits (15)	2.08	Statewide (of 36 Standard applications)	9
6. Local Support (5)	5.00	Regional (of all applications)	
7. Sustainability (5)	4.58	Stage 3 Ranking Score (100)	64.46
Total Stage 3 Score (100)	64.46		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$9,336,850	\$	Cost of Electricity	\$0.57/kWh
REF9 Grant Funds	\$590,000	\$	Price of Fuel	\$7.27/Gal
Matching Funds	\$34,000	\$	Household Energy Cost	\$9,335

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy: NAB states these projects will displace 102,099 gallons of imported diesel annually, will result in 3,717 hours of diesels off time, and will result in a lifetime savings to the communities of \$13.5 million.

Concerns and Risks:

The main technical aspects and potential challenges of final construction of these projects will be considered in the design process and include: 1)Permafrost soils supporting ground mounted racking for solar PV panels;

2)Integration of battery energy storage system, power conversion system for grid forming inverter, and system controls/dispatch; and

3)Challenging logistics in a remote location. All of these issues have been addressed and resolved in similar projects in nearby communities, but each project has unique site-specific circumstances. All of the proposed equipment for this project is commercialized technology. The initial environmental survey in the feasibility phase of the project did not identify any serious environmental concerns.

IPP Model:

During 2021 the Northwest Arctic Borough helped the two tribes of Shungnak and Kobuk to develop a Community Solar array with battery, that is configured as an IPP. This was funded through USDA HECG and local Village Improvement Fund (VIF). It was commissioned September 2021.

The 2 tribes together owns and operates the array and is selling power to AVEC, the utility. AVEC is supportive of this project and supports further replication across the Northwest Arctic Borough for the communities served by AVEC.

The Borough through an MOU helps the Tribal IPP to manage the project and fund transfers.

The IPP is operating as non-profit and funding received from the utility is being invested in an Energy fund for the IPP and proceeds used for insurance, maintenance, service and future build out of the project. It also will create a local job for someone to maintain the system.

The project is capable of Diesel-off operation for the utility during days in summer when the load is low.

There is an operational agreement as part of the PPA with AVEC.

NWAB is working on the same kind of project for Noatak this year, which has been being funded by DOE-tribal funds and the Northwest

Election District: 140

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04/12/2022

Arctic Borough's Village Improvement Fund, VIF for the amount of \$2.5 million. AVEC has already agreed to this for Noatak. This is the same process and construct that DMLW is proposing in the AEA DFE application.

Renewable Energy Fund: Round 14 Application Summaries



AEEC Ninilchik Wind

App #14008

Standard Application

Project Type: Wind

Energy Region: Railbelt

Applicant: Alaska Electric and Energy Cooperative, Inc.

Proposed Phase(s): Feasibility

Applicant Type: Utility

Recommended Phase(s): Feasibility

Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC) plans to construct a 30-MW wind energy generation facility located on the Kenai peninsula. The project will consist of 9 wind turbines disbursed throughout the site and electrically interconnected to the HEA transmission system. In addition to turbines, the project will need to construct turbine access roads and crane pads, plus connect the turbines through an electrical collector system. The proposed project will study the feasibility of locating the wind energy generation facility in the western Kenai Peninsula south of Ninilchik and north of Happy Valley.

DNR/DMLW Feasibility Comments

PAAD - No comment. SCRO - Project area contains multiple land owners notably KPB, DNR, CIRI, and University of Alaska. Depending on final placement of infrastructure, including access, easement(s) and/or lease(s) would be required for those portions affecting DMLW-managed lands. Project area also includes existing authorizations. Activities exceeding a General Allowed Use (GAU) of state lands per 11 AAC 96.020 would require authorization. RADS - Project is located within the Kenai Area Plan. State land in that area is classified. Potential changes can be addressed when a final location is determined. OHA - The project area should be surveyed for cultural resources once an area is selected for the project.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



AEEC Ninilchik Wind

App #14008

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	70.00
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.77
3. Stage 2 Feasibility (20)	17.50		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	0.75	Statewide (of 36 Standard applications)	20
6. Local Support (5)	4.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	54.49
Total Stage 3 Score (100)	54.49		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$78,700,000	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$192,000	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$48,000	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-The largest risk is that the project resource is overestimated due to a lack of wind measurement. This will be mitigated through the CDR process.-Equipment supply risk caused by the remote location of the project, limited construction season and size of turbine components. Careful supply chain and transportation planning will need to take place.-HEA will conduct contingency planning for critical milestones. -Public opposition is not anticipated. Widespread support has been observed during the HEA board meetings and public forums.-The current project cost estimate has an uncertainty of 20% which adds risk of cost overruns that will not be covered by grant funds.-Difficulty negotiating a land use agreement. The prospective site includes four landowners—Alaska DNR, Kenai Peninsula Borough, University of Alaska and a Native Corporation. Previous work with DNR and KPB suggests that site control should not be a barrier.The technical risks and mitigations listed here are thoughtful and will likely be addressed in the CDR. Environmental risks:The applicant addresses all areas of environmental risk and appears to have a plan to address the risks should they present challenges. These areas will all be addressed in the development of the CDR. Both the technical and environmental risks for this project are well understood, minimal and reasonable.Economic Risks:-Unexpected increase in turbine component or delivery costs.-Labor shortages for construction and operations phases. -Foreign exchange risk with European or Asian based turbine manufacturers. -Lack of federal tax incentive extensions.-Lack of crane availability in Alaska. -Difficulties in site deliveries due to challenges with shipping in Alaska.

Election District: P-31

Renewable Energy Fund: Round 14 Application Summaries



AEEC Summit Lake Wind

App #14009**Standard Application****Project Type:** Wind**Energy Region:** Railbelt**Applicant:** Alaska Electric and Energy Cooperative, Inc.**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC) plans to construct a 30-MW wind energy generation facility located on the Kenai peninsula. The project will consist of 9 wind turbines disbursed throughout the site and electrically interconnected to the HEA transmission system. In addition to turbines, the project will need to construct turbine access roads and crane pads, plus connect the turbines through an electrical collector system. The proposed project will study the feasibility of locating the wind energy generation facility in the northeastern Kenai Peninsula on the mountain ridgelines above Summit Lake to the east of the Seward Highway.

DNR/DMLW Feasibility Comments

SCRO - Limited portions of the Project Area include DMLW-managed lands. Depending on exact final locations of proposed infrastructure corridors, easement(s) may be required from DMLW-SCRO. Additionally, any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will additionally require authorization. PAAD - No Comment. RADS - Project is located within the Kenai Area Plan. State land in that area is classified. Potential changes can be addressed when a final location is determined. OHA - The project area should be surveyed for cultural resources once an area is selected for the project.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



AEEC Summit Lake Wind

App #14009

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	80.00
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	1.01
3. Stage 2 Feasibility (20)	20.00		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	4.75	Statewide (of 36 Standard applications)	13
6. Local Support (5)	4.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	61.49
Total Stage 3 Score (100)	61.49		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$107,800,000	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$232,000	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$58,000	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-The largest risk is that the project resource is overestimated due to a lack of wind measurement. This will be mitigated through the CDR process.-Equipment supply risk caused by the remote location of the project, limited construction season and size of turbine components. Careful supply chain and transportation planning will need to take place.-HEA will conduct contingency planning for critical milestones. -Public opposition is not anticipated. Widespread support has been observed during the HEA board meetings and public forums.-The current project cost estimate has an uncertainty of 20% which adds risk of cost overruns that will not be covered by grant funds.-The project cost estimate has an uncertainty of +/- 20%. Risks associated with negotiations include the inability to successfully negotiate a land use agreement with the USFS. HEA went through a site-prospecting process to develop and consolidate dozens of GIS layers including wetlands, historical sites, land cover, wind production and existing infrastructure. This thorough vetting process on the front end produced viable sites with lower overall risk.Environmental Risk: The applicant addresses all areas of environmental risk and appears to have a plan to address the risks should they present challenges. These areas will all be addressed in the development of the CDR. Economic Risks:-Unexpected increase in turbine component or delivery costs.-Labor shortages for construction and operations phases. -Foreign exchange risk with European or Asian based turbine manufacturers. -Lack of federal tax incentive extensions.-Lack of crane availability in Alaska.-Difficulties in site delivery due to challenges with shipping in Alaska. Both the technical and environmental risks for this project are well understood, minimal and reasonable.

Election District: O-29

Renewable Energy Fund: Round 14 Application Summaries



AEEC East Foreland - Nikiski Wind

App #14010**Standard Application****Project Type:** Wind**Energy Region:** Railbelt**Applicant:** Alaska Electric and Energy Cooperative, Inc.**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC) plans to construct a 30-MW wind energy generation facility located on the Kenai peninsula. The project will consist of 9 wind turbines disbursed throughout the site and electrically interconnected to the HEA transmission system. In addition to turbines, the project will need to construct turbine access roads and crane pads, plus connect the turbines through an electrical collector system. The proposed project will study the feasibility of locating the wind energy generation facility in the East Foreland / Nikiski Industrial Area, in Nikiski, Alaska.

DNR/DMLW Feasibility Comments

SCRO - Limited portions of the Project Area include DMLW-managed lands. Depending on exact final locations of proposed infrastructure corridors, easement(s) and/or lease(s) may be required from DMLW-SCRO. Additionally, any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will additionally require authorization. The Project Area also falls within the Kenai National Moose Range (AS 16.20.030(a)(8)). PAAD - No comment. RADS - The project falls within the Kenai Area Plan. Potential classification actions would depend on final location, however land within the Kenai National Moose Range is legislative designated under AS 16.20.030(a)(8) and cannot be disposed of without action from the legislature. DOG - Depending on final siting, one of the proposed wind turbines is in close proximity (a couple hundred feet) but does not appear to be on the Tideland Lease held by Hilcorp, ADL 29513. In LST CI0190, S007N012W16, will continue to be available for oil and gas leasing. State owned oil and gas. Last leased under ADL 391838, relinquished in 2017.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



AEEC East Foreland - Nikiski Wind

App #14010

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	73.33
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.75
3. Stage 2 Feasibility (20)	18.33		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	2.42	Statewide (of 36 Standard applications)	17
6. Local Support (5)	4.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	56.99
Total Stage 3 Score (100)	56.99		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$80,372,500	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$200,000	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$50,000	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-The largest risk is that the project resource is overestimated due to a lack of wind measurement. This will be mitigated through the CDR process.-Equipment supply risk caused by the remote location of the project, limited construction season and size of turbine components. Careful supply chain and transportation planning will need to take place.-HEA will conduct contingency planning for critical milestones. -Public opposition is not anticipated. Widespread support has been observed during the HEA board meetings and public forums.-The current project cost estimate has an uncertainty of 20% which adds risk of cost overruns that will not be covered by grant funds.-The project cost estimate has an uncertainty of +/- 20%. Risks associated with negotiations include the inability to successfully negotiate a land use agreement with the land owners. To mitigate this risk, multiple suitable turbine sites with numerous land owners have been identified. The prospective turbine sites include private, corporate, native-corporation and Borough land. Given the diversity of siting locations, permitting the wind turbine construction is not a likely barrier. HEA went through a site-prospecting process to develop and consolidate dozens of GIS layers including wetlands, historical sites, land cover, wind production and existing infrastructure. This thorough vetting process on the front end produced viable sites with lower overall risk.Environmental Risk: The applicant addresses all areas of environmental risk and appears to have a plan to address the risks should they present challenges. These areas will all be addressed in the development of the CDR. Economic Risks:-Unexpected increase in turbine component or delivery costs.-Labor shortages for construction and operations phases. -Foreign exchange risk with European or Asian based turbine manufacturers. -Lack of federal tax incentive extensions.-Lack of crane availability in Alaska. -Difficulties in site delivers due to challenges with shipping in Alaska. Both the technical and environmental risks for this project are well understood, minimal and reasonable.

Election District: O-29

Renewable Energy Fund: Round 14 Application Summaries



AEEC Caribou Hills

App #14011**Standard Application****Project Type:** Wind**Energy Region:** Railbelt**Applicant:** Alaska Electric and Energy Cooperative, Inc.**Proposed Phase(s):** Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Feasibility

Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC) plans to construct a 30-MW wind energy generation facility located on the Kenai peninsula. The project will consist of 9 wind turbines disbursed throughout the site and electrically interconnected to the HEA transmission system. In addition to turbines, the project will need to construct turbine access roads and crane pads, plus connect the turbines through an electrical collector system. The proposed project will study the feasibility of locating the wind energy generation facility in the Caribou Hills on the southern Kenai Peninsula.

DNR/DMLW Feasibility Comments

PAAD - No Comment; SCRO - Portions of the Project Area include DMLW-managed lands. Depending on exact final locations of proposed infrastructure corridors, easement(s) and/or lease(s) may be required from DMLW-SCRO. Additionally, any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will additionally require authorization. Multiple existing authorizations also are within the Project Area. RADS - The project falls within the Kenai Area Plan. Potential classification actions would depend on final location. OHA - The project area should be surveyed for cultural resources once an area is selected for the project. DOG - In LST CI0748, S002S012W35, will continue to be available for oil and gas leasing. State-owned oil and gas. Last leased under ADL 392483, relinquished 2017.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



AEEC Caribou Hills

App #14011

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	73.75
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.75
3. Stage 2 Feasibility (20)	18.44		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	2.63	Statewide (of 36 Standard applications)	16
6. Local Support (5)	4.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	57.30
Total Stage 3 Score (100)	57.30		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$85,034,500	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$209,600	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$52,400	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-The largest risk is that the project resource is overestimated due to a lack of wind measurement. This will be mitigated through the CDR process.-Equipment supply risk caused by the remote location of the project, limited construction season and size of turbine components. Careful supply chain and transportation planning will need to take place.-HEA will conduct contingency planning for critical milestones. -Public opposition is not anticipated. Widespread support has been observed during the HEA board meetings and public forums.-The current project cost estimate has an uncertainty of 20% which adds risk of cost overruns that will not be covered by grant funds.-The project cost estimate has an uncertainty of +/- 20%. Risks associated with negotiations include the inability to successfully negotiate a land use agreement with the land owners. To mitigate this risk, multiple suitable turbine sites with numerous land owners have been identified. The prospective turbine sites include Alaska DNR and a native corporation. Past experience with DNR suggests permitting met towers and ultimately the wind turbine construction will not be a barrier. HEA went through a site-prospecting process to develop and consolidate dozens of GIS layers including wetlands, historical sites, land cover, wind production and existing infrastructure. This thorough vetting process on the front end produced viable sites with lower overall risk. Environmental Risk: The applicant addresses all areas of environmental risk and appears to have a plan to address the risks should they present challenges. These areas will all be addressed in the development of the CDR. Economic Risks:-Unexpected increase in turbine component or delivery costs.-Labor shortages for construction and operations phases. -Foreign exchange risk with European or Asian based turbine manufacturers. -Lack of federal tax incentive extensions.-Lack of crane availability in Alaska. -Difficulties in site delivery due to challenges with shipping in Alaska.Both the technical and environmental risks for this project are well understood, minimal and reasonable.

Election District: P-31

Renewable Energy Fund: Round 14 Application Summaries



AEEC - KPB CPL Landfill Gas CHP Project

App #14012

Standard Application

Project Type: Biomass, HeatBiofuel**Energy Region:** Railbelt**Applicant:** Alaska Electric and Energy Cooperative, Inc.**Proposed Phase(s):** Design**Applicant Type:** Utility**Recommended Phase(s):** Design

Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC) and in cooperation with the Kenai Peninsula Borough (KPB) propose the installation of a Combined Heat & Power Project at the KPB's Central Peninsula Landfill (CPL). The proposed Project would generate electricity from collected landfill gas and initially supplemented with pipeline natural gas to generate up to 1.6 MW of power. The waste heat from the electric reciprocating engine generator would be captured and utilized to operate the CPL's leachate evaporator which is currently fueled by natural gas from the ENSTAR system. Thus, eliminating or significantly reducing the CPL's natural gas bill required to evaporate leachate.

DNR/DMLW Feasibility Comments

PAAD - No comments
RADs - project falls within the Kenai Area Plan
OHA - If new ground disturbance is planned then the area should be surveyed for cultural resources.
DOG - in LST CI0083, S004N011W12, will continue to be available for oil and gas leasing. State-owned oil and gas. Last leased under ADL 391248, expired 2013.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



AEEC - KPB CPL Landfill Gas CHP Project

App #14012

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	90.75
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	1.89
3. Stage 2 Feasibility (20)	22.69		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	9.33	Statewide (of 36 Standard applications)	4
6. Local Support (5)	4.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	68.76
Total Stage 3 Score (100)	68.76		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$12,685,316	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$884,986	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$221,247	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy:

Estimated savings, based on the applicant's model runs, range from \$4.8 million to \$20.2 million, depending on final capital and operating costs. Project benefits will accrue to the estimated 58,500 citizens in the KPB, including the estimated 25,000 members of Homer Electric.

Concerns and Risks:

Engineering reports and 25% design drawings suggest major concerns and risks have been identified.

Possible Enhancements:

Project siting, landfill gas production, and potential changes in pipeline natural gas have been addressed. The use of Municipal Solid Waste (MSW) as an energy source is well documented in many locations, including the Municipality of Anchorage.

Issues are not identified in completing the project, technical and economic concerns are not identified. Environmental assessment was completed for the landfill so not barriers to development are anticipated.

Election District: P-31

Renewable Energy Fund: Round 14 Application Summaries



Galena Maintenance Station Solar

App #14013**Standard Application****Project Type:** Solar**Energy Region:** Yukon-Koyukuk/Upper Tanana**Applicant:** State of Alaska - Department of Transportation and Public Facilities**Proposed Phase(s):** Feasibility, Design, Construction**Applicant Type:** Local Government**Recommended Phase(s):** 0

Project Description

This project will install a solar panel array and associated equipment at the Galena Maintenance Station located in Galena, AK. The solar installation will offset electricity consumption currently provided by the city of Galena. The Galena Maintenance Station provides for the safe operation and maintenance of the airport and roads in Galena, AK. The proposed solar panel installation will offset utility costs and allow operating funds to contribute more effectively toward providing safe and efficient transportation for this rural community.

Renewable Energy Fund: Round 14 Application Summaries



Galena Maintenance Station Solar

App #14013

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)	
2. Matching Resources (15)		Benefit/Cost Ratio	
3. Stage 2 Feasibility (20)			
4. Project Readiness (5)		Project Rank	
5. Benefits (15)		Statewide (of 36 Standard applications)	
6. Local Support (5)		Regional (of all applications)	
7. Sustainability (5)		Stage 3 Ranking Score (100)	
Total Stage 3 Score (100)			
Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$200,000	\$	Cost of Electricity \$/kWh
REF9 Grant Funds	\$195,000	\$0	Price of Fuel \$/Gal
Matching Funds	\$5,000	\$0	Household Energy Cost

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1.

Election District: T-39

Renewable Energy Fund: Round 14 Application Summaries**Ruth Barnett Sport Fish Hatchery - Heat Recovery****App #14014****Heat Application****Project Type:** HeatRecovery**Energy Region:** Railbelt**Applicant:** State of Alaska - Department of Fish and Game, Division of Sport Fish**Proposed Phase(s):** Recon, Feasibility**Applicant Type:** Local Government**Recommended Phase(s):** 0**Project Description**

The project will recover waste heat from effluent currently discharged to the Chena river, the facility heats between 250 and 500 GPM of well water from approximately 33 degrees F to approximately 44 degrees F for the production of fish aqua-culture water. This water after circulation through the hatchery is screened, cleaned, and discharged into the Chena river. The proposed project will intercept the existing 20" effluent discharge line to scavenge waste heat using a Daikin "templifier" or similar heat recovery unit.

Renewable Energy Fund: Round 14 Application Summaries



Ruth Barnett Sport Fish Hatchery - Heat Recovery

App #14014

Heat Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis		
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)		
2. Matching Resources (15)		Benefit/Cost Ratio		
3. Stage 2 Feasibility (20)				
4. Project Readiness (5)		Project Rank		
5. Benefits (15)		Statewide (of 3 Heat applications)		
6. Local Support (5)		Regional (of all applications)		
7. Sustainability (5)		Stage 3 Ranking Score (100)		
Total Stage 3 Score (100)				
Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$52,500	\$	Cost of Electricity	\$/kWh
REF9 Grant Funds	\$50,000	\$0	Price of Fuel	\$/Gal
Matching Funds	\$2,500	\$0	Household Energy Cost	

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1.

Election District: A-1

Renewable Energy Fund: Round 14 Application Summaries



Kotzebue Wind Heat System

App #14015**Heat Application****Project Type:** Wind**Applicant:** City of Kotzebue**Applicant Type:** Local Government**Energy Region:** Northwest Arctic**Proposed Phase(s):** Feasibility, Design, Construction**Recommended Phase(s):** Feasibility, Design, Construction

Project Description

This project would utilize 213,000 KWH of excess wind energy from the non-profit Kotzebue Electric Association, Inc.'s (KEA) wind turbines in the form of heat delivered to the Water Treatment Plant (WTP). This utilizes wind energy that would otherwise be wasted. The proposed project will provide public benefits to both the local electric utility and individual rate payers in the form of additional revenue for KEA and reduced water utility bills for community members due to the avoided diesel fuel use. This project would make the local utility financially stronger, keep money that would have otherwise gone to the fuel provider circulating within the community, and reduce both fuel costs and fuel use. As KEA adds more turbines, solar, and batteries to their grid over the next two to three years, the amount of recovered heat available from the power plant will decrease significantly, raising the price of operating the WTP. This rise in costs can be mitigated and reversed with the addition of an electric boiler, control panels, and a transformer to allow curtailed wind to be utilized and sold at a discounted rate to the city. The newly constructed WTP includes space for a future electric boiler with hydronics already installed to accommodate a project like this.

DNR/DMLW Feasibility Comments

PAAD - No comments. NRO Lands: No comments. RADS - No comments. OHA - If new ground disturbance is planned then the area should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Kotzebue Wind Heat System

App #14015

Heat Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	14.25	Stage 2 Tech & Econ Score (100)	76.33
2. Matching Resources (15)	0.00	Benefit/Cost Ratio	1.34
3. Stage 2 Feasibility (20)	19.08		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	7.00	Statewide (of 3 Heat applications)	2
6. Local Support (5)	1.00	Regional (of all applications)	
7. Sustainability (5)	4.50	Stage 3 Ranking Score (100)	55.33
Total Stage 3 Score (100)	55.33		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$721,835	\$	Cost of Electricity	\$0.36/kWh
REF9 Grant Funds	\$702,435	\$	Price of Fuel	\$5.81/Gal
Matching Funds	\$00	\$	Household Energy Cost	\$7,247

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include: •Applicant states that there are no technological or financial risks. Environmental Risk: •The applicant addresses all areas of environmental risk, none of which appear to be significant. Economic Risks: •No economic risks are identified. This project does not carry very much risk and the applicant provides some discussion related to each of the risk categories. However the applicant does not discuss any of the potential downsides of the new system. It is unlikely that there are zero risks associated with the new system. Some areas that could have been discussed include: •Renewables unavailable and not providing energy to the grid/electric boiler. Intermittency of wind. •Interaction with recovered heat from the powerhouse. •Supply chain delays •Inflation and cost escalation •Impact of KEA BESS integration •Adverse impact to the hospital heat savings. Interaction and agreements between the WTP and the Hospital.

Election District: T-40

Renewable Energy Fund: Round 14 Application Summaries



Kwigillingok Wind Turbine Upgrade

App #14016**Standard Application****Project Type:** Wind**Applicant:** Kwig Power Company**Applicant Type:** Utility**Energy Region:** Lower Yukon-Kuskokwim**Proposed Phase(s):** Construction**Recommended Phase(s):** Construction

Project Description

Kwig Power Company's existing hybrid renewable system is due for upgrades and expansion. Its five wind turbines still have 1980s-era blades installed, which are inefficient and not optimized for the rough conditions of southwest Alaska. KPC proposes to upgrade these turbines by acquiring four (4) sets of SERI Thin Airfoil blades. The new blades will increase energy production through improved aerodynamic efficiency allowing the rotors to harvest more energy from a given rotor area and through improved peak stall characteristics which will allow an increase of rotor RPM from 50 to 56 or 60 RPM. In addition, we must purchase our own up-tower crane to service our turbines/blades.

DNR/DMLW Feasibility Comments

PAAD - No Comment
RADs - No Comment
OHA - Should inadvertent discoveries of cultural resources occur during the duration of the project, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.70[d]). Please note that some sites can be deeply buried and that fossils are considered cultural resources subject to the Alaska Historic Preservation Act.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Kwigillingok Wind Turbine Upgrade

App #14016

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	16.64	Stage 2 Tech & Econ Score (100)	77.25
2. Matching Resources (15)	6.00	Benefit/Cost Ratio	1.25
3. Stage 2 Feasibility (20)	19.31		
4. Project Readiness (5)	4.00	Project Rank	
5. Benefits (15)	5.92	Statewide (of 36 Standard applications)	12
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	61.87
Total Stage 3 Score (100)	61.87		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$292,216	\$	Cost of Electricity	\$0.67/kWh
REF9 Grant Funds	\$278,716	\$	Price of Fuel	\$5.20/Gal
Matching Funds	\$13,500	\$	Household Energy Cost	\$8,462

AEA Review Comments & Recommendation

Full Funding

Technical risks (and mitigations) identified include:-Difficult weather conditions and logistics to transport equipment to rural Alaska. The technical risks and mitigations listed here are unavoidable and will be manageable. Environmental Risk: N/A, blade upgrades will occur at an existing facility which already has permits in place. Economic Risks: Low economic risk. The SERI blades are designed to replace the current blades. The new blades should increase the productivity and decrease the maintenance requirements. The population of Kwig has remained steady and slightly increased recently. The energy demands are likely to follow the same trend. Project consists of a single blade retrofit phase. The KPC staff successfully operates its utility and has received grant funding in the past.

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Kwinhagak Reconnaissance Study

App #14017**Standard Application****Project Type:** Wind, Transmission, Solar, Storage**Energy Region:** Lower Yukon-Kuskokwim**Applicant:** Native Village of Kwinhagak**Proposed Phase(s):** Recon**Applicant Type:** Government Entity**Recommended Phase(s):** Recon

Project Description

Reconnaissance Study will focus on collecting and analyzing Kwinhagak's solar resources along with its current electric and thermal load data and diesel-wind system. This baseline data will then be used to create a conceptual design for an energy system that incorporates wind/solar/battery with the current wind-diesel system. Estimated costs and financing will also be included in the final Reconnaissance Study Report.

DNR/DMLW Feasibility Comments

PAAD - No comments
RADS - Location is within the Bristol Bay Area Plan and the Togiak NWR/Lower Goodnews River SUA (ADL 226851).
OHA - No Comment.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Kwinhagak Reconnaissance Study

App #14017

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	15.03	Stage 2 Tech & Econ Score (100)	44.67
2. Matching Resources (15)	6.00	Benefit/Cost Ratio	0.00
3. Stage 2 Feasibility (20)	11.17		
4. Project Readiness (5)	3.83	Project Rank	
5. Benefits (15)	0.50	Statewide (of 36 Standard applications)	25
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	4.33	Stage 3 Ranking Score (100)	45.20
Total Stage 3 Score (100)	45.20		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$82,000	\$	Cost of Electricity	\$0.50/kWh
REF9 Grant Funds	\$81,000	\$	Price of Fuel	\$5.41/Gal
Matching Funds	\$1,000	\$	Household Energy Cost	\$7,645

AEA Review Comments & Recommendation

Full Funding

Resource sustainability: Solar potential will be identified however, if a project location is identified to fit the needs of the community solar is a sustainable resource. Permits & authorizations: Project permits will be identified as part of the study. Although the application could indicate types of permits they would explicitly look into. A site will be identified as part of the project, although potential sites or potential sites owned by the applicant are not mentioned. Technical risks: Project scope mentions addressing the integration of the system with the existing wind system along with batteries. Other technology risks not identified. Environmental risks: Applicant mentioned identifying environmental risks "to a degree" but says they are not a core outcome of the study. Part of study is to identify basic operation, application does not include information on reliability of proposed system, although solar is a reliable resource. section 5.4.4 was not answered. RE resource present: Solar is available along with the existing wind system but not explicitly mentioned. RE resource useful: solar is useful. Application indicates the project will identify basic operation of the system and the resource available along with demand. Logistical: the study is planned with adequate steps, milestones and team members. Logistics for the project if moved to construction is not mentioned. Business: The application indicates researching power purchase agreements and project operations as part of the project. Financial: Revenue and power purchase agreements will be researched as part of the project. Economic Risks: Potential impact to future PCE subsidy payments for the Community, potential for reduced heat recovery from RE generation owing to any "diesels-off" time. Cost escalation due to supply chain issues or inflationary pressure should be evaluated.

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Kotzebue Wind to PV Transition Utilizing Existing Wind Infrastructure

App #14018**Standard Application****Project Type:** Solar**Applicant:** Kotzebue Electric Association, Inc.**Applicant Type:** Utility**Energy Region:** Northwest Arctic**Proposed Phase(s):** Construction**Recommended Phase(s):** Construction

Project Description

Kotzebue Electric Association (KEA) built the first utility-scale wind farm in Alaska beginning in the late-1990s. KEA has been operating a fleet of 66kW wind turbines that are now obsolete and not cost effective to operate and maintain in comparison to the two EWT 900kW turbines. The nonfunctioning 66kW turbines are a negative aspect of renewable energy and KEA is planning to retire the fleet. Unfortunately there is not a suitable small-scale (~50kW) wind turbine available on the US market to replace the 66kW turbines. Though the existing 66kW wind turbines are being retired, the installed power transformers, underground power lines, fiber optic communications, control shelters, SCADA and access roads are still useful for a PV power installation. KEA will convert eight, existing 66kW wind turbine installations into 66kW PV arrays. KEA intends to leave the wind turbine 12" steel piling foundations in place to allow for future testing of small scale (~50-300kW) wind turbines and other energy technologies in a true Arctic environment in cooperation with NREL, UAF-ACEP and other interested entities.

DNR/DMLW Feasibility Comments

PAAD - No Comments. NRO Lands - No comments. RADS - No comments. OHA - If this is the first utility-scale wind farm in Alaska then it should be assessed for its NRHP eligibility. Technology is one of the areas that evolves quickly and may not need to be 50 years of age before consideration under NRHP.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Kotzebue Wind to PV Transition Utilizing Existing Wind Infrastructure

App #14018

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	14.25	Stage 2 Tech & Econ Score (100)	75.83
2. Matching Resources (15)	13.00	Benefit/Cost Ratio	0.84
3. Stage 2 Feasibility (20)	18.96		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	3.25	Statewide (of 36 Standard applications)	10
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	64.46
Total Stage 3 Score (100)	64.46		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$2,025,000	\$	Cost of Electricity	\$0.36/kWh
REF9 Grant Funds	\$1,900,000	\$	Price of Fuel	\$5.81/Gal
Matching Funds	\$702,000	\$	Household Energy Cost	\$7,247

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy:

The 532kW PV array will not affect electric rates but will reduce the COPA or fuel cost component of the customer's electric bill.

Approximately 45,000-50,000 fewer gallons of diesel fuel are anticipated to be purchased annually.

Concerns and Risks:

The site is already an established RE site. It is fully permitted an environmental risk is not a concern. Economic risks are considered low but include potential low price of diesel fuel, inadequacy of control system, and equipment failure of the inverter or modules. This project builds on existing RE infrastructure that has aged out but was the subject of 4 prior REF applications (rounds 1, 2, 3, and 13). This project will replace existing turbines with a solar array.

Election District: T-40

Renewable Energy Fund: Round 14 Application Summaries**Eklutna Village Solar Energy Project Feasibility Study****App #14019****Standard Application****Project Type:** Transmission, Solar**Energy Region:** Railbelt**Applicant:** Native Village of Eklutna**Proposed Phase(s):** Feasibility**Applicant Type:** Government Entity**Recommended Phase(s):** Feasibility**Project Description**

Just to the west of the Native Village of Eklutna, a former gravel mining site is located along with lands conveyed to Eklutna, Inc that were contaminated by the US Government. The Native Village of Eklutna, with assistance from Eklutna, Inc., are pursuing a "next use" of these properties to incorporate a long-term, renewable energy source providing income to NVE and Eklutna, Inc by increasing benefits to shareholders and providing employment to tribal member within walking distance from their homes. This project would be a source of pride for shareholders and would allow Eklutna to expand its ongoing relationship with Matanuska Electric Association. NVE is requesting support to assess Eklutna, Inc. lands for redevelopment for solar energy deployment.

DNR/DMLW Feasibility Comments

PAAD - No comments RADS - No comments OHA - No comments

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Eklutna Village Solar Energy Project Feasibility Study

App #14019

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.01	Stage 2 Tech & Econ Score (100)	48.08
2. Matching Resources (15)	13.00	Benefit/Cost Ratio	0.07
3. Stage 2 Feasibility (20)	12.02		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	1.00	Statewide (of 36 Standard applications)	24
6. Local Support (5)	1.00	Regional (of all applications)	
7. Sustainability (5)	4.42	Stage 3 Ranking Score (100)	46.37
Total Stage 3 Score (100)	46.37		

Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$	\$	Cost of Electricity \$0.20/kWh
REF9 Grant Funds	\$22,500	\$	Price of Fuel \$1.32/Gal
Matching Funds	\$7,500	\$	Household Energy Cost \$3,058

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy: The application does not provide enough information about the existing system to glean this information. **Concerns and Risks:** A primary technical risk is getting the existing utility to respond in a timely manner. Matanuska Electric Association's resources are outside of the projects control so response time may be longer than planned. Due to the project's proximity to the Native Village of Eklutna, there may be archaeological or historical concerns that Eklutna, Inc and the Native Village of Eklutna staff would work to address, mitigate, and avoid. There may be issues with working in previously contaminated sites if the project expands to Camp Mohawk. If this seems like a threat, project managers, consultants, and environmental director will get involved in the resolution. It is suspected that there will be 10% shading at the site from Bear Mountain poses a risk to project development and a risk to long-term operations; however, that should be determined during feasibility and a decision will be made on whether to proceed with the project. It is not believed there are many economics risks once the project is vetted and brought online. The operator of the solar project is a matter to be determined. NVE is not in a position to develop systems and process; however, Eklutna, Inc. has an accounting team that can assist in ensuring collection and accounting accuracy and the corporation has provided an official letter of support for the project as part of the application packet.

Election District: F-12

Renewable Energy Fund: Round 14 Application Summaries



Kongiganak Wind Upgrade with Airfoil Blades for Turbines

App #14020

Standard Application

Project Type: Wind**Applicant:** Puvurnaq Power Company**Applicant Type:** Utility**Energy Region:** Lower Yukon-Kuskokwim**Proposed Phase(s):** Construction**Recommended Phase(s):** Construction

Project Description

Puvurnaq Power Company's existing hybrid renewable system is due for upgrades and expansion. Its five wind turbines still have 1980s-era blades installed, which are inefficient and not optimized for the rough conditions of southwest Alaska. PPC proposes to upgrade these turbines by acquiring four (4) blade sets of SERI Thin Airfoil blades to add to the two it has already received funding to purchase. The new blades will increase energy production through improved aerodynamic efficiency allowing the rotors to harvest more energy from a given rotor area and through improved peak stall characteristics which will allow an increase of rotor RPM from 50 to 56 or 60 RPM. In addition, we must purchase our own up-tower crane to service our turbines/blades.

DNR/DMLW Feasibility Comments

RADS - No comments
PAAD - No comments
OHA - Should inadvertent discoveries of cultural resources occur during the duration of the project, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.70[d]). Please note that some sites can be deeply buried and that fossils are considered cultural resources subject to the Alaska Historic Preservation Act.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Kongiganak Wind Upgrade with Airfoil Blades for Turbines

App #14020

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	16.79	Stage 2 Tech & Econ Score (100)	77.50
2. Matching Resources (15)	6.00	Benefit/Cost Ratio	1.12
3. Stage 2 Feasibility (20)	19.38		
4. Project Readiness (5)	4.00	Project Rank	
5. Benefits (15)	5.17	Statewide (of 36 Standard applications)	14
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	61.33
Total Stage 3 Score (100)	61.33		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$292,216	\$	Cost of Electricity	\$0.65/kWh
REF9 Grant Funds	\$278,716	\$	Price of Fuel	\$5.43/Gal
Matching Funds	\$13,500	\$	Household Energy Cost	\$8,538

AEA Review Comments & Recommendation

Full Funding

Contribution to Lower the Cost of Energy: Based on the parameters used in the AEA analysis, the following savings could be realized:

- Total diesel fuel displaced per year: 5,682 gallons
- Total fuel cost displaced over 20 years: \$317,000

Concerns and Risks: -The risks are low for this project. -There is a possibility that the expected benefit from the upgrade in terms of additional wind turbine output may not be realized due to factors such as wind turbine down-time or wind availability. The analysis does use actual wind turbine output from 2020 data, but performance of the turbines varies from year to year.

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Akiachak Wind Feasibility Study

App #14021**Standard Application****Project Type:** Wind, Solar, Storage**Energy Region:** Lower Yukon-Kuskokwim**Applicant:** Akiachak Native Community**Proposed Phase(s):** Recon, Feasibility**Applicant Type:** Government Entity**Recommended Phase(s):** Recon, Feasibility

Project Description

The Reconnaissance Study phase of this project will focus on collecting data and analyzing Akiachak's current diesel system and wind and solar resources along with electric and thermal load data. These baseline data will then be used to create a conceptual design for an energy system that integrates wind/solar/battery with the current diesel system. A detailed cost estimate and financing plan will also be included in the final Reconnaissance Study Report. For the Phase II portion, we seek to investigate the economic viability of installing wind turbine generators for electrical generation facilities. AC is proposing to install a reference 50-meter meteorological tower as well as a LIDAR meteorological unit to simultaneously collect and correlate wind data across the community at heights greater than or equal to 50 meters. The monitoring program will evaluate specific sites in and around Akiachak and can be easily expanded to surrounding communities through redeployment of the LIDAR unit, and continued use of the Akiachak reference station. The monitoring program in Akiachak will continue for 12 months. Monthly wind resource reports will be produced with a final report summarizing the data collection, and opportunities for the application of low inertia wind turbines on taller towers.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - No comments. OHA - The project area should be surveyed for cultural resources once a location is chosen.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Akiachak Wind Feasibility Study

App #14021

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	15.97	Stage 2 Tech & Econ Score (100)	52.58
2. Matching Resources (15)	0.00	Benefit/Cost Ratio	0.50
3. Stage 2 Feasibility (20)	13.14		
4. Project Readiness (5)	4.58	Project Rank	
5. Benefits (15)	2.17	Statewide (of 36 Standard applications)	23
6. Local Support (5)	2.00	Regional (of all applications)	
7. Sustainability (5)	4.50	Stage 3 Ranking Score (100)	46.86
Total Stage 3 Score (100)	46.86		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$371,000	\$	Cost of Electricity	\$0.63/kWh
REF9 Grant Funds	\$371,000	\$	Price of Fuel	\$5.08/Gal
Matching Funds	\$00	\$	Household Energy Cost	\$8,119

AEA Review Comments & Recommendation

Full Funding

Cost Estimate:The redundant data collection, as well as a longer period of time for data collection (18 months vs. 12 months) results in a higher price tag for the data collection process. ~\$100k more than similar projects that are buying their equipment outright (purchase of a LIDAR system)
Technical risks:Technical risks are not identified in this section except for the risk of installing a 50 meter met tower, which will be weather dependent and couple potentially impact the schedule. Risks related to the results of the prior feasibility study are discussed and the rationale for a second reconnaissance effort is explained.
Environmental Risk: Section 5.3.2 is marked as N/A and no information regarding Environmental risk is provided in this application.
Economic Risks:Economic risks are not addressed, and the applicant states that the economic risks will be addressed in the reconnaissance study.A previous wind feasibility study was conducted that characterized the wind speed at 4 m/s. However the applicant states that the feasibility study was not conducted at the proper height or location. Additional information is needed in order to re-assess the wind resource. Additionally, technology has improved significantly since the first assessment in 2007. Wind energy production is feasible now in lower speed environments than before.A number of nearby communities, Kwethluk, Bethel and Napaskiak, have viable wind resources. It is proposed that there may be a potential for wind resources at or above the 50 meter height. Additionally, there may have been detrimental influences to the previous study due to local terrain, tower height and placement.

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Dixon Diversion Feasibility Project

App #14022**Standard Application****Project Type:** Hydro**Applicant:** Chugach Electric Association, Inc.**Applicant Type:** Utility**Energy Region:** Railbelt**Proposed Phase(s):** Feasibility**Recommended Phase(s):** Feasibility

Project Description

Dixon Diversion would be an expansion to the Bradley Lake Hydroelectric Project. Two project alternatives are currently being studied. The primary option would build a tunnel to divert water from the Dixon Glacier watershed to Bradley Lake to increase the energy output of the existing Bradley Lake power plant. The other alternative would transport water by tunnel to a new power plant located on the Lower Martin River. Either alternative would generate enough energy annually to be among the largest hydroelectric projects in Alaska. The diversion project would generate an estimated 168,000 MWh annually, which would increase Bradley Lake's energy output by about 44 percent. This application uses the first option of diverting water to Bradley Lake for the estimated project costs and energy generation. The Martin River alternative is likely to have similar but higher costs and energy generation.

DNR/DMLW Feasibility Comments

SCRO - Most of the Project Area include DMLW-managed lands. Depending on exact final locations of proposed infrastructure corridors, easement(s) and or lease(s) may be required from DMLW-SCRO. Additionally, any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will additionally require authorization. PAAD - Within the project area Martin River and the unnamed outflow from Dixon Glacier are non-navigable. RADS - The project area is within the Kenai Area Plan boundary. The area surrounding the Bradley Lake hydroelectric dam is to be managed primarily as a power site consistent with FERC license requirements. Management intent is also to accommodate recreation (particularly at designated campsites) and public access where the security of the power project, public safety, and liability are not significantly at risk. The area around the dam will also be managed for wildlife habitat and harvest. OHA - The project area should be surveyed once a location is chosen.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Dixon Diversion Feasibility Project

App #14022

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	6.74	Stage 2 Tech & Econ Score (100)	88.00
2. Matching Resources (15)	15.00	Benefit/Cost Ratio	1.39
3. Stage 2 Feasibility (20)	22.00		
4. Project Readiness (5)	4.83	Project Rank	
5. Benefits (15)	6.58	Statewide (of 36 Standard applications)	5
6. Local Support (5)	2.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	67.16
Total Stage 3 Score (100)	67.16		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$184,500,000	\$	Cost of Electricity	\$0.24/kWh
REF9 Grant Funds	\$1,000,000	\$	Price of Fuel	\$1.32/Gal
Matching Funds	\$1,000,000	\$	Household Energy Cost	\$3,428

AEA Review Comments & Recommendation

Full Funding

FERC License amendment required. Technical risks: tunnel-boring for underground tunnels, which can potentially increase construction costs significantly. Environmental risks: Applicant does not identify salmon in project area; however ADF&G AWC identifies chum, coho, sockeye, and Dolly Varden in resource reach. ADF&G minimum instream flow (MIF) unknown at this time including impacts on project. Engineering alternatives report to be completed by BPMC in 2022 identifying best option. Contribution to Lower the Cost of Energy: The project will reduce direct energy cost to approximately three quarters of Alaskans who live in communities served by the Railbelt utilities. The Dixon Diversion project will help lower the cost of electricity in both Anchorage and Fairbanks and, by reducing the cost of businesses that sell to rural communities, help to lower costs in those communities. Based on preliminary cost estimates, the benefit of the project to the participating utilities could exceed \$170 million (NPV) over the 50-year life of the project, when accounting for the cost-based purchase price of the additional energy generated as a result of this diversion project. Concerns and Risks: During the construction phase, the long underground tunnels will be the most challenging. The project team will perform a robust study of the terrain and geology to better understand risk of tunneling. There may be minor wetland impacts while constructing the access road, though most ground is well drained. The high initial cost of this diversion project is a risk, but the project uses existing generation and transmission sources, thereby significantly reducing the cost as compared to a new hydroelectric project. Possible Enhancements: No enhancements to the proposal; however, the proposed project would build onto the existing Bradley Lake hydro project increasing the facility's generation load factor, allowing all Railbelt utilities to increase the generation potential of the Bradley Lake.

Election District: P-32

Renewable Energy Fund: Round 14 Application Summaries



Fairbanks Regional Office Building Solar

App #14023**Standard Application****Project Type:** Solar**Energy Region:** Railbelt**Applicant:** State of Alaska - Department of Transportation and Public Facilities**Proposed Phase(s):** Feasibility, Design**Applicant Type:** Local Government**Recommended Phase(s):** 0

Project Description

This project will install a solar panel array and associated equipment at the Fairbanks Regional Office Building located in Fairbanks, AK. The solar installation will offset electricity consumption currently provided by Golden Valley Electric Association. The Fairbanks Regional Office Building provides for state-based services such as Public Assistance Division, Food Stamp Office, and State of Alaska Employment Services. The proposed solar panel installation will offset utility costs and allow operating funds to contribute more effectively toward providing services to the community, and continued energy efficiency projects for the site.

Renewable Energy Fund: Round 14 Application Summaries



Fairbanks Regional Office Building Solar

App #14023

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$80,000	\$	Cost of Electricity	\$/kWh
REF9 Grant Funds	\$80,000	\$0	Price of Fuel	\$/Gal
Matching Funds	\$00	\$0	Household Energy Cost	

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1.

Election District: A-1

Renewable Energy Fund: Round 14 Application Summaries



Naterkaq Light Plant Battery Installation and Integration

App #14024**Standard Application****Project Type:** Storage**Energy Region:** Lower Yukon-Kuskokwim**Applicant:** Naterkaq Light Plant**Proposed Phase(s):** Construction**Applicant Type:** Utility**Recommended Phase(s):** Construction

Project Description

Naterkaq Light Plant (NLP) is constructing a high penetration wind diesel battery system. NLP is requesting a grant of \$355,000 to complete and improve the battery installation and optimize its performance. Intelligent Energy Systems (iES) has teamed with Hatachi Energy Grid Edge Solutions to furnish, install and integrate a 500kW/713 kWh battery energy storage system into the community of Cheforak's electrical grid. NLP has contracted with Intelligent Energy Systems (iES) of Anchorage, which has in turn teamed with Hatachi Energy Grid Edge Solutions to furnish, install, and integrate a 500kW/713 kWh battery energy storage system into the community of Cheforak's electrical grid. Combined iES and Hatachi Energy represent the most experienced team in Alaska to successfully deliver this project successfully. NLP is requesting a grant of \$352,000 from round 14 of the REF to complete and improve the performance of the overall project.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - Project area is within a Legislatively Designated Area (LDA): Clarence Rhodes National Wildlife Refuge, a national wildlife refuge designated as a state game refuge under AS 16.20.030(a)(16), so designated to protect and preserve the natural habitat and game population in the area. OHA - Areas proposed for new ground disturbance should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Naterkaq Light Plant Battery Installation and Integration

App #14024

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio 0.32
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$1,290,124	\$	Cost of Electricity	\$0.55/kWh
REF9 Grant Funds	\$352,000	\$0	Price of Fuel	\$5.25/Gal
Matching Funds	\$938,124	\$0	Household Energy Cost	\$7,784

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Pilot Point Comprehensive Community Wind-Solar Storage and Heat Project

App #14025**Standard Application****Project Type:** Wind, Storage**Energy Region:** Bristol Bay**Applicant:** City of Pilot Point**Proposed Phase(s):** Construction**Applicant Type:** Local Government**Recommended Phase(s):** Construction

Project Description

Purchase and install 16 Xalt Energy XPANDXMP111E Battery modules(180kW/176 kWh battery system, with expansion to 300 kW/352 kWh+)energy storage system (BESS). This will be integrated into and accommodates existing infrastructure installed in 2019 consisting of two 100 kW XANT wind turbines and 16 installed ETS heaters in community Another 10 ETS already purchased by the community will be installed/integrated in homes in Pilot Point.Due to the remoteness and complex integration of this system, post-installation support is required and included in this project.

DNR/DMLW Feasibility Comments

PAAD - No comments.RADS - No comments.OHA - Areas proposed for new ground disturbance should be surveyed for cultural resources.DOG - in Lease Sale Tract AP0441, there is no record of a lease in S030S051W29, but will continue to be available for oil and gas leasing.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Pilot Point Comprehensive Community Wind-Solar Storage and Heat Project

App #14025

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	14.56	Stage 2 Tech & Econ Score (100)	51.75
2. Matching Resources (15)	15.00	Benefit/Cost Ratio	0.29
3. Stage 2 Feasibility (20)	12.94		
4. Project Readiness (5)	3.75	Project Rank	
5. Benefits (15)	2.33	Statewide (of 36 Standard applications)	18
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	3.50	Stage 3 Ranking Score (100)	55.58
Total Stage 3 Score (100)	55.58		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$821,000	\$	Cost of Electricity	\$0.60/kWh
REF9 Grant Funds	\$495,500	\$	Price of Fuel	\$4.50/Gal
Matching Funds	\$325,500	\$	Household Energy Cost	\$7,403

AEA Review Comments & Recommendation

Partial Funding

Technical Risks: Technical risks are not identified in this section outside of logistical challenges associated with transportation of materials to rural Alaska. Unexpected shipping delays due to often severe weather present the biggest technical risk but the contractors are adaptable. "Technical Risks are low as the project team has the technical expertise and familiarity with the equipment necessary to ensure safe and efficient operation." For a construction/final phase project, the technical risk section should have been significantly more robust. Environmental Risks: USFWS, USACE, FAA and DNR were all contacted. Agency consultations indicated that federal permits will not be required for this type of project. The Fish & Wildlife Service has noted previously that this project is near known designated critical habitat in the action area, but not in an action area of the suspected presence of listed species. This project will not fill material on or disturb existing soil in a wetlands area, and will not require a determination from USACE. The proposed BESS Site is not located on wetlands or streams. Economic Risks: Economic Risks are not identified in this section. Applicant states that economic risks are low based on proven technology, experienced contractors and the success of similar projects in nearby communities.

Election District: S-37

Renewable Energy Fund: Round 14 Application Summaries



Nome Battery Energy Storage System

App #14026**Standard Application****Project Type:** Storage**Energy Region:** Bering Straits**Applicant:** Nome Joint Utility System**Proposed Phase(s):** Construction**Applicant Type:** Utility**Recommended Phase(s):** Construction

Project Description

Nome Joint Utility System (NJUS) proposes construction of a 2 MW/2 MWh battery energy storage system (BESS) to improve utilization (net capacity factor) of its two EWT DW52-900 wind turbines and to enable future expansion of renewable energy, including additional wind turbine, and wind-to-heat systems in the community. A BESS will allow NJUS to operate a smaller and more efficient diesel generator with the wind turbines and will eventually enable occasional diesels-off operation where power will be provided solely by wind turbines and the BESS.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - No comments. The proposed project does not involve DMLW-managed land, however the proposed infrastructure location do fall within the Nome Airport area that is managed by the DOT (ADL 412693). Depending on the exact final location of infrastructure the project should be coordinating with DOT. OHA - Areas proposed for new ground disturbance should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Nome Battery Energy Storage System

App #14026

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	12.97	Stage 2 Tech & Econ Score (100)	85.50
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.89
3. Stage 2 Feasibility (20)	21.38		
4. Project Readiness (5)	4.00	Project Rank	
5. Benefits (15)	6.25	Statewide (of 36 Standard applications)	7
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	65.59
Total Stage 3 Score (100)	65.59		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$2,500,000	\$	Cost of Electricity	\$0.36/kWh
REF9 Grant Funds	\$2,000,000	\$	Price of Fuel	\$4.36/Gal
Matching Funds	\$500,000	\$	Household Energy Cost	\$6,595

AEA Review Comments & Recommendation

Full Funding

Technical risks: Technical risks are not identified in this section outside of supply chain challenges, which NJUS plans to mitigate by initiating long lead time purchases as soon as possible. Project elements are not technically challenging and will not require new development work. NJUS is proposing a wind-diesel-BESS model like KEA has operated for several years. For a construction/final phase project, the technical risk section should have been more robust. Applicant states: "There are no drawbacks, technical or economic to installing a BESS to better utilize NJUS' existing and planned future renewable energy assets." Environmental Risk: Project activities occur at the Snake River Power Plant, an industrial area west of Nome. Environmental risks are not anticipated. Economic Risks: Economic risks are not identified in this section. The BESS will enable higher net capacity factor of the existing EWT turbines. The Go Electric BESS is modular in concept and design, which enables expansion of the system to accommodate two additional turbines. Strong technical proposal and modeling attachments were included with the submission of this project. NJUS budgets for their capital and maintenance projects annually. The REF project will be included in the FY23 budget. NJUS maintains a \$1M cash reserve that can be tapped to fund BESS integration costs beyond what is anticipated. Regular operation and maintenance activities will be conducted by NJUS' long term staff, and be incorporated into their normal maintenance schedule. Specialized work will be conducted by contractors. NJUS will require a 2 year warranty from the manufacturer for the BESS. Routine maintenance will be conducted by NJUS staff in accordance with the recommended maintenance schedule. NJUS operations are at the end of a long supply chain. All supplies must be flown or barged in. NJUS departments evaluate supply needs monthly including critical long lead time items and shipping schedules.

Election District: T-39

Renewable Energy Fund: Round 14 Application Summaries



Jenny Creek Hydro Reconnaissance - Kake IPEC

App #14027**Standard Application****Project Type:** Hydro**Energy Region:** Southeast**Applicant:** Inside Passage Electric Cooperative**Proposed Phase(s):** Recon**Applicant Type:** Utility**Recommended Phase(s):** Recon

Project Description

Inside Passage Electric Cooperative (IPEC) is the local electric provider for Kake, AK. We recently completed the Gunnuk Creek hydro project in Kake, and we are now looking to add additional renewable energy resources to IPEC's generation mix at Kake. IPEC has spent the past decade working to identify renewable energy projects for the benefit of its member-consumers in order to reduce rates, and to reduce carbon emissions from diesel generation. Jenny Creek, located approximately .75 miles from the Kake boat harbor, has long been identified as a potential site for a new run-of-river hydro project. IPEC desires to perform a reconnaissance level study to help decide if further investigation of Jenny Creek's potential is warranted. IPEC plans to work with HDR Engineering, Inc. (HDR) to accomplish this.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - No comments. OHA - The project area should be surveyed for cultural resources once a location is chosen.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Jenny Creek Hydro Reconnaissance - Kake IPEC

App #14027

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	14.63	Stage 2 Tech & Econ Score (100)	73.50
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.44
3. Stage 2 Feasibility (20)	18.38		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	1.75	Statewide (of 36 Standard applications)	15
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	4.67	Stage 3 Ranking Score (100)	60.09
Total Stage 3 Score (100)	60.09		

Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$	\$	Cost of Electricity \$0.61/kWh
REF9 Grant Funds	\$62,368	\$	Price of Fuel \$4.65/Gal
Matching Funds	\$10,000	\$	Household Energy Cost \$7,439

AEA Review Comments & Recommendation

Full Funding

IPEC/HDR team has performed well with multiple REF grants in the past. Diesel consumption at Kake high enough that all energy from Jenny could be used to displace diesel generation. Contribution to Lower the Cost of Energy: IPEC has spent the past decade working to identify renewable energy projects for the benefit of its member-consumers in order to reduce serving-area wide (postage stamp rate), and to reduce carbon emissions from diesel generation. The reconnaissance phase of this project will establish anticipated savings. Concerns and Risks: The reconnaissance phase will establish any technical or environmental risks associated with the proposed Jenny Creek Hydro Project.

Election District: R-35

Renewable Energy Fund: Round 14 Application Summaries



Nenana Biomass District Heat System

App #14028**Heat Application****Project Type:** Biomass, HeatBiofuel**Energy Region:** Railbelt**Applicant:** City of Nenana**Proposed Phase(s):** Construction**Applicant Type:** Local Government**Recommended Phase(s):** Construction

Project Description

The Nenana Biomass District Heat System will provide heat to the water treatment plant, fire department, K-12 school, and the biomass facility itself. Each of these buildings provide services to the residents of the City of Nenana and the members of the Nenana Native Association. The boiler, a building frame, and structural insulated panels (SIP) have already been purchased for the project. The demolition, sitework, foundation work, installation of district heat piping, and engineering for the building have all been completed. Floor slabs have begun to be poured and work has commenced on erecting the building frame.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - No comments. NRO - No comments. OHA - Areas proposed for new ground disturbance should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Nenana Biomass District Heat System

App #14028

Heat Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	10.93	Stage 2 Tech & Econ Score (100)	70.58
2. Matching Resources (15)	15.00	Benefit/Cost Ratio	1.09
3. Stage 2 Feasibility (20)	17.64		
4. Project Readiness (5)	4.58	Project Rank	
5. Benefits (15)	4.25	Statewide (of 3 Heat applications)	1
6. Local Support (5)	2.00	Regional (of all applications)	
7. Sustainability (5)	4.83	Stage 3 Ranking Score (100)	64.08
Total Stage 3 Score (100)	64.08		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$1,820,312	\$	Cost of Electricity	\$0.26/kWh
REF9 Grant Funds	\$676,121	\$	Price of Fuel	\$3.22/Gal
Matching Funds	\$457,468	\$	Household Energy Cost	\$5,560

AEA Review Comments & Recommendation

Full Funding

Woody biomass costs at \$10 per ton reflect waste disposal from sawmills; if other wood sources are obtained, costs may be higher. The biomass system is expected to meet 80% of annual heat demand with integration to existing heating units (oil fired) to meet the additional heat demand.

Concerns and Risks:

Woody biomass costs at \$10 per ton reflect waste disposal from sawmills; if other wood sources are obtained, costs may be higher.

Possible Enhancements:

The City has sited the facility in such a location that future buildings could be added to the system.

Additional Risks/Comments:

•The design was funded previously and this application is for construction, but the proposed scope includes completion of the design in September 2022. How do you produce a final cost estimate if the design is not complete?

•5.1.1: the availability of the fuel required by this project is conditional on a lumber contract that has not been finalized/signed.

•7.1.2: the City does not yet have a heat sales agreement with the school district

Election District: C-6

Renewable Energy Fund: Round 14 Application Summaries



Interior Alaska Wind Energy Resource Assessment

App #14029

Standard Application

Project Type: Wind**Energy Region:** Railbelt**Applicant:** Golden Valley Electric Association**Proposed Phase(s):** Recon, Feasibility**Applicant Type:** Utility**Recommended Phase(s):** Recon, Feasibility

Project Description

Funds from this project will be used to complete wind resource assessments at up to five sites in Interior Alaska (3-5 sites depending on grant funding). Each location will host 1-2 masts with multiple sensors at various elevations to provide quality/representative data for use in a site resource model and bank ready feasibility study. Data collection will continue for a minimum of two years. Data and final reports will be used to document, model, support financing and encourage economically competitive development of utility scale wind projects with a target size of about to 100 MW per site.

DNR/DMLW Feasibility Comments

PAAD: Multiple RST may be used or impacted by the project. NRO comments: Murphy Dome - no comments. Deltana - DNR authorization required. Donnelly Dome - DNR authorization required. Pedro Dome - site is on Mental Health Trust Lands, mining claims underlie area, coordination and authorization required. Wickersham Dome - on boundary between State and BLM land, popular recreation area, site is also very close to TAPS and would need coordination with Alyeska, may require authorization from DNR depending on exact location. OHA Comments: Murphy Dome - located within an historic district eligible for the NRHP, placing wind turbines within the viewshed of the HD may constitute an adverse effect. Deltana - Should inadvertent discoveries of cultural resources occur during the duration of the project, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.70[d]). Please note that some sites can be deeply buried and that fossils are considered cultural resources subject to the Alaska Historic Preservation Act. Donnelly Dome - the project area should be surveyed for cultural resources. Pedro Dome - the project area should be surveyed for cultural resources. Wickersham Dome - the project area should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Interior Alaska Wind Energy Resource Assessment

App #14029

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	12.76	Stage 2 Tech & Econ Score (100)	95.17
2. Matching Resources (15)	13.00	Benefit/Cost Ratio	2.92
3. Stage 2 Feasibility (20)	23.79		
4. Project Readiness (5)	4.50	Project Rank	
5. Benefits (15)	9.88	Statewide (of 36 Standard applications)	2
6. Local Support (5)	0.00	Regional (of all applications)	
7. Sustainability (5)	5.00	Stage 3 Ranking Score (100)	73.92
Total Stage 3 Score (100)	73.92		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$2,105,700	\$	Cost of Electricity	\$0.26/kWh
REF9 Grant Funds	\$1,425,000	\$	Price of Fuel	\$3.10/Gal
Matching Funds	\$680,700	\$408,420	Household Energy Cost	\$6,486

AEA Review Comments & Recommendation

Partial Funding

Contribution to Lower the Cost of Energy:

Based on the parameters used in the AEA analysis, the following savings could be realized:

- Total diesel fuel displaced per year from diesel generation: 29.8 million gallons
- Fuel cost savings on the first full year of operations: \$5 million
- Displaced diesel-generated power per year: 350,400,000 kWh

The present value of the net benefit is estimated to amount to \$455.8 million

Concerns and Risks:

The Applicant noted that due to the relatively remote locations and harsh climate, maintaining a reliable system will require ongoing diligence and experienced personnel.

Possible Enhancements:

There is potential for an even larger size wind project or for multiple locations since the project is intended to be integrated into the Railbelt transmission system, which serves the power needs of the entire Railbelt area.

Election District: E-9

Renewable Energy Fund: Round 14 Application Summaries



Levelock Renewables Final Design and Permitting

App #14030**Standard Application****Project Type:** Wind, Biomass, Hydro, Geothermal,
Transmission, Solar, Storage, Natural Gas**Energy Region:** Bristol Bay**Applicant:** Levelock Village Council**Proposed Phase(s):** Design**Applicant Type:** Government Entity**Recommended Phase(s):** 0

Project Description

Levelock is working to re-open its Fish Processing Plant and needs additional energy for this economic development project. The Tribe owns the processing plant and is therefore also responsible for the energy needs of the plant. The challenge is to meet the Plant's needs while not burdening the community with additional energy costs. To achieve this, developing a complete energy assessment, options analysis, and conceptual system design is needed in order to create the Final Design. This REF-funded project will complement and advance both the wind assessment completed in 2017 and the technical work being conducted by the US Dept of Energy – Office of Indian Energy (DOE) program. DOE's effort will create an on-site inventory of the technical/hard energy assets in Levelock. DOE will assess the current utility and distribution system, additional components the Tribe and community have purchased and are in the community, clarifying energy needs of the processing plant, and also provide general recommendations.

Renewable Energy Fund: Round 14 Application Summaries



Levelock Renewables Final Design and Permitting

App #14030

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$213,500	\$	Cost of Electricity	\$/kWh
REF9 Grant Funds	\$201,500	\$0	Price of Fuel	\$/Gal
Matching Funds	\$12,000	\$0	Household Energy Cost	

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1

Election District: S-37

Renewable Energy Fund: Round 14 Application Summaries



Atmautluak Light Plant Battery, Thermal Stove, and Metering Installation

App #14031

Standard Application

Project Type: 0**Applicant:** Atmautluak Tribal Utilities**Applicant Type:** Utility**Energy Region:** Lower Yukon-Kuskokwim**Proposed Phase(s):** Construction**Recommended Phase(s):** Construction

Project Description

Atmautluak Light Plant (ALP) is a standalone diesel generating and electrical distribution utility which provides electricity to the Village of Atmautluak. In 2019, ALP received a grant of \$2,900,000 from the USDA High Energy Cost Program to construct a 200 kW wind heat system and integrate the energy into their power system. This system is currently under construction and the funds have been used to install 2, Frontier 24-100 kW wind turbines on 40 meter tilt-up towers; upgrade .5 miles of electrical distribution to interconnect the wind farm; and install a wind diesel supervisory control system, a 200 kW load balancing boiler, and 20 electric thermal storage devices to capture surplus wind energy to displace heating fuel. Construction began in Fall 2021. The wind turbines and powerline have been constructed. The project was subjected to a number of unpredictable cost increases, mostly due to supply chain uncertainties. ALP is requesting \$375,000 to complete the installation and integration of the 250kW/377kWh battery energy storage system and 20 electric thermal stoves to enable upwards of 3,200 hours of diesel off operation annually. This AEA funding will also provide ALP with two years of ongoing technical assistance and an advanced monitoring system to ensure overall power productivity, improve system reliability, grid stability, increase renewable availability and optimize overall power system operations. In sum, the award will enable ALP to produce 40,000 surplus kWh of wind energy annually, displace 30,000 gallons of diesel fuel used for power generation (equivalent to a savings of \$105,000 at \$3.50/gal), and generate deferred diesel operational savings of \$28,800 annually (at \$9 per operating hour). This is an annual benefit of \$133,800. Additionally, the wind system has the potential to produce an additional 66,000 kWh of surplus electricity, which is available to displace 2,200 gallons of home heating fuel. It will also improve safety and resiliency in the community while eliminating requirements to invest in the expansion of bulk fuel storage.

DNR/DMLW Feasibility Comments

PAAD - No Comments. RADS - No Comments. OHA - Should inadvertent discoveries of cultural resources occur during the duration of the project, our office should be notified so that we may evaluate whether the resources should be preserved in the public interest (as specified at Section 41.35.70[d]). Please note that some sites can be deeply buried and that fossils are considered cultural resources subject to the Alaska Historic Preservation Act.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Atmautluak Light Plant Battery, Thermal Stove, and Metering Installation

App #14031

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio 0.09
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$	\$	Cost of Electricity	\$0.66/kWh
REF9 Grant Funds	\$375,000	\$0	Price of Fuel	\$4.96/Gal
Matching Funds	\$40,000	\$0	Household Energy Cost	\$8,197

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1.

Election District: S-38

Renewable Energy Fund: Round 14 Application Summaries



Yakutat Wave Feasibility and Design Project

App #14032**Standard Application****Project Type:** Hydrokinetic**Energy Region:** Southeast**Applicant:** CalWave Power Technologies**Proposed Phase(s):** Feasibility**Applicant Type:** IPP**Recommended Phase(s):** 0

Project Description

The proposed project would consist of feasibility studies and conceptual design by CalWave Power Technologies (CalWave), with the potential for additional input from the Alaska Village Electric Cooperative (AVEC) and the Alaska Center for Energy and Power (ACEP). CalWave has been involved with Launch Alaska's Tech Deployment Track since September 2021, and is excited about the possibility of operating a project in Southeast Alaska. While Yakutat is a member of AVEC, CalWave will design and oversee the construction and installation of our proprietary wave energy converter (WEC) technology for the benefit of the Yakutat community. Considering its open shoreline and its proximity to the grid interconnection, Cannon Beach appears to be the best location for a WEC deployment. While feasibility studies in the past have focused on the area's waves themselves, we will additionally conduct feasibility studies that assess the composition of the ocean floor sediment, any debris that may hinder WEC performance, and effects on marine species and ecosystems. The overall goal of this project is to lay the foundation for the pilot deployment of a single small WEC (1 kW) capable of powering local blue economy applications, and much more significantly, the pilot deployment of a larger WEC (100 kW) capable of satisfying a large portion of Yakutat's power demand (ranging from 5 - 15%, depending on time of day and time of year). Beyond the pilot deployment of a single 100 kW device, there may be the option to install an additional 4 WECs in order to continue the phase-out of the continuous use of diesel generators in Yakutat.

Renewable Energy Fund: Round 14 Application Summaries



Yakutat Wave Feasibility and Design Project

App #14032

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)	
2. Matching Resources (15)		Benefit/Cost Ratio	
3. Stage 2 Feasibility (20)			
4. Project Readiness (5)		Project Rank	
5. Benefits (15)		Statewide (of 36 Standard applications)	
6. Local Support (5)		Regional (of all applications)	
7. Sustainability (5)		Stage 3 Ranking Score (100)	
Total Stage 3 Score (100)			
Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$3,244,000	\$	Cost of Electricity \$/kWh
REF9 Grant Funds	\$207,500	\$0	Price of Fuel \$/Gal
Matching Funds	\$199,100	\$0	Household Energy Cost

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did Not Pass Stage 1.

Election District: P-32

Renewable Energy Fund: Round 14 Application Summaries**Levelock Renewables Final Design and Permitting Duplicate to 14030****App #14033****Standard Application****Project Type:** 0**Energy Region:** Bristol Bay**Applicant:** Levelock Village Council**Proposed Phase(s):** 0**Applicant Type:** Government Entity**Recommended Phase(s):** 0**Project Description**

Renewable Energy Fund: Round 14 Application Summaries



Levelock Renewables Final Design and Permitting Duplicate to 14030

App #14033

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)	
2. Matching Resources (15)		Benefit/Cost Ratio	
3. Stage 2 Feasibility (20)			
4. Project Readiness (5)		Project Rank	
5. Benefits (15)		Statewide (of 36 Standard applications)	
6. Local Support (5)		Regional (of all applications)	
7. Sustainability (5)		Stage 3 Ranking Score (100)	
Total Stage 3 Score (100)			
Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$	\$	Cost of Electricity
REF9 Grant Funds	\$	\$0	Price of Fuel
Matching Funds	\$00	\$0	Household Energy Cost

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did not pass stage 1.

Election District: S-37

Renewable Energy Fund: Round 14 Application Summaries



Galena Community Scale Solar PV and Battery Project

App #14034**Standard Application****Project Type:** Solar, Storage**Energy Region:** Yukon-Koyukuk/Upper Tanana**Applicant:** City of Galena**Proposed Phase(s):** Design, Construction**Applicant Type:** Local Government**Recommended Phase(s):** Design, Construction

Project Description

Galena Community Scale Solar PV and Battery Project proposes to install a 1.2 MW solar photovoltaic (PV) and 500 kW/800 kWh battery energy storage system (BESS). This project will be integrated into the City of Galena's existing stand-alone diesel-electric generation and distribution grid and save the community over 80,000 gallons of diesel fuel annually and over 2,000,000 gallons over the projected 25-year life of the installation. The project will be installed on City land above certified flood level and will use a combination of contracted and local labor. This clean energy initiative will build on recent efforts that include a large-scale biomass district heating system, powerplant upgrades to automated switchgear, improved diesel generator controls and higher efficiency engines, transformer upgrades and changeouts that have already saved several thousand gallons of fuel annually, LED lighting improvements, and a highly trained workforce. The community has already secured \$1.5 million to initiate this project and is seeking \$2 million from the AEA Renewable Energy Fund. If awarded, it is expected that final design, permitting, and long lead-time equipment procurement will occur in 2022 and early 2023, construction will commence in summer of 2023, and system performance verification and reporting will continue through 2024.

DNR/DMLW Feasibility Comments

PAAD - No comments. RADS - No comments. NRO - No comments. OHA - Areas of new ground disturbance should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Galena Community Scale Solar PV and Battery Project

App #14034

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	19.71	Stage 2 Tech & Econ Score (100)	84.17
2. Matching Resources (15)	15.00	Benefit/Cost Ratio	1.27
3. Stage 2 Feasibility (20)	21.04		
4. Project Readiness (5)	5.00	Project Rank	
5. Benefits (15)	5.08	Statewide (of 36 Standard applications)	1
6. Local Support (5)	5.00	Regional (of all applications)	
7. Sustainability (5)	4.67	Stage 3 Ranking Score (100)	80.16
Total Stage 3 Score (100)	80.16		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$4,506,000	\$	Cost of Electricity	\$0.60/kWh
REF9 Grant Funds	\$2,000,000	\$	Price of Fuel	\$5.17/Gal
Matching Funds	\$1,506,000	\$	Household Energy Cost	\$10,020

AEA Review Comments & Recommendation

Full Funding with Special Provision

Contribution to Lower the Cost of Energy: The applicant model calculates 87,367 gallons of fuel saved every year equaling 2,184,180 gallons over the 25-year life of the Project. Annual O&M saving will be \$13,604 for the City of Galena.

Concerns and Risks: There is little technical risk associated with this project. Environmental risks involve the project site being on or near wetlands. There are two potential sites and environmental assessments will be the main driver of the final location decision. Public input will also weigh on the decision.

Financial Risk: There remains a \$1 million funding gap to which the City has identified many sources of potential funding. While this is a substantial sum, it is probable that the City will obtain such necessary funding. The City has been successful in applying to AEA's PPF loan program as recent as 2021.

Resource sustainability: The application shows the solar potential for the area, the estimated value of solar insolation and information from NREL.

Permits & authorizations: Application includes the permits required for installation and the length of the time to acquire them.

Technical risks: Identifies technical readiness level – lowest level, similar projects, challenges of unknown foundations and how the risks will be mitigated.

Environmental risks: siting above flood levels, no threatened species, wet lands in the area. Siting analysis will address environmental risks/requirements. Upgrades to system are currently underway as part of a different project, equipment quote included, similar to existing projects.

Election District: T-39

Renewable Energy Fund: Round 14 Application Summaries



Unga Man Creek Hydroelectric Project

App #14035**Standard Application****Project Type:** Hydro**Applicant:** City of False Pass**Applicant Type:** Local Government**Energy Region:** Aleutians**Proposed Phase(s):** Design**Recommended Phase(s):** Design

Project Description

Unga Man Creek Hydro Project is a proposed 180 kW run-of-river project on Unga Man Creek north of False Pass. The recommended project configuration would include 4,400 feet of 24-inch HDPE penstock to convey 18 cubic feet per second of water from a diversion structure upstream of the east fork confluence at elevation 260 feet down to a powerhouse at elevation 70 feet, near the existing road bridge. The project would provide 83% of the utility's electricity at generation or ~588,000 kWh annually based on a typical year.

DNR/DMLW Feasibility Comments

SCRO-There is no State owned land within the project area. PAAD - No comment; no navigable waters, no RST. RADS - Project area is within a Legislatively Designated Area (LDA): Aleutian Islands Refuge, a national wildlife refuge designated as a state game refuge under AS 16.20.030(a)(1), so designated to protect and preserve the natural habitat and game population in the area. OHA - There are no known cultural resources, but the area probably has not been surveyed for cultural resources. The project area should be surveyed for cultural resources.

DNR/DOF Feasibility Comments

N/A

DNR/DGGS Feasibility Comments

N/A

DNR/DGGS Geohazards Comments

N/A

Renewable Energy Fund: Round 14 Application Summaries



Unga Man Creek Hydroelectric Project

App #14035

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)	13.66	Stage 2 Tech & Econ Score (100)	59.33
2. Matching Resources (15)	11.00	Benefit/Cost Ratio	0.70
3. Stage 2 Feasibility (20)	14.83		
4. Project Readiness (5)	1.83	Project Rank	
5. Benefits (15)	1.00	Statewide (of 36 Standard applications)	21
6. Local Support (5)	5.00	Regional (of all applications)	
7. Sustainability (5)	2.00	Stage 3 Ranking Score (100)	51.33
Total Stage 3 Score (100)	51.33		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$5,167,720	\$	Cost of Electricity	\$0.62/kWh
REF9 Grant Funds	\$321,000	\$	Price of Fuel	\$3.62/Gal
Matching Funds	\$54,000	\$	Household Energy Cost	\$6,947

AEA Review Comments & Recommendation

Full Funding with Special Provision

Project capacity:

- 2015 Prelim Project Performance & Cost Estimate had 125 kW, design flow of 12 cfs, assumed instream 5 cfs.
- 2016 Feasibility Study Progress Report had 140 kW project, design flow 13 cfs and assumed instream 2 cfs with inlet just below East Fork (RM 1.4)
- Application 2.4 states 180 kW project to carry 18 cfs from above East Fork but below confluence of North & South Forks (RM 1.6).
- Applicant 3/1/22 States 180 kW & 18 cfs in Feasibility Report to be completed March 2022. Applicant at this time does not assume an instream flow.
- Economics based on zero instream flow.

Environmental considerations:

- 2016 FRP Recommendations noted that salmon were observed throughout proposed by-pass reach.
- Application mentions Pink Salmon
- ADF&G biologist found other species of salmon.
- 5.3.2 Identifies pink salmon & returning water. However, not listed but ADF&G AWC also identifies Chum, sockeye, and Coho. This could have a major impact on project. 2016 FRP notes that because of meander both potential sites may have 100-150 foot long 8-12 foot tall concrete wall with spillway (large cost & expensive to clean out). North & South basins are similar in area. Gages for each have data that may not be accurate.
- Hydrology Report 12/31/2021 states existing hydrology data is sufficient to form conclusions regarding feasibility of various hydro project in the Unga Man Creek Basin.
- It is recommended that gauging continue.
- Hydrology Report 12/31/2021 provides a flow duration curve for South Fork but none for North Fork or bridge locations. Does not give a flow duration curve for intake site (downstream of North & South Forks).

Election District S-37

Cost:

- Application gives construction cost of \$4.7M. -2016 Feasibility Study Progress Report gives estimated cost of \$25,000/kW for and estimated construction cost of \$4.6M with probable range of \$3.6M - \$5.4M. 100' to 150' long concrete wall will substantially increase

construction costs.

Renewable Energy Fund: Round 14 Application Summaries

For comparison Five Mile Creek \$5.2M Direct construction costs add with contingency \$6.4M. Does not include construction administration.



Emergency Renewable Energy Sources for Southeast Alaska - Saxman

App #14036**Standard Application****Project Type:** 0**Energy Region:** Southeast**Applicant:** Tlingit Haida Regional Housing Authority**Proposed Phase(s):** 0**Applicant Type:** Government Entity**Recommended Phase(s):** 0

Project Description

This project will provide back-up electricity to our elderly apartment complex. By providing this we will ensure all the emergency systems will be operational despite long blackouts of electricity in our rural communities. It will also safeguard food which is stored for use year-round as the cost of provisions in the villages is extremely high and unreliable. This project will entail the purchasing of a generator, constructing an accessory building to locate it, trenching, and connect to the existing systems so systems can be easily switched when needed. Any patch work on asphalt or ground cover will be addressed.

Renewable Energy Fund: Round 14 Application Summaries



Emergency Renewable Energy Sources for Southeast Alaska - Saxman

App #14036

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)	
2. Matching Resources (15)		Benefit/Cost Ratio	
3. Stage 2 Feasibility (20)			
4. Project Readiness (5)		Project Rank	
5. Benefits (15)		Statewide (of 36 Standard applications)	
6. Local Support (5)		Regional (of all applications)	
7. Sustainability (5)		Stage 3 Ranking Score (100)	
Total Stage 3 Score (100)			
Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$203,000	\$	Cost of Electricity \$/kWh
REF9 Grant Funds	\$170,000	\$0	Price of Fuel \$/Gal
Matching Funds	\$33,000	\$0	Household Energy Cost

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did not pass stage 1.

Election District: R-36

Renewable Energy Fund: Round 14 Application Summaries



Emergency Renewable Energy Sources for Southeast Alaska - Kake

App #14037**Standard Application****Project Type:** 0**Energy Region:** Southeast**Applicant:** Tlingit Haida Regional Housing Authority**Proposed Phase(s):** 0**Applicant Type:** Government Entity**Recommended Phase(s):** 0

Project Description

This project will provide back-up electricity to our elderly apartment complex. By providing this we will ensure all the emergency systems will be operational despite long blackouts of electricity in our rural communities. It will also safeguard food which is stored for use year-round as the cost of provisions in the villages is extremely high and unreliable. This project will entail the purchasing of a generator, constructing an accessory building to locate it, trenching, and connect to the existing systems so systems can be easily switched when needed. Any patch work on asphalt or ground cover will be addressed.

Renewable Energy Fund: Round 14 Application Summaries



Emergency Renewable Energy Sources for Southeast Alaska - Kake

App #14037

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$203,000	\$	Cost of Electricity	\$/kWh
REF9 Grant Funds	\$170,000	\$0	Price of Fuel	\$/Gal
Matching Funds	\$33,000	\$0	Household Energy Cost	

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did not pass stage 1.

Election District: R-35

Renewable Energy Fund: Round 14 Application Summaries**Emergency Renewable Energy Sources for Southeast Alaska - Angoon****App #14038****Standard Application****Project Type:** 0**Energy Region:** Southeast**Applicant:** Tlingit Haida Regional Housing Authority**Proposed Phase(s):** 0**Applicant Type:** Government Entity**Recommended Phase(s):** 0**Project Description**

This project will provide back-up electricity to our elderly apartment complex. By providing this we will ensure all the emergency systems will be operational despite long blackouts of electricity in our rural communities. It will also safeguard food which is stored for use year-round as the cost of provisions in the villages is extremely high and unreliable. This project will entail the purchasing of a generator, constructing an accessory building to locate it, trenching, and connect to the existing systems so systems can be easily switched when needed. Any patch work on asphalt or ground cover will be addressed.*

Renewable Energy Fund: Round 14 Application Summaries



Emergency Renewable Energy Sources for Southeast Alaska - Angoon

App #14038

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis	
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)	
2. Matching Resources (15)		Benefit/Cost Ratio	
3. Stage 2 Feasibility (20)			
4. Project Readiness (5)		Project Rank	
5. Benefits (15)		Statewide (of 36 Standard applications)	
6. Local Support (5)		Regional (of all applications)	
7. Sustainability (5)		Stage 3 Ranking Score (100)	
Total Stage 3 Score (100)			
Funding & Cost	Requested	Recommended	
Total Cost Through Construction	\$203,000	\$	Cost of Electricity \$/kWh
REF9 Grant Funds	\$170,000	\$0	Price of Fuel \$/Gal
Matching Funds	\$33,000	\$0	Household Energy Cost
AEA Review Comments & Recommendation			Did Not Pass Stage 1

Election District: R-35

Renewable Energy Fund: Round 14 Application Summaries**Reindeer and Barbara Creek Hydro Reconnaissance Project / Atmautluak Wind Diesel Battery Project****App #14039****Standard Application****Project Type:** Hydro**Energy Region:** Bristol Bay**Applicant:** City of Port Heiden**Proposed Phase(s):** Recon, Feasibility**Applicant Type:** Local Government**Recommended Phase(s):** 0**Project Description**

The City of Port Heiden is requesting \$215,000 from the REF to conduct reconnaissance and conceptual design studies for the development of a 150 to 450 kW hydro project at two sites, Reindeer and Barabara creeks.

Renewable Energy Fund: Round 14 Application Summaries



Reindeer and Barbara Creek Hydro Reconnaissance Project / Atmautluak Wind Diesel Battery Project

App #14039

Standard Application

Stage 3 Scoring Summary

Criterion (Max Score)	Score	Feasibility Analysis
1. Cost of Energy (35)		Stage 2 Tech & Econ Score (100)
2. Matching Resources (15)		Benefit/Cost Ratio
3. Stage 2 Feasibility (20)		
4. Project Readiness (5)		Project Rank
5. Benefits (15)		Statewide (of 36 Standard applications)
6. Local Support (5)		Regional (of all applications)
7. Sustainability (5)		Stage 3 Ranking Score (100)
Total Stage 3 Score (100)		

Funding & Cost	Requested	Recommended		
Total Cost Through Construction	\$	\$	Cost of Electricity	\$/kWh
REF9 Grant Funds	\$225,000	\$0	Price of Fuel	\$/Gal
Matching Funds	\$00	\$0	Household Energy Cost	

AEA Review Comments & Recommendation

Did Not Pass Stage 1

Did not pass stage 1.

Election District: S-37