# Renewable Energy Fund: Round 15 Application Summaries

## Native Village of Kluti-Kaah Wood Chip Heating Project

**App #15001** **Heat Application**

**Project Type:** HeatBiofuel
**Applicant:** Native Village of Kluti-Kaah
**Applicant Type:** Government Entity
**Energy Region:** Copper River Chguach
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

### Project Description

The Native Village of Kluti-Kaah Woodchip Heating Project proposes Phase IV Construction funding in the amount of $500,000 and will construct a biomass wood chip district heating system to service the Tribal Hall, Tribal Offices, garage, HeadStart, and the Cultural Learning and Recreational Center (CLRC). This project will displace about 23,709 gallons of imported heating fuel which is approximately 90% of the current and predicted usage. This system will use approximately 285 tons (25% moisture) per year of locally harvested and processed woodchips. This project will create local wood-harvesting employment/small business opportunities, providing a use for wood that is harvested to protect communities from wildfire while decreasing the community's dependence on expensive imported diesel. As part of another project NVKK is a developing wood harvest, wood chip processing, and a sawmill for economic development within the community.Initial funding for the development of this project was received from the United States Forest Service Wood Innovation Program and the Denali Commission for Phase 1 design and construction that included the Tribal Hall, offices, garage, Headstart and clinic. Since these grants were awarded, NVKK has received funding to complete the construction of the CLRC, so the proposed AEA grant will support the expanded scope to provide biomass heat to the CLCR. The clinic will be moved into the CLRC. Additionally, the WIG and DC funding was received before COVID and the recent out-of-control inflation and shipping costs. Construction costs for the project have increased significantly due to lack of materials availability, shipping, and a shortage of construction contractors. The AEA funding will also support the completion of work already started on the chip-fired districted heating system.

### DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Renewable Energy Fund: Round 15 Application Summaries

## Native Village of Kluti-Kaah Wood Chip Heating Project

**App #15001** **Heat Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.87 |
| 2. Matching Resources (15) | 18.00 |
| 3. Stage 2 Feasibility (25) | 19.39 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 4.75 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 9.33 |
| Total Stage 3 Score (100) | 81.84 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 77.58 |
| Benefit/Cost Ratio | 1.04 |

| Project Rank | |
|---|---|
| Statewide (of 2 Heat applications) | 1 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 81.84 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,065,000 | $1,065,000 |
| REF Grant Funds | $500,000 | $500,000 |
| Matching Funds | $403,400 | $403,400 |

| | |
|---|---|
| Cost of Electricity | $0.36/kWh |
| Price of Fuel | $5.05/Gal |
| Household Energy Cost | $10,138 |

### AEA Review Comments & Recommendation

**Full Funding**

This is the final phase of the project, which has received funding from multiple sources. The application covers the existing cost overruns. The project will displace 90% of the existing load. The design is based on existing projects and best practices. There is redundancy in case of failure. No site control is necessary as the grantee owns the land. Risks include chip quality and availability of trained staff.

**Election District: 36-R**

# Nuyakuk River Hydroelectric Project (Run of River Project)

**App #15002** **Standard Application**

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

# Nuyakuk River Hydroelectric Project (Run of River Project)

**App #15002** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | |
| 2. Matching Resources (15) | |
| 3. Stage 2 Feasibility (25) | |
| 4. Project Readiness (5) | |
| 5. Benefits (10) | |
| 6. Local Support (5) | |
| 7. Sustainability (10) | |
| Total Stage 3 Score (100) | |

| Feasibility Analysis |
|---|
| Stage 2 Tech & Econ Score (100) |
| Benefit/Cost Ratio |

| Project Rank |
|---|
| Statewide (of 29 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $155,009,624 | $ |
| REF Grant Funds | $1,000,000 | $0 |
| Matching Funds | $200,000 | $0 |

| | |
|---|---|
| Cost of Electricity | $/kWh |
| Price of Fuel | $/Gal |
| Household Energy Cost | |

**AEA Review Comments & Recommendation** **Did Not Pass Stage 1**

**Election District: 37-S**

# Selawik Solar PV

**App #15003** **Standard Application**

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

## Project Description

The Northwest Arctic Borough (NAB) is requesting $1,134,500 for Phase IV Construction of a high penetration distributed solar PV system for the community of Selawik. Based on Hybrid Optimization for Multiple Energy Resources (HOMER) software modeling and AEA's B/C Ratio model, this system will displace about 27,278 gallons of imported diesel fuel annually and will result in about 193 hours of diesels-off operation, saving the community about $81,698 during the first year of operation. Lifetime savings for the project are estimated at 681,947 gallons of diesel fuel and $2,511,674. In addition to reducing the cost of electrical generation, the solar PV system, in conjunction with a related and separately funded project to construct a Battery Energy Storage System, will result in a hybrid solar PV/battery/diesel system, will dramatically increase the efficiency and resilience of the power generation system by providing spinning reserve and significantly reducing brown-outs and black-outs and associated freeze-ups of the community water system. 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-Kobuk, and Noatak. Upon completion of the project, this solar PV system will be transferred to ownership as an IPP by the Native Village of Selawik and sell power to the Alaska Village Electric Cooperative, similar to other projects in the region.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Selawik Solar PV

**App #15003** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 19.06 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 18.09 |
| 4. Project Readiness (5) | 4.71 |
| 5. Benefits (10) | 2.50 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 72.86 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 72.38 |
| Benefit/Cost Ratio | 0.88 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 14 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.86 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,542,000 | $1,542,000 |
| REF Grant Funds | $1,134,500 | $1,134,500 |
| Matching Funds | $251,500 | $251,500 |

| | |
|---|---|
| Cost of Electricity | $0.53/kWh |
| Price of Fuel | $6.00/Gal |
| Household Energy Cost | $8,448 |

## AEA Review Comments & Recommendation

**Full Funding**

A more detailed schedule would be warranted for the project to move forward.

**Election District: 40-T**

# Healy Renewable Resource Assessment

**App #15004** **Standard Application**

**Project Type:** Wind
**Applicant:** Cook Inlet Region Inc (CIRI) Energy, LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

CIRI Energy is planning to develop, own and operate a 40-MW wind and/or solar project on the privately owned lands of CIRI. Through the proposed resource and economic study within the scope of this grant application, the best resource and location will be identified to continue development. In subsequent phases, engineering, procurement, and construction studies will be completed to reach a final investment decision. In addition to providing information for the best resource and location, the data collected within the scope of this grant will provide data necessary to obtain commercial financing. The fully developed project will supply clean and affordable power to the Railbelt grid through a power purchase agreement negotiated with the interconnected utilities.

## DNR/DGGS Geohazards Comments

The proposed site is located within the Quaternary-active Northern Foothills Fold and Thrust Belt, a continuous system of active faults that accommodate growth of the Alaska Range in a zone ~500 km wide (i.e., east to west) north of the Denali Fault. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Renewable Energy Fund: Round 15 Application Summaries

## Healy Renewable Resource Assessment

**App #15004** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 21.26 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 20.98 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 5.92 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 8.20 |
| Total Stage 3 Score (100) | 78.36 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 96.42 |
| Benefit/Cost Ratio | 2.59 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 10 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 78.36 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $89,400,000 | $89,400,000 |
| REF Grant Funds | $298,000 | $298,000 |
| Matching Funds | $54,000 | $54,000 |

| | |
|---|---|
| Cost of Electricity | $0.22/kWh |
| Price of Fuel | $5.45/Gal |
| Household Energy Cost | $9,425 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 30-O**

# Beluga Renewable Resource Assessment

**App #15005** **Standard Application**

**Project Type:** Wind
**Applicant:** Cook Inlet Region Inc (CIRI) Energy, LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

CIRI Energy is planning to develop, own and operate a 40-MW wind and/or solar project on the privately owned lands of CIRI. Through the proposed resource and economic study within the scope of this grant application, the best resource and location will be identified to continue development. In subsequent phases, engineering, procurement, and construction studies will be completed to reach a final investment decision. In addition to providing information for the best resource and location, the data collected within the scope of this grant will provide data necessary to obtain commercial financing. The fully developed project will supply clean and affordable power to the Railbelt grid through a power purchase agreement negotiated with the interconnected utilities.

## DNR/DMLW Feasibility Comments

Within Kenai Area Plan. Project area is not designated. Area will need to be classified before an authorization is issued.

## DNR/DGGS Geohazards Comments

The proposed site is located at the northern end of the Cook Inlet Basin above the Alaska-Aleutian subduction zone interface, ~12 km southeast of the western terminus of the Susitna section of the Castle Mountain fault that has been active in the last 15,000 years. Ground accelerations from ongoing subduction zone earthquakes also to be expected. All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Renewable Energy Fund: Round 15 Application Summaries

## Beluga Renewable Resource Assessment

**App #15005** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 29.55 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 18.07 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 2.17 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 8.20 |
| Total Stage 3 Score (100) | 79.99 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 74.79 |
| Benefit/Cost Ratio | 0.91 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 8 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 79.99 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $89,400,000 | $89,400,000 |
| REF Grant Funds | $298,000 | $298,000 |
| Matching Funds | $54,000 | $54,000 |

| | |
|---|---|
| Cost of Electricity | $0.24/kWh |
| Price of Fuel | $7.68/Gal |
| Household Energy Cost | $13,101 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Huslia Community-Scale Solar PV and Battery Project

**App #15006** **Standard Application**

**Project Type:** Solar
**Applicant:** Tanana Chiefs Conference
**Applicant Type:** IPP
**Energy Region:** Yukon-Koyukuk Upper Tanana
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

Huslia Community-Scale Solar PV and Battery Project proposes to install a 350 KW solar photovoltaic (PV) and 500 kWh battery energy storage system (BESS). This project will be integrated into Alaska Village Electric Cooperative's (AVEC's) existing stand-alone diesel electric generation and distribution grid in Huslia and save the community approximately 32,243 gallons of diesel fuel annually and about 806,075 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 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. TCC is seeking $2,082,000 from the AEA Renewable Energy Fund. If awarded, it is expected that final. design, permitting, and long lead-time equipment procurement will occur in 2023 and early 2024, construction will commence in summer of 2024, and system performance verification and reporting will continue through the end of 2024. TCC will serve as an Independent Power Producer and AVEC will purchase the renewable power through a Power Purchase Agreement (PPA)

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Huslia Community-Scale Solar PV and Battery Project

**App #15006** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 25.01 |
| 2. Matching Resources (15) | 10.50 |
| 3. Stage 2 Feasibility (25) | 19.11 |
| 4. Project Readiness (5) | 4.33 |
| 5. Benefits (10) | 4.08 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 9.22 |
| Total Stage 3 Score (100) | 74.77 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 76.46 |
| Benefit/Cost Ratio | 1.00 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 12 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 74.77 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $2,192,000 | $2,192,000 |
| REF Grant Funds | $2,082,000 | $2,082,000 |
| Matching Funds | $110,000 | $110,000 |

| | |
|---|---|
| Cost of Electricity | $0.55/kWh |
| Price of Fuel | $6.25/Gal |
| Household Energy Cost | $11,090 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 36-R**

# Hydroelectric Power Adak - Feasibility and Conceptual Design

**App #15007** **Standard Application**

**Project Type:** Hydro
**Applicant:** TDX Adak Generating, LLC
**Applicant Type:** Utility
**Energy Region:** Aleutians
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

Hydroelectric Power Adak – Feasibility and Conceptual Design proposes to complete a detailed feasibility study on three hydroelectric project options, and dependent on those results, a conceptual design, and lastly, begin permit consultations for a hydroelectric turbine. The ultimate goal of this work is to install a hydroelectric power system on Adak which should reduce the dependence on expensive transported diesel fuel for local power generation. A previous Reconnaissance report, completed by Hatch in 2013, listed several options for installing a hydroelectric turbine. This Hatch report identifies two specific options we would like to investigate further with this detailed feasibility study. Both options utilize the existing water infrastructure connected to Lake Bonnie Rose (a dam and 10-inch domestic water pipeline). However, this existing water infrastructure (dam and pipeline) was installed by the military over 60 years ago and has had little maintenance. Therefore, if the existing infrastructure does not have the integrity to support a 20-year project, a third option explores the economics and feasibility of installing a new dam and penstock, potentially also providing water to the city. Based on the existing pipeline diameter, head, and flow conditions from Lake Bonnie Rose, the estimated power production is 89 kW – 440 kW, which corresponds to 26 -100% of the total community load currently served by TAG. TAG, the electric utility on Adak, will work with the City of Adak and other stakeholders to provide lower cost electricity to the island.

## DNR/DMLW Feasibility Comments

Currently there is an expired permit for water export issued to the Aleut Corp, which automaticaly invoked an AS 46.15.035/.037 reservation of water (not subject to AS 46.15.145 laws). The reservation is certificated for fish purposes and any water right applications (which includes the said hydropower) will be subject to it unless the permit is closed, therefore creating no need for the reservation. The first option will require a application to modify a dam for an existing state jurisdictional dam (Bonnie Rose Lake Dam AK00108). The second option would require an HPCJR at the very least, and it is likely to involve the construction of a new state jurisdictional dam. SCRO:GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of naviagble or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Geohazards Comments

The proposed site is located directly above the Alaska-Aleutian Megathrust, a major plate-boundary fault that accommodates subduction of the Pacific plate beneath the North American Plate. Numerous significant and tsunamigenic earthquakes have occurred here and high ground accelerations in future subduction zone earthquakes are expected.All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Hydroelectric Power Adak - Feasibility and Conceptual Design

**App #15007** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 27.67 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 21.33 |
| 4. Project Readiness (5) | 4.67 |
| 5. Benefits (10) | 5.50 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 91.66 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 85.33 |
| Benefit/Cost Ratio | 1.26 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 1 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 91.66 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $497,650 | $497,650 |
| Matching Funds | $247,075 | $247,075 |

| | |
|---|---|
| Cost of Electricity | $1.17/kWh |
| Price of Fuel | $5.69/Gal |
| Household Energy Cost | $12,265 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Turnagain Arm Tidal Electricity Generation project (TATEG)

**App #15008** **Standard Application**

**Project Type:** Hydrokinetic
**Applicant:** Turnagain Arm Tidal Energy Corporation
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon
**Recommended Phase(s):** Recon

## Project Description

Tidal Energy Corp (TEC) is the developer of the Turnagain Arm Tidal Electricity Generation project (FERC #P-15109), a 137 square mile tidal energy site situated between Anchorage, Fire Island, and Point Possession, Alaska. Preliminary water speed modeling indicates several high speed hotspots within the boundaries with power potential to be determined by these requested studies and others. Technical assistance for refined modeling of water speeds has been requested by TEC from Pacific Northwest National Lab (PNNL), with confirmation testing technical assistance requested from the Alaska Center for Energy and Power (ACEP) and National Renewable Energy Lab (NREL). PNNL technical assistance on biological and environmental desktop analysis with a view to providing likely regulatory and permitting guidance has also been requested. Several requests for Techno Economic Analysis assistance from NREL and Idaho National Lab will be in by 3/3/23. This proposal for AEA REF 15 is to request funding for a) Bathymetry for the site (See attached proposal from Terrasond), as well as Regulatory and Permitting Consulting (See attached bid proposal from 48 North). Once the studies and consulting tasks outlined in the Reconnaissance Phase are completed, the majority of the reconnaissance for the site will be finished, and next steps can be considered on a go/no go basis based on data collected.

## DNR/DMLW Feasibility Comments

PAAD - Within the area of mean high tide and the 3 mile limit a state authorization will be required upon and across state tidelands and submerged lands as defined in AS 38.05.965 (25) and (26). The project will also need to work with NOAA- USFS regarding endangered Beluga Whales. SCRO: Infrastructure proposed to be placed on state submerged lands in Turnagain Arm and Cook Inlet requires an authorization from SCRO. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. Lands in the project area may also be under management by DPOR for Chugach State Park. No disposable interest classification nearby. Mostly in Cook Inlet. FYI, first lat/long is on the coast and appears to fall within the Kenai State Moose Range

## DNR/DGGS Geohazards Comments

These sites are located at the ~northern end of the Cook Inlet Basin above the Alaska-Aleutian subduction zone interface. Ground accelerations from ongoing subduction zone earthquakes to be expected.All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Turnagain Arm Tidal Electricity Generation project (TATEG)

**App #15008** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.06 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 13.35 |
| 4. Project Readiness (5) | 3.25 |
| 5. Benefits (10) | 2.25 |
| 6. Local Support (5) | 1.00 |
| 7. Sustainability (10) | 7.00 |
| Total Stage 3 Score (100) | 56.41 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 53.39 |
| Benefit/Cost Ratio | 1.07 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 21 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 56.41 |

| Funding & Cost | Requested | Recommended | | |
|---|---|---|---|---|
| Total Cost Through Construction | $2,694,680,000 | $2,694,680,000 | Cost of Electricity | $0.21/kWh |
| REF Grant Funds | $1,400,000 | $1,400,000 | Price of Fuel | $2.77/Gal |
| Matching Funds | $280,000 | $80,000 | Household Energy Cost | $5,792 |

## AEA Review Comments & Recommendation

**Partial Funding with Special Provision**

Reconnaissance studies are a desktop study and the analysis should use resource, economic, and operational data that is readily and/or publicly available. There are also many stakeholders on a project such as TATEG, and it is imperative for project planners to conduct extensive stakeholder outreach prior to any feasibility study work, such as bathymetric mapping, to determine the extent of stakeholder approval. Additionally, the TATEG project's permitting and regulatory requirements must be known before the project team can sufficiently define the scope of work, and subsequently estimate the project cost and schedule. The recommended grant award amount is intended to fund the Stakeholder Outreach and Regulatory and Permitting Consulting work activities, which are necessary work activities to inform the question of: "Should this project be built?"

**Election District: 16-H, 15-H, 8-D**

# Railbelt Wind Feasibility Study and Conceptual Design

**App #15009** **Standard Application**

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

## Project Description

For this project, the Railbelt Wind Feasibility and Conceptual Design (considered part of phase II of the Railbelt Wind Study), MEA will manage a collaborative effort to evaluate the feasibility for wind energy generation projects across the Railbelt and understand the relationships between wind resources therein. This project will consider and leverage the efforts of GVEA and HEA funded through Round 14 of the REF and HEA's offshore platform Lidar study requested in Round 15, to eliminate redundant data collection efforts. The feasibility study will begin with economic analysis of the potential sites recommended in the Railbelt Wind Reconnaissance Study and install up to ten (10) meteorological (met) towers, collect data for up to three years, and analyze the feasibility of each individual site for development. Pyranometers can be installed at each met tower to measure the solar resource and determine the potential for solar PV standalone projects or co  located wind and solar PV. The number of sites will be given precedence over multiple towers at one site to fully quantify the interrelationship of wind resources across the Railbelt. Met towers may be moved based on low measured wind energy, high turbulence, or other reasons.

## DNR/DMLW Feasibility Comments

SCRO: If DMLW-managed lands are proposed for use an authorization will be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. Land use permits may be required for installation of met towers on State land.

## DNR/DGGS Geohazards Comments

The AK railbelt crosses several active tectonic structures. All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

ALASKA ENERGY AUTHORITY

# Railbelt Wind Feasibility Study and Conceptual Design

**App #15009** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.06 |
| 2. Matching Resources (15) | 19.50 |
| 3. Stage 2 Feasibility (25) | 19.82 |
| 4. Project Readiness (5) | 4.50 |
| 5. Benefits (10) | 5.25 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 9.20 |
| Total Stage 3 Score (100) | 73.83 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 79.28 |
| Benefit/Cost Ratio | 1.10 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 13 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 73.83 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,322,680,000 | $1,322,680,000 |
| REF Grant Funds | $1,833,333 | $1,833,333 |
| Matching Funds | $550,000 | $550,000 |

| | |
|---|---|
| Cost of Electricity | $0.21/kWh |
| Price of Fuel | $2.77/Gal |
| Household Energy Cost | $5,792 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: various**

# Napaskiak Reconnaissance and Wind Assessment Project

**App #15010** **Standard Application**

**Project Type:** Wind, Solar
**Applicant:** City of Napaskiak
**Applicant Type:** Local Government
**Energy Region:** Lower Yukon Kuskokwim
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

The City would like to know the economic viability of renewable energy, specifically wind+solar+battery storage with our diesel system by conducting this two phase project: Reconnaissance and Wind Assessment. By conducting these efforts together as one project, we can realize a feasibility study and conceptual design to move our community towards substantially reduced dependence on diesel.

## DNR/DMLW Feasibility Comments

SCRO:GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. RS 2477/RST 30 is in the area and any impacts to the State's interest in RST 30 will require an authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Renewable Energy Fund: Round 15 Application Summaries

## Napaskiak Reconnaissance and Wind Assessment Project

**App #15010** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.71 |
| 2. Matching Resources (15) | 9.00 |
| 3. Stage 2 Feasibility (25) | 11.15 |
| 4. Project Readiness (5) | 1.63 |
| 5. Benefits (10) | 0.50 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 8.67 |
| Total Stage 3 Score (100) | 53.66 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 44.61 |
| Benefit/Cost Ratio | 0.33 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 24 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 53.66 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $446,500 | $446,500 |
| Matching Funds | $3,000 | $3,000 |

| | |
|---|---|
| Cost of Electricity | $0.76/kWh |
| Price of Fuel | $6.45/Gal |
| Household Energy Cost | $10,069 |

### AEA Review Comments & Recommendation

**Partial Funding**

Monitoring costs of $2000 per month are high, partial funding recommended of $1,000 per month. Cost of met tower is high compared to purchase price for equipment, partial funding of 50% of $194,000 recommended.

**Election District: 38-S**

# Chefornak Battery Installation, Integration and Commissioning

**App #15011** **Standard Application**

**Project Type:** Wind
**Applicant:** Naterkaq Light Plant
**Applicant Type:** Local Government
**Energy Region:** Lower Yukon Kuskokwim
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Feasibility

## Project Description

Naterkaq Light Plant is a standalone diesel generating and electrical distribution utility providing electricity to the community Chefornak. Energy Cost Program for a BESS system to augment our wind diesel project.The DOE funds were used to purchase a 500kW/677 kWh Battery Energy Storage System (BESS) Naterkaq Light Plant (NLP) is requesting $437,000 to complete the installation, integration, and commissioning to enable upwards of 2600 hours of diesel off operation annually.REF Funds will allow NLP to produce 600,000 kWh of wind energy annually, displacing more than 39,030 gallons of diesel fuel used for power generation. This is equivalent to a savings of more than $190,000 annually at $5.00/gallons and generate deferred diesel operating savings of $23,400 annually (at$9 per operating hour) due to 2600 diesel-off hours.This is an annual benefit of $213,400. Additionally, 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

Cannot dispose of state land within an LDA - AS 16.20.030A16 - Within the Clarence Rhodes National Wildlife Range SCRO:GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. LDA.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Chefornak Battery Installation, Integration and Commissioning

**App #15011** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.18 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 18.47 |
| 4. Project Readiness (5) | 3.83 |
| 5. Benefits (10) | 10.00 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 5.43 |
| Total Stage 3 Score (100) | 78.91 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 73.87 |
| Benefit/Cost Ratio | 1.72 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 9 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 78.91 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $437,000 | $437,000 |
| Matching Funds | $858,000 | $858,000 |

| | |
|---|---|
| Cost of Electricity | $0.55/kWh |
| Price of Fuel | $6.61/Gal |
| Household Energy Cost | $8,946 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 38-S**

# Atmautluak Battery and Thermal Stove Installation, Integration and Commissioning

**App #15012** **Standard Application**

**Project Type:** Wind
**Applicant:** Atmautluak Tribal Utilities
**Applicant Type:** Government Entity
**Energy Region:** Lower Yukon Kuskokwim
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

Atmautluak Tribal Utilities/Light Plant (ATU), as a standalone diesel generating and electrical distribution utility providing electricity to the Village of Atmautluak, received a $2,900,000 grant from USDA High Energy Cost Program for a 200 kW wind-heat system for our power system. The USDA funds have been used to purchase and 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, install a wind diesel supervisory control system, and a 200 kW-load balancing boiler. In addition, a 250kW/377kWh battery energy storage system (BESS) and 30 electric thermal storage(ETS) devices have been purchased. The ETS's will capture surplus wind energy to displace heating fueland the BESS system. ATU is requesting $577,000 to complete the installation, integration, and commissioning of the 250kW/377kWh battery energy storage system and 30 electric thermal stoves to enable upwards of 3,200 hours of diesel off operation annually. Atmautluak is committing $75,000 in cash match and $6,000 in kind to this project. REF Funds will enable ATU to produce 400,000 kWh of wind energy annually, displacing 25,556 gallons of diesel fuel used for power generation. This is equivalent to a savings of $127,780 at $5.00/gal current rate is $6.54), and generate deferred diesel operating savings of $29,700 annually (at $9 per operating hour) due to 3300 diesel-off hours. This is an annual benefit of $127,780. Additionally, the wind system has the potential to produce an additional 66,000 kWh of surplus electricity, which could displace up to 2,200 gallons of home heating fuel, and additional $11,000 directly to homeowners. It will also improve safety and resiliency in the community while eliminating requirements to invest in the expansion of bulk fuel storage.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Atmautluak Battery and Thermal Stove Installation, Integration and Commissioning

**App #15012** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 21.53 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 12.30 |
| 4. Project Readiness (5) | 3.92 |
| 5. Benefits (10) | 2.50 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 5.43 |
| Total Stage 3 Score (100) | 59.18 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 49.21 |
| Benefit/Cost Ratio | 0.77 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 19 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 59.18 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $577,000 | $577,000 |
| Matching Funds | $81,000 | $81,000 |

| | |
|---|---|
| Cost of Electricity | $0.66/kWh |
| Price of Fuel | $6.54/Gal |
| Household Energy Cost | $9,546 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 38-S**

# Kipnuk Battery Installation, Integration and Commissioning

**App #15013** **Standard Application**

**Project Type:** Wind
**Applicant:** Kipnuk Light Plant
**Applicant Type:** Government Entity
**Energy Region:** Lower Yukon Kuskokwim
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

Kipnuk Light Plant is a standalone diesel generating and electrical distribution utility providing electricity to the community of Kipnuk. Kipnuk has had wind turbines for a number of years, and we've needed a Battery for some time in order to more effectively use all the wind energy from our windgeneration. We were very happy that the DOE provided funds for us to purchase a 500kW/677 kWh Battery Energy Storage System (BESS). KLP is now requesting $434,000 to complete the installation, integration, and commissioning to enable upwards of 2600 hours of diesel off operation annually.REF Funds will allow KLP to increase diesel-off hours from 1,109 to 5,499 or 4,390 additional hours displacing more than 70,000 gallons of diesel fuel from using our wind turbine/diesel system. This is equivalent to a savings of more than $350,000 annually at $5.00/gallons and generate deferred diesel operating savings of $48,600 annually (at $9 per operating hour) due to 5400 diesel-off hours.This is an annual benefit of $398,600. Additionally, it will also improve safety and resilience.

## DNR/DMLW Feasibility Comments

SCRO: GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. RS 2477/RST 116 is in the area and any impacts to the State's interest in RST 116 will require an authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Kipnuk Battery Installation, Integration and Commissioning

**App #15013** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 21.71 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 18.47 |
| 4. Project Readiness (5) | 3.92 |
| 5. Benefits (10) | 10.00 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 5.43 |
| Total Stage 3 Score (100) | 80.53 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 73.87 |
| Benefit/Cost Ratio | 5.00 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 6 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 80.53 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $434,000 | $434,000 |
| Matching Funds | $859,000 | $859,000 |

| | |
|---|---|
| Cost of Electricity | $0.69/kWh |
| Price of Fuel | $6.54/Gal |
| Household Energy Cost | $9,624 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 38-S**

# Renewable Energy Fund: Round 15 Application Summaries

## Chignik Hydroelectric Power System

**App #15014** **Standard Application**

**Project Type:** Hydro
**Applicant:** Chignik Hydroelectric Power System
**Applicant Type:** Local Government
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Design
**Recommended Phase(s):** Design

### Project Description

The City of Chignik's water source is Indian Lake which is impounded by a timber buttress dam. Water flows from the dam through a 7,260 ft transmission line to the community water treatment plant. Flow from Indian lake has also historically powered a now decommissioned 60 kW hydroelectric turbine in a local cannery, the FERC permit for which is now owned by the city. Thedam and portions of the water transmission lines are over 70 years old, near failure, and in urgent need of replacement. As of the date of this application, the Alaska Area Office of the Indian Health Service (AAIHS) has committed to funding the renovation of the aging dam and water transmission lines to meet this need. The AAIHS has approved $7,230,830 of funding ($639,987 for engineering and $6,590,843 for construction). This approval is being reviewed by the national-level IHS and is expected to be available in 2023. The water transmission and dam replacement project will be referred to as the "dam renovation" for the remainder of this application. In this application, the City of Chignik seeks funding to complete the final design and permitting phase (Phase III) of a hydroelectric power generation system concurrent with the design of the dam renovation. Because the dam renovation is expected to be funded in 2023, the confluence of 2023 IHS funding and the timing of this application represents a unique opportunity to design thehydroelectric system at the same time as the dam renovation. Concurrency is important because the design and construction of the hydroelectric system will be significantly more expensive should Phase III be completed separately. The concurrent design will achieve cost savings through economies of scale and ensure that electric-power generation is considered in the water sourceproject's sizing, location, and layout. Therefore, funding must be approved specifically during the current round of the REF. The hydroelectric power generation system or "hydroelectric system" as it will be referred to for the remainder of the application, will consist of a penstock, a newpowerhouse with a Turgo turbine, a tailrace, electrical transmission infrastructure to the existing diesel powerplant, and the associated control upgrades; it will be housed inside the renovated dam. Phase III of the hydroelectric system project will utilize a 2014 feasibility study performedby the consulting firm Hatch Ltd. and a 2018 Preliminary Engineering Report (PER) performed by the Alaska Native Tribal Health Consortium (both documents are included in Appendix A). The 2014 feasibility study found that the proposed hydroelectric system could meet approximately 94.7% of the city's electrical load, saving approximately 50,441 gallons of diesel annually.

### DNR/DMLW Feasibility Comments

Chignik Dam (AK00103) is under Federal Jurisdiction, but it would be prudent to have them submit a HPCJR for the project to ADNR. Water right application on file. PAAD - Please see comments from RD 13008 application for the same projectSCRO: GPS coordinates indicate project is on non-state uplands lands. If shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

### DNR/DGGS Geohazards Comments

The proposed site is located directly above the Alaska-Aleutian Megathrust, a major plate-boundary fault that accommodates subduction of the Pacific plate beneath the North American Plate. Numerous significant and tsunamigenic earthquakes have occurred here and high ground accelerations in future subduction zone earthquakes are expected. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Renewable Energy Fund: Round 15 Application Summaries

## Chignik Hydroelectric Power System

**App #15014** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 15.29 |
| 2. Matching Resources (15) | 10.50 |
| 3. Stage 2 Feasibility (25) | 18.26 |
| 4. Project Readiness (5) | 3.92 |
| 5. Benefits (10) | 2.00 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 61.47 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 73.04 |
| Benefit/Cost Ratio | 0.60 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 18 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 61.47 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $6,684,344 | $6,684,344 |
| REF Grant Funds | $802,394 | $802,394 |
| Matching Funds | $43,767 | $43,767 |

| | |
|---|---|
| Cost of Electricity | $0.58/kWh |
| Price of Fuel | $3.94/Gal |
| Household Energy Cost | $6,780 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Beric Alaska Energy Solar One

**App #15015** **Standard Application**

**Project Type:** Solar
**Applicant:** Mark K. Johnson dba Beric Alaska Energy
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

Project consists, in phase one, of an approximately 200 Kw solar array on parcel of land adjacent to existing distribution infrastructure. Phase two would expand the project by an additional 200 Kw. Phase three would add a storage battery and related equipment to enhance dispatchability of produced energy. Throughout the project, emphasis would be placed on operational efficiency and scalability of combination solar/battery systems. This project is intended to demonstrate and perfect the use of and dispatchability of scalable solar/battery/energy storage in the Railbelt.

# Renewable Energy Fund: Round 15 Application Summaries

## Beric Alaska Energy Solar One

**App #15015** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | |
| 2. Matching Resources (15) | |
| 3. Stage 2 Feasibility (25) | |
| 4. Project Readiness (5) | |
| 5. Benefits (10) | |
| 6. Local Support (5) | |
| 7. Sustainability (10) | |
| Total Stage 3 Score (100) | |

| Feasibility Analysis |
|---|
| Stage 2 Tech & Econ Score (100) |
| Benefit/Cost Ratio |

| Project Rank |
|---|
| Statewide (of 29 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $52,500 | $0 |
| Matching Funds | $17,500 | $0 |

| | |
|---|---|
| Cost of Electricity | $/kWh |
| Price of Fuel | $/Gal |
| Household Energy Cost | |

**AEA Review Comments & Recommendation** **Did Not Pass Stage 1**

**Election District: 30-O**

# Kalskag Wind Feasibility and Conceptual Design

**App #15016** **Standard Application**

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

## Project Description

Alaska Village Electric Cooperative, Inc. (AVEC) is requesting $267,300 and will provide a matchof $29,700 to conduct a wind power feasibility and conceptual design project for the powergeneration in Upper Kalskag that also serves the community of Lower Kalskag via an intertie.AVEC, with the cooperation of the communities, would assess the feasibility of wind resourcessuited to provide power to the communities and prepare a conceptual design of a wind facility.

## DNR/DMLW Feasibility Comments

Locations within an area plan must comply with the management intent for that unit. KUAP - Unit 18A MAT, WHB, WRR. PAAD - once the project is further developed review will be necessary. There are multiple RST files that begin or end within the Upper/Lower Kalskag vicinity. SCRO: GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. RS 2477/RST 229 and 335, 92 is in the area and any impacts to the State's interest in RSTs will require an authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Kalskag Wind Feasibility and Conceptual Design

**App #15016** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.35 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 18.25 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 2.50 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 72.10 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 73.00 |
| Benefit/Cost Ratio | 0.30 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 15 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.10 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $5,647,000 | $5,647,000 |
| REF Grant Funds | $267,300 | $267,300 |
| Matching Funds | $29,700 | $29,700 |

| | |
|---|---|
| Cost of Electricity | $0.54/kWh |
| Price of Fuel | $6.75/Gal |
| Household Energy Cost | $9,022 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# New Stuyahok Solar Energy and Battery Storage Project

**App #15017** **Standard Application**

**Project Type:** Solar
**Applicant:** Alaska Village Electric Cooperative, Inc.
**Applicant Type:** Utility
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

Alaska Village Electric Cooperative, Inc. (AVEC) is requesting $2,520,000 through an Alaska Energy Authority (AEA) Renewable Energy Fund (REF) grant to complete final design and construction of a local solar energy and battery storage in New Stuyahok, Alaska that would also serve Ekwok, Alaska. The proposed project involves completing final solar design and constructionof a 300-kW solar array with a 500-kW power conversion system and a 500 kWh battery storage to supplement the existing power generation system which serves New Stuyahok and Ekwok. Like many communities in Alaska, New Stuyahok and Ekwok experiences high and unstable energy costs. The communities depend on diesel fuel to power the three local generators and two back up generators responsible for all available energy in the communities. To provide renewable energy to the communities, a distributed solar-battery hybrid system would be constructed in New Stuyahok next to the existing power plant. The existing diesel system wouldoperate at a lower capacity to supplement solar energy in the winter and when the solar resource is low. It is anticipated that solar generation would be the primary energy source during periods of prolonged sun exposure by installing a power converter and energy storage system. Solar energy has proven a viable energy resource in the similar communities in western Alaska. As solarbecomes a proven feasible energy source for communities in Alaska, AVEC hopes to secure funding from AEA to reduce energy costs for New Stuyahok and Ekwok through the installation of solar power and battery storage.

## DNR/DMLW Feasibility Comments

Locations within an area plan must comply with the management intent for that unit. KUAP - Unit 18A MAT, WHB, WRR. On State land, but no disposable interest classification nearby. Coordinates might be in error, approx 10 miles from communities listed. SCRO: GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# New Stuyahok Solar Energy and Battery Storage Project

**App #15017** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.92 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 12.50 |
| 4. Project Readiness (5) | 2.92 |
| 5. Benefits (10) | 2.50 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 9.83 |
| Total Stage 3 Score (100) | 64.67 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 69.00 |
| Benefit/Cost Ratio | 0.07 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 17 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 64.67 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $2,800,000 | $2,800,000 |
| REF Grant Funds | $2,520,000 | $2,520,000 |
| Matching Funds | $280,000 | $280,000 |

| | |
|---|---|
| Cost of Electricity | $0.54/kWh |
| Price of Fuel | $7.94/Gal |
| Household Energy Cost | $9,273 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# LIDAR Improvement to Interior Wind Energy Assessments

**App #15018** **Standard Application**

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

## Project Description

Funds from this project will be used to improve the outcome of Phase 2 – Feasibility and Conceptual Design of one or more proposed 100 MW wind farms. Ground based remote sensing (LIDAR) equipment will be specified, procured, installed and operated to enhance the higher altitude accuracy of wind speed measurements at meteorological towers currently installed with theREF 14 grant funding. In addition, the LIDAR measurements could fill in data gaps during periods when MET mast sensors are frozen or out of service.

## DNR/DMLW Feasibility Comments

Cannot dispose of land within an LDA - ETAP Unit L-01 - AS41.14.400 Tanana Valley State Forest LDA.

## DNR/DGGS Geohazards Comments

The proposed site is located within the Minto Flats seismic zone where significant historical earthquakes have occurred.General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# LIDAR Improvement to Interior Wind Energy Assessments

**App #15018** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.43 |
| 2. Matching Resources (15) | 19.50 |
| 3. Stage 2 Feasibility (25) | 23.36 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 9.67 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 8.33 |
| Total Stage 3 Score (100) | 90.78 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 93.42 |
| Benefit/Cost Ratio | 2.46 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 2 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 90.78 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $250,000 | $250,000 |
| Matching Funds | $125,000 | $125,000 |

| | |
|---|---|
| Cost of Electricity | $0.22/kWh |
| Price of Fuel | $5.08/Gal |
| Household Energy Cost | $9,943 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 36-R**

# Akiak Reconnaissance and Wind Assessment Project

**App #15019** **Standard Application**

**Project Type:** Wind
**Applicant:** City of Akiak owner of Akiak Power Utilities
**Applicant Type:** Local Government
**Energy Region:**
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

The City would like to know the economic viability of renewable energy, specifically wind+solar+battery storage with our diesel system by conducting this two phase project: Reconnaissance and Wind Assessment. By conducting these efforts together as one project, we can realize a feasibility study and conceptual design to move our community towards substantially reduced dependence on diesel.

# Akiak Reconnaissance and Wind Assessment Project

**App #15019** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | |
| 2. Matching Resources (15) | |
| 3. Stage 2 Feasibility (25) | |
| 4. Project Readiness (5) | |
| 5. Benefits (10) | |
| 6. Local Support (5) | |
| 7. Sustainability (10) | |
| Total Stage 3 Score (100) | |

| Feasibility Analysis |
|---|
| Stage 2 Tech & Econ Score (100) |
| Benefit/Cost Ratio |

| Project Rank |
|---|
| Statewide (of 29 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $446,500 | $0 |
| Matching Funds | $3,000 | $0 |

| | |
|---|---|
| Cost of Electricity | $/kWh |
| Price of Fuel | $/Gal |
| Household Energy Cost | |

**AEA Review Comments & Recommendation** **Did Not Pass Stage 1**

**Election District:**

# Levelock Feasibility and Conceptual Design

**App #15020** **Standard Application**

**Project Type:** Wind, Solar
**Applicant:** Levelock Village Council
**Applicant Type:** Government Entity
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

As the wind assessment is completed, our community has generally selected a potential wind site, and is considering different configurations and sites for community solar installations. Our community members and leaders are ready to develop local renewable energy resources to reduce dependence on fossil fuels. Funds are being requests from AEA – REF to determine the feasibility and options for a community based plan. Our goals are to reduce energy costs, reduce dependence on fossil fuels, and of course building, operating, and maintaining a sustainable project are all met. We have determined that wind combined with solar and energy storage has potential to meet all ofour goals. An initial goal for the feasibility project is to create an option for development of a hybrid energy system that could displace up to 40% of the fuel used for power generation and 20% of the diesel fuel used for heating.The Feasibility Study and Conceptual Design are needed to determine the technical options, site conditions, constructability, issues related to sustainable system operations, and management and economics.

## DNR/DMLW Feasibility Comments

SCRO:GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed shorelands or submerged of navigable or public waters will be used for this project an authorization from SCRO may be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization. RS 2477/RST 90 is in the area and any impacts to the State's interest in RST will require an authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Levelock Feasibility and Conceptual Design

**App #15020** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.94 |
| 2. Matching Resources (15) | 9.00 |
| 3. Stage 2 Feasibility (25) | 11.65 |
| 4. Project Readiness (5) | 4.25 |
| 5. Benefits (10) | 0.50 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 5.00 |
| Total Stage 3 Score (100) | 53.35 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 46.62 |
| Benefit/Cost Ratio | 0.04 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 25 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 53.35 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $197,000 | $197,000 |
| Matching Funds | $9,000 | $9,000 |

| | |
|---|---|
| Cost of Electricity | $0.85/kWh |
| Price of Fuel | $6.00/Gal |
| Household Energy Cost | $10,171 |

**AEA Review Comments & Recommendation** **Full Funding with Special Provision**

**Election District: 37-S**

# Utility-Scale Railbelt Wind – Alaska Renewables

**App #15021** **Standard Application**

**Project Type:** Wind
**Applicant:** Alaska Renewables LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Design
**Recommended Phase(s):** Design

## Project Description

AKR now has several wind development assets which have the potential to dramatically displace expensive fossil fuel consumption for electricity generation in Alaska. Little Mt Susitna (LMS) has been awarded the win from Chugach Electric's recent Renewables RFP. Shovel Creek and other sites entered into GVEA's 2021 RFI and are sites of potential interest for GVEA's strategic generation plan. Both LMS and Shovel Creek now have meteorological campaigns up and running (the latter thanks to REF 14). Now, AKR is advancing into the core work of site environmental data collection, engineering, grid integration and interconnection study, and the many other workstreams required to bring the projects through to construction.

## DNR/DMLW Feasibility Comments

SCRO: Alaska Renewable has applied for a lease for the Mt. Susitna wind farm, however an easement is most likely needed as well; applicant is aware. Cannot dispose of state land within an LDA. 1) Within ETAP Unit F-38, AS 41.17.400 Tanana Valley Stat Forest LDA. Locations within an area plan must comply with the management intent for that unit. 2) Within SMAP Unit M-15 PUR.

## DNR/DGGS Geohazards Comments

The proposed northern site is located within the Minto Flats seismic zone where significant historical earthquakes have occurred. The proposed southern site is located ~10 km north of the western terminus of the Susitna section of the Castle Mountain fault that has been active in the last 15,000 years. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Utility-Scale Railbelt Wind – Alaska Renewables

**App #15021** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.06 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 17.74 |
| 4. Project Readiness (5) | 4.67 |
| 5. Benefits (10) | 2.17 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 71.64 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 70.96 |
| Benefit/Cost Ratio | 0.68 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 16 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 71.64 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $597,007,912 | $597,007,912 |
| REF Grant Funds | $2,000,000 | $2,000,000 |
| Matching Funds | $3,546,500 | $3,546,500 |

| | |
|---|---|
| Cost of Electricity | $0.21/kWh |
| Price of Fuel | $2.77/Gal |
| Household Energy Cost | $5,791 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 36-R, 30-O**

# Naknek Electric Battery Energy Storage System

**App #15022** **Standard Application**

**Project Type:** Storage
**Applicant:** Naknek Electirc Association Inc
**Applicant Type:** Utility
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

Naknek Electric Association (NEA) proposes to install a battery energy storage system (BESS) to increase reliability and more efficiently manage existing diesel electric generators. The installation of a BESS will allow NEA to reduce online generation by 24.6% and operate the remaining 75.4% of generators at a high efficiency. The reduced online generators will save approximately 4.9% fuel or 80,154 gallons of fuel. The reduced runtime will reduce O&M costs by approximately 24.6%. This is the first and the central element for NEA to reduce its reliance on diesel fuel. With powerplant integration secured, NEA can install wind turbines and expand its existing solar PV array, enabling diesel-off operation and further reducing diesel consumption. The expansion of the existing solar array and the addition of wind turbines will be a second project and a future NEA grant application, which NEA anticipates next year in Round 16. The REF13-funded Naknek Service Area Renewable Energy Feasibility and Conceptual Design is almost complete and will provide the details required for project two of NEA's plans to expand renewable energy in their system.

## DNR/DMLW Feasibility Comments

On SOA Selected land within the Bristol Bay AP. Adjacent to BBAP unit 11 04 RSU. SCRO: GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed tide or submerged lands are proposed for use an authorization will be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Naknek Electric Battery Energy Storage System

**App #15022** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 23.76 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 18.89 |
| 4. Project Readiness (5) | 4.07 |
| 5. Benefits (10) | 4.25 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 83.47 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 75.58 |
| Benefit/Cost Ratio | 1.07 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 5 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 83.47 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $4,122,984 | $4,122,984 |
| REF Grant Funds | $2,172,984 | $2,172,984 |
| Matching Funds | $1,950,000 | $1,950,000 |

| | |
|---|---|
| Cost of Electricity | $0.58/kWh |
| Price of Fuel | $5.55/Gal |
| Household Energy Cost | $10,532 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Cook Inlet Oil Platform Wind Project

**App #15023** **Standard Application**

**Project Type:** Wind
**Applicant:** Alaska Electric & Energy Cooperative, Inc.
**Applicant Type:** Utility
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC), plans to construct approximately 30-MWs of wind energy generation located on or near the Kenai Peninsula. The proposed project will evaluate construction of three to four offshore wind turbines on the A, C, Baker, and Dillion offshore oil platforms and electrically interconnected to the HEA transmission system at the Bernice Lake Substation located near the coast in the East Forelands of Nikiski, Alaska. The proposed project is a Reconnaissance level effort to study the possibility of the proposed project along with a partial Feasibility stage effort to collect and process one years' worth of offshore wind data by installing an IEC classified vertical profiling Lidar with finance-grade data capable of measuring wind speed to a height of 300 M.2.5 Scope

## DNR/DMLW Feasibility Comments

Locations within an area plan must comply with the management intent for that unit. KEAP Unit 11 RMG. SCRO: If DMLW-managed lands (uplands, tidelands or submerged lands) are proposed for use an authorization will be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Feasibility Comments

The the project description is to "evaluate construction," rather than construct, and "collect and process one years' worth of offshore wind data by installing an IEC classified vertical profiling Lidar. All four platforms are in the Middle Ground Shoal Unit. The DOG permit number associated with the unit is LO/CI 94-011. The associated oil and gas leases include: Platform A: straddles ADLs 18754 and 18756 Platform C: ADL 18756 Platform Baker: ADL 17595 Platform Dillon: ADL 18746

## DNR/DGGS Geohazards Comments

The proposed site is located in the Cook Inlet Basin above the Alaska-Aleutian subduction zone interface. Ground accelerations from ongoing subduction zone earthquakes to be expected. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Cook Inlet Oil Platform Wind Project

**App #15023** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 16.97 |
| 2. Matching Resources (15) | 19.50 |
| 3. Stage 2 Feasibility (25) | 19.42 |
| 4. Project Readiness (5) | 4.75 |
| 5. Benefits (10) | 4.50 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 77.64 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 77.67 |
| Benefit/Cost Ratio | 1.15 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 11 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 77.64 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $52,948,198 | $102,948,198 |
| REF Grant Funds | $214,400 | $214,400 |
| Matching Funds | $97,448 | $97,448 |

| | |
|---|---|
| Cost of Electricity | $0.24/kWh |
| Price of Fuel | $4.00/Gal |
| Household Energy Cost | $7,523 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 8-D**

# Augustine Island Geothermal

**App #15024** **Standard Application**

**Project Type:** Geothermal
**Applicant:** Alaska Electric & Energy Cooperative, Inc. (AEEC)
**Applicant Type:** Utility

**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC), plans to study the interconnection of approximately 70-MWs of geothermal energy generation located on Augustine Island. The proposed effort will evaluate the preferred method of bringing power onshore to AEEC's existing 115,000-volt transmission lines along the western shore of the Kenai Peninsula in the vicinity of Anchor Point, Alaska. The proposed project is a feasibility level effort to develop costs of sufficient accuracy to assess project economics.

## DNR/DMLW Feasibility Comments

PAAD - Within the area of mean high tide and the 3 mile limit on the Augustine side and the Anchor Point side a state authorization will be required across state tidelands and submerged lands as defined in AS 38.05.965 (25) and (26) if the project progresses. Land use permits may be required for installation of data collection devices on State land. SCRO: Augustine Island is under a surface authorization - Interagency Land Managment Agreement with the University of Alaska. If DMLW-managed lands (uplands, tidelands or submerged lands) are proposed for use an authorization will be required, and coordination with the University of Alaska to determine if both projects are compatible. Locations within an area plan must comply with the management intent for that unit. KEAP Unit 12 HTG Geothermal activities are under the jurisdiction of the Division of Oil and Gas. Since the project description doesn't propose any on-the-ground activity, it is unlikely any permitting from DOG would be required. ADL 394080 Augustine Island Geothermal Prospecting Permit expires 8/31/2024. Permittee is beginning permit process for Summer 2023 activities.

## DNR/DGGS Geohazards Comments

The proposed site is located above the Alaska-Aleutian subduction zone interface. Ground accelerations from ongoing subduction zone earthquakes to be expected. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Augustine Island Geothermal

**App #15024** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 16.97 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 22.75 |
| 4. Project Readiness (5) | 4.72 |
| 5. Benefits (10) | 8.83 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 87.76 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 90.98 |
| Benefit/Cost Ratio | 1.83 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 4 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 87.76 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $177,210,140 | $343,776,440 |
| REF Grant Funds | $68,000 | $68,000 |
| Matching Funds | $42,140 | $42,140 |

| | |
|---|---|
| Cost of Electricity | $0.24/kWh |
| Price of Fuel | $4.00/Gal |
| Household Energy Cost | $7,523 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Mount Spurr Geothermal

**App #15025** **Standard Application**

**Project Type:** Geothermal
**Applicant:** Alaska Electric & Energy Cooperative, Inc. (AEEC)
**Applicant Type:** Utility

**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

Homer Electric Association, Inc. (HEA) through its generation subsidiary Alaska Electric & Energy Cooperative, Inc. (AEEC), plans to study the interconnection of approximately 70-MWs of geothermal energy generation located near Mount Spurr. The proposed effort will evaluate the costs of bringing power to existing transmission lines at Beluga on the northwestern shore of Cook Inlet. The proposed project is a feasibility level effort to develop costs of sufficient accuracy to assess project economics.

## DNR/DMLW Feasibility Comments

Locations within an area plan must comply with the management intent for that unit. KEAP Unit 11 RMG.SCRO: The use of DMLW-managed lands (uplands, tidelands or submerged lands) requires authorizations from SCRO for any activities that exceed GAU, 11 AAC 96.020. Authorized most likely needed are permits for studies. For full development leases and easements will most likely be required. Geothermal activities are under the jurisdiction of the Division of Oil and Gas.

## DNR/DGGS Feasibility Comments

Since the project description doesn't propose any on-the-ground activity, it is unlikely any permitting from DOG would be required. Mt Spurr Geothermal Prospecting Permits ADLs 393962 and 393958 expire 8/31/2023. The permittee is beginning permit process for Summer 2023 activities.

## DNR/DGGS Geohazards Comments

The proposed site is located ~60 km west of the western terminus of the Susitna section of the Castle Mountain fault that has been active in the last 15,000 years. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Mount Spurr Geothermal

**App #15025** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 16.97 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 23.05 |
| 4. Project Readiness (5) | 4.79 |
| 5. Benefits (10) | 8.75 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 88.06 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 92.21 |
| Benefit/Cost Ratio | 1.83 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 3 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 88.06 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $176,276,440 | $343,776,440 |
| REF Grant Funds | $45,500 | $45,500 |
| Matching Funds | $30,940 | $30,940 |

| | |
|---|---|
| Cost of Electricity | $0.24/kWh |
| Price of Fuel | $4.00/Gal |
| Household Energy Cost | $7,523 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 37-S**

# Yakutat Community Health Center Heat Recovery Project

**App #15026** **Heat Application**

**Project Type:** HeatRecovery
**Applicant:** Yakutat Community Health Center
**Applicant Type:** Government Entity
**Energy Region:** Southeast
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

This project will design and construct a diesel heat recovery system between the AVEC powerplant and the Yakutat Community Health Center (YCHC). The distribution loop will be buried and consist of preinsulated 3” PEX, tied into the YCHC health center heating system. The proposed project is anticipated to reduce diesel fuel consumption of the Yakutat Community Health Center by 18,400 gallons annually as estimated by the ANTHC Heat Recovery Feasibility Study.

## DNR/DMLW Feasibility Comments

Locations within an area plan must comply with the management intent for that unit. Probably need reclassification. YAAP 8A5 STL. Might be apart of Fed Action AA-908. SERO: GPS coordinate location indicates project is located on lands conveyed to the municipality of Yakutat. The project site is located adjacent to DMLW-managed land. Any activity on DMLW-managed lands that exceed GAU (11 AAC 96.020) require authorization.

## DNR/DGGS Geohazards Comments

The proposed site is located in a tectonically complex area at the eastern end of the Alaska-Aleutian Megathrust (where subduction of the Yakutat Microplate causes significant uplift) and the northern end of the Queen Charlotte-Fairweather strike-slip plate boundary fault. All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Yakutat Community Health Center Heat Recovery Project

**App #15026** **Heat Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 17.95 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 17.83 |
| 4. Project Readiness (5) | 4.29 |
| 5. Benefits (10) | 4.58 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 9.53 |
| Total Stage 3 Score (100) | 72.19 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 71.33 |
| Benefit/Cost Ratio | 1.24 |

| Project Rank | |
|---|---|
| Statewide (of 2 Heat applications) | 2 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.19 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,255,247 | $1,255,247 |
| REF Grant Funds | $1,000,000 | $1,000,000 |
| Matching Funds | $273,000 | $273,000 |

| | |
|---|---|
| Cost of Electricity | $0.51/kWh |
| Price of Fuel | $6.00/Gal |
| Household Energy Cost | $7,957 |

**AEA Review Comments & Recommendation** **Full Funding with Special Provision**

**Election District: 2-A**

# Tuntutuliak Community Services Association Electrical Utility 200kw Solar Energy Project

**App #15027** **Standard Application**

**Project Type:** Solar
**Applicant:** Tuntutuliak Community Services Association
**Applicant Type:** Utility
**Energy Region:** Lower Yukon Kuskokwim
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The project proposes to install, integrate, and commission a 200 kW solar/PV array energy for the islanded hybrid wind-diesel-battery-heat system for Tuntutuliak Community Services Association (TCSA), a tribally-owned community utility in Tuntutuliak, AK, which is designated as a High Energy Cost Area with a residential retail electric rate of $0.65 per kWh. The solar/PVsystem will utilize existing power controls, battery energy storage system to integrate the solar energy. TCSA employees are already familiar with the integration of wind+diesel+battery energy storage and have a stable, well maintained diesel power system and modern electrical distribution grid ready to accept the solar energy.

## DNR/DMLW Feasibility Comments

SCRO: GPS coordinates indicate project is on non-state uplands lands. If DMLW-managed tidelands or submerged lands are proposed for use an authorization will be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Tuntutuliak Community Services Association Electrical Utility 200kw Solar Energy Project

**App #15027** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 23.52 |
| 2. Matching Resources (15) | 3.00 |
| 3. Stage 2 Feasibility (25) | 14.58 |
| 4. Project Readiness (5) | 3.00 |
| 5. Benefits (10) | 2.25 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 9.22 |
| Total Stage 3 Score (100) | 55.57 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 58.33 |
| Benefit/Cost Ratio | 0.00 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 22 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 55.57 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,211,768 | $ |
| REF Grant Funds | $1,197,768 | $ |
| Matching Funds | $14,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.65/kWh |
| Price of Fuel | $7.64/Gal |
| Household Energy Cost | $10,426 |

**AEA Review Comments & Recommendation** **Full Funding with Special Provision**

**Election District: 38-S**

# Water Supply Creek Hydro Construction

**App #15028** **Standard Application**

**Project Type:** Hydro
**Applicant:** Inside Passage Electric Cooperative
**Applicant Type:** Utility
**Energy Region:** Southeast
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

IPEC is requesting $3,538,526 in grant funding to construct a run of river hydro project at Water Supply Creek near Hoonah. This will be the second hydro project for Hoonah, and will reduce the community's dependence on diesel-electric generation. This project, combined with the Gartina Falls hydro project completed in 2015, will produce about 50% of Hoonah's electric requirements with clean, renewable energy.

## DNR/DMLW Feasibility Comments

PAAD - This appears to be on the small tributary to Gartina Creek within SE1/4 Section 11, T44S, R61E, CRM. The lands have been conveyed to Sealaska Corporation by IC 1361. This small stream is not navigable, AS 38.04.062. Dam Safety - Project owner should submit a HPCJR for this project. It is unclear if this will be a FERC facility or possibly a state jurisdicational dam. Even run of the river systems have the potential to be state jurisdictional dams. Gartina Falls Hydro is another FERC project (P-14066). Hoonah also has a state regulated hydropower dam at Shotter Creek (AK00032). Water right application on file. SERO: GPS coordinates indicates project is on non-state uplands. Any activity on DMLW-managed lands that exceed GAU (11 AAC 96.020) require authorization.

## DNR/DGGS Geohazards Comments

The proposed site is ~80 km east-northeast of the Queen Charlotte-Fairweather strike-slip plate boundary fault. General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# Water Supply Creek Hydro Construction

**App #15028** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 21.8 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 18.38 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 1.75 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 80.42 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 73.50 |
| Benefit/Cost Ratio | 0.38 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 7 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 80.42 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $10,976,099 | $10,976,099 |
| REF Grant Funds | $3,538,526 | $3,538,526 |
| Matching Funds | $6,853,474 | $6,853,474 |

| | |
|---|---|
| Cost of Electricity | $0.68/kWh |
| Price of Fuel | $5.64/Gal |
| Household Energy Cost | $9,663 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 2-A**

# Godwin Creek Hydroelectric Project

**App #15029** **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

There are two conceptual configurations for the proposed Project. The first is a run-of-river hydroelectric project with a diversion structure on Godwin Creek approximately one mile upstream from the confluence with Fourth of July Creek. From the diversion structure, water would be conveyed through a penstock to a powerhouse located near the confluence of both creek. This configuration was developed in 2014 based on early reconnaissance efforts, and allProject features would be located on State or City owned land. Since 2014, the Godwin Glacier has retreated significantly creating a natural lake at the base of the glacier. The lake has two lake outlets (a northern outlet and a southern outlet). Given this new development, an alternative configuration would be to construct a dam at both lake outlets to create some amount of storagepotential. It should be noted that these Project features would be located on USFS land and would therefore trigger the need for a FERC license. Under this configuration the intake structure would likely be located near the southern lake outlet, from which point water would be diverted through a penstock to a powerhouse located near the confluence with Fourth of July Creek. For bothconfigurations, tailwater from the powerhouse would be conveyed into Fourth of July Creek or Godwin Creek near the confluence of both creeks. A transmission line would be constructed from the powerhouse to an existing substation approximately 10,900 feet west of the proposed powerhouse location. Access roads, including a bridge crossing Godwin Creek would also be necessary for the construction and operation of the Project.

## DNR/DMLW Feasibility Comments

PAAD - Godwin Creek is not navigable for title purposes, AS 38.04.062. Based on size it is considered navigable and public water, AS 38.05.127. These appear to be lands patented to the state that have not been conveyed; verification with RSS is required. Dam Safety - Even if this has the potential to be a FERC project, it would be prudent to submit a HPCJR form to ADNR. Water right application on file. SCRO: The use of DMLW-managed lands (uplands, tidelands or submerged lands) requires authorizations from SCRO for any activities that exceed GAU, 11 AAC 96.020. Authorized most likely needed are permits for studies, of which there is a stream gage permit issued to Chugach Electric Association. For full development leases and easements will most likely be required.

## DNR/DGGS Geohazards Comments

General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended. The proposed site is located above the Alaska-Aleutian subduction zone interface. Ground accelerations from ongoing subduction zone earthquakes to be expected.

# Renewable Energy Fund: Round 15 Application Summaries

## Godwin Creek Hydroelectric Project

**App #15029** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 8.15 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 18.13 |
| 4. Project Readiness (5) | 4.67 |
| 5. Benefits (10) | 1.75 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 9.33 |
| Total Stage 3 Score (100) | 58.53 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 72.50 |
| Benefit/Cost Ratio | 0.40 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 20 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 58.53 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $67,212,601 | $67,212,601 |
| REF Grant Funds | $1,729,000 | $1,729,000 |
| Matching Funds | $306,117 | $306,117 |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $1.33/Gal |
| Household Energy Cost | $3,613 |

**AEA Review Comments & Recommendation** **Full Funding**

**Election District: 5-C**

# Public Works Solar Panel Array

**App #15030** **Standard Application**

**Project Type:** Solar
**Applicant:** City of Fairbanks
**Applicant Type:** Local Government
**Energy Region:** Railbelt
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

This project will install a commercial solar panel array on an elevated pad on the Public Works compound to decrease energy costs through the direct use of renewable energy resources. This will be accomplished through a series of activities included in Phase III and Phase IV. The Public Works Facility is in the designated EPA PM 2.5 Air Quality Non-Attainment area. Generating andusing electricity from solar power will lower the consumption of power produced in local power plants using coal and oil.

# Renewable Energy Fund: Round 15 Application Summaries

## Public Works Solar Panel Array

**App #15030** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | |
| 2. Matching Resources (15) | |
| 3. Stage 2 Feasibility (25) | |
| 4. Project Readiness (5) | |
| 5. Benefits (10) | |
| 6. Local Support (5) | |
| 7. Sustainability (10) | |
| Total Stage 3 Score (100) | |

| Feasibility Analysis |
|---|
| Stage 2 Tech & Econ Score (100) |
| Benefit/Cost Ratio |

| Project Rank |
|---|
| Statewide (of 29 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,600,000 | $1,600,000 |
| REF Grant Funds | $1,600,000 | $0 |
| Matching Funds | $00 | $0 |

| | |
|---|---|
| Cost of Electricity | $/kWh |
| Price of Fuel | $/Gal |
| Household Energy Cost | |

**AEA Review Comments & Recommendation** **Did Not Pass Stage 1**

**Election District: 31-P**

# City of Unalaska Wind Power Design/Construction

**App #15031** **Standard Application**

**Project Type:** Wind
**Applicant:** City of Unalaska Department of Public Utilities
**Applicant Type:** Government Entity
**Energy Region:** Aleutians
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

City of Unalaska (COU) proposes a combined wind power design/construction project to install two megawatts of wind power capacity – comprised of two EWT DW58-1000 wind turbines – on COU land in Lower Pyramid Valley of Unalaska. COU initiated a self-funded wind study in 2017 to identify prospective wind power sites and collect high quality wind data. That study is complete anddocumented in a Wind Resource Assessment Report dated Feb. 2022. The primary site evaluated in the wind study is the location of the proposed wind power construction project. In 2021, COU was awarded REF13 funding for feasibility and design, which was revised in 2022 with AEA consent to focus on design elements to support construction on an accelerated schedule. Workcompleted under the REF13 has supported work in 2022 to enable final design, permitting, and construction of wind turbines in Unalaska. In the larger view, wind and potentially geothermal power will enable COU to attain its near-term goal of a renewable energy-powered community with a long-term goal of becoming a world leader in operating a carbon-free economy.

## DNR/DMLW Feasibility Comments

If DMLW-managed tidelands or submerged lands are proposed for use an authorization will be required. Any activities on DMLW-managed lands that exceed GAU, 11 AAC 96.020, will require authorization.

## DNR/DGGS Geohazards Comments

The proposed site is located directly above the Alaska-Aleutian Megathrust, a major plate-boundary fault that accommodates subduction of the Pacific plate beneath the North American Plate. Numerous significant and tsunamigenic earthquakes have occurred here and high ground accelerations in future subduction zone earthquakes are expected.General comment on all projects: All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site. Additional information on active faults is available in the Quaternary fault & fold digital database: http://maps.dggs.alaska.gov/qff/, http://doi.org/10.14509/qff, and https://doi.org/10.14509/24956. Any of these structures built on frozen ground should consider an adjustable foundation so the structures can remain usable in the future, as frozen ground degradation is very likely. Similar considerations with building on fine grained sediments due to the potential of frost Jacking - an adjustable foundation is recommended.

# City of Unalaska Wind Power Design/Construction

**App #15031** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 18.99 |
| 2. Matching Resources (15) | 0.00 |
| 3. Stage 2 Feasibility (25) | 18.11 |
| 4. Project Readiness (5) | 4.63 |
| 5. Benefits (10) | 3.00 |
| 6. Local Support (5) | 0.00 |
| 7. Sustainability (10) | 9.33 |
| Total Stage 3 Score (100) | 54.05 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 72.42 |
| Benefit/Cost Ratio | 0.90 |

| Project Rank | |
|---|---|
| Statewide (of 29 Standard applications) | 23 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 54.05 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $13,424,000 | $13,424,000 |
| REF Grant Funds | $4,000,000 | $4,000,000 |
| Matching Funds | $8,790,000 | $8,790,000 |

| | |
|---|---|
| Cost of Electricity | $0.59/kWh |
| Price of Fuel | $5.25/Gal |
| Household Energy Cost | $8,418 |

**AEA Review Comments & Recommendation** **Partial Funding**

**Election District: 37-S**