# Renewable Energy Fund: Round 18 Application Summaries

## Goat Lake Hydro Reservoir Expansion - Construction

**App #18001** **Standard Application**

**Project Type:** Hydro
**Applicant:** Goat Lake Hydro, Inc.
**Applicant Type:** Utility
**Energy Region:** Southeast
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

### Project Description

Goat Lake Hydro (GLH), a subsidiary of Alaska Power & Telephone Company (AP&T), will construct a small (estimated 3 foot tall, 200 foot long) impoundment at the Goat Lake hydropower project, an existing hydropower project serving Skagway, Haines, Dyea, and IPEC (Klukwan and Chilkat Valley communities). This very low-impact project will increase storage at Goat Lake by an estimated 2,000,000 kWh per year that can be utilized as an alternative to diesel-based generation. The project will help increase the efficient use of other hydropower projects in the region (ex: Kasidaya and Dewey Lakes hydro) and set the stage for future renewable energy integration in the region. The design life of the impoundment will be 50 years or greater, meaning the project will help provide an estimated 100 million kWh of clean, renewable energy, offsetting more than 7 million gallons of diesel fuel use. (See attached “Images of Project Site” document.)

### DNR/DMLW Feasibility Comments

PAAD - This 225 acre lake is navigable in fact per AS 38.05.062. The state is asserting this in its waters in federal areas initiative. GLH currently has two easements with DMLW for their hydroelectric project; ADL 106422, and ADL 105150. Construction may require additional authorization or amendment to one or both existing easements. Coordinate with SE Regional Office to ensure the lat & long of the impoundment is not on state land. Goat Lake is identified by the state as a navigable water body, though surrounded by federal lands. As a water body, it is to be managed to allow a diversity of uses, consistent with the uses authorized on adjoining uplands in federal, private, or other state entity ownership. It may be necessary to evaluate whether the 3-foot-tall impoundment will alter or eliminate any shoreline access, therefore restricting the general use of the water body.

### DNR/DOF Feasibility Comments

No impact on DFFP; no comment

### DNR/DGGS Feasibility Comments

-GEOLOGIC UNITS: Colluvial deposits, glacial deposits, lake deposits, paludal peat deposits, bedrock; -PERMAFROST: Isolated (<10%) to absent; -SUITABILITY FOR CONSTRUCTION MATERIAL: Areas of clean sand and gravel may be suitable, depending on distribution and thickness as well as the thickness of any fine-grained surface cover. Materials on slopes may be unsuitable due to potential instability issues. Areas of poor drainage may not be suitable. Use best construction practices.; -SUSCEPTIBILITY TO FROST ACTION: Generally intense frost action where sediments are fine-grained and/or wet. Generally less intense where sediment is coarse-grained and/or well-drained. Bedrock may be susceptible to frost action along bedding planes or joints.; -SURFACE DRAINAGE AND FLOODING POTENTIAL: Flooding is possible along streams in the spring and during intense storm events. Surface drainage is often poor near swamps and areas of permafrost, especially where sediment is fine-grained. Surface drainage is good along slopes and where sediment is coarse-grained.

### DNR/DGGS Geohazards Comments

-High seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard. -High landslide hazard: Skagway is well known for having frequent rockfall and snow avalanches. Although landslides have not been mapped around the Goat Lake Hydro project site, there are numerous active rockfall areas along that stretch of the Klondike Highway, as well as several known snow avalanche paths.

# Renewable Energy Fund: Round 18 Application Summaries

## Goat Lake Hydro Reservoir Expansion - Construction

**App #18001** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.82 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 20.88 |
| 4. Project Readiness (5) | 1.67 |
| 5. Benefits (10) | 8.50 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 77.86 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 83.50 |
| Benefit/Cost Ratio | 6.32 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 4 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 77.86 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $2,250,000 | $ |
| REF Grant Funds | $2,000,000 | $2,000,000 |
| Matching Funds | $250,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.43/kWh |
| Price of Fuel | $4.65/Gal |
| Household Energy Cost | $9,430 |

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

**Election District: B-3**

# Hunter Creek Hydro Electric Feasibility Study Project

**App #18002** **Standard Application**

**Project Type:** Hydro
**Applicant:** Matanuska Electric Association
**Applicant Type:** Utility
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon
**Recommended Phase(s):** Feasibility

## Project Description

This project will update the estimated cost analysis presented in the 2013 feasibility study of the east fork Hunter Creek hydropower resource. This reconnaissance study was originally completed by Eklutna, Inc. in 2013 with partial grant funding award in REF Round 4. The proposed update will include potential field updates and updated technical, regulatory, and economic estimations to determine whether the project is feasible via an updated cost model. The prior reconnaissance study identified a viable 7.7 MW run-of-river hydro project on the east fork of Hunter Creek with an estimated 27,100 MWh of annual energy output. East fork project configurations considered by the 2013 study ranged from 5.3 to 23 MW installed capacity and 21,000 to 80,900 MWh annual output.

## DNR/DMLW Feasibility Comments

PAAD - Hunter Creek is not navigable for title Purposes under AS 38.04.062. Hunter Creek is anadromous and therefore public water per AS 38.05.126 as defined in As 38.05.965(21). I would hope that ADF&G is commenting about fish passage being maintained. Proposed site (based on a single GPS coordinate and not a project footprint) is located within S016N004E31, which is state selected lands at this point with ANILCA topfiling. It is VERY unlikely that this location is under DNR management. However, if it is determined that this is under DNR management, projects such as this often need development plan details such as placement of infrastructure, transmission lines and access to be clearly defined in the application. Permits may be required for feasibility studies and for access if access development is not within GAUs. if access involves material, a material sales contract may be needed. Construction activities may require DNR authorization to comply with assorted 11 AAC 96.016c regulations regarding vehicle operation, attendance, and disturbance in the Knik River Public Use Area, as well as the construction itself.

## DNR/DOF Feasibility Comments

Project appears to be wihtin the Knik River Public Use Area LDA

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Multiple parties are interested in this site. There are no publicly available flow measurements or flow records for Hunter Creek. Would need to review the prior 2013 reconnaissance study to evaluate the validity of the 21,000 to 80,900 MWh annual output estimate, which is a rather large range to base project cost-benefit off of. DGGS is planning to conduct winter flow measurements at Hunter Creek in 2026, and we would invite collaboration for future near-term and long-term stream gaging at this site, for more accurate power generation estimates.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, paludal peat deposits, bedrock; -PERMAFROST: Sporadic (10-50%) to isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium landslide hazard: Solifluction was previously mapped on the hillsides surrounding the project site, and liquefaction occurred in the saturated soils along the Knik River during the 1964 earthquake.; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate in the vicinity of the parcel (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Hunter Creek Hydro Electric Feasibility Study Project

**App #18002** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 7 |
| 2. Matching Resources (15) | 19.50 |
| 3. Stage 2 Feasibility (25) | 15.54 |
| 4. Project Readiness (5) | 4.50 |
| 5. Benefits (10) | 3.67 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 7.67 |
| Total Stage 3 Score (100) | 59.88 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 62.18 |
| Benefit/Cost Ratio | 1.05 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 20 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 59.88 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $160,000 | $ |
| REF Grant Funds | $112,000 | $ |
| Matching Funds | $48,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.15/kWh |
| Price of Fuel | $1.61/Gal |
| Household Energy Cost | $3,170 |

## AEA Review Comments & Recommendation

**Full Funding with Special Provision**

Duplicate application received, please see application # 18003.

**Election District:**

## Hunter Creek Hydro Electric Feasibility Study Project DUPLICATE (ref 18002)

**App #18003** **Standard Application**

**Project Type:** Hydro
**Applicant:** Matanuska Electric Association
**Applicant Type:** Utility
**Energy Region:**
**Proposed Phase(s):** Recon
**Recommended Phase(s):** Recon

### Project Description

This project will update the estimated cost analysis presented in the 2013 feasibility study of the east fork Hunter Creek hydropower resource. This reconnaissance study was originally completed by Eklutna, Inc. in 2013 with partial grant funding award in REF Round 4. The proposed update will include potential field updates and updated technical, regulatory, and economic estimations to determine whether the project is feasible via an updated cost model. The prior reconnaissance study identified a viable 7.7 MW run-of-river hydro project on the east fork of Hunter Creek with an estimated 27,100 MWh of annual energy output. East fork project configurations considered by the 2013 study ranged from 5.3 to 23 MW installed capacity and 21,000 to 80,900 MWh annual output.

# Hunter Creek Hydro Electric Feasibility Study Project DUPLICATE (ref 18002)

**App #18003** **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 35 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $160,000 | $ |
| REF Grant Funds | $112,000 | $0 |
| Matching Funds | $48,000 | $0 |

| | |
|---|---|
| Cost of Electricity | $0.15/kWh |
| Price of Fuel | $1.61/Gal |
| Household Energy Cost | $3,170 |

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

Election District: **Matanuska-Susitna Borough Region**

## Knik Tribe Renewable Reconnaissance and Feasibility Study

**App #18004** **Standard Application**

**Project Type:** Wind
**Applicant:** Knik Tribe
**Applicant Type:** Other
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

### Project Description

The Knik Tribe Renewable Resource Reconnaissance and Feasibility study will evaluate the technical and economic viability of wind and solar energy, in conjunction with energy storage, tomeet facility, community, and utility scale energy needs at up to five locations in the MatanuskaSusitna Borough (MatSu). A desktop reconnaissance study of modeled wind resources will beconducted and up to five sites for will be forwarded to a feasibility study. The feasibility study willinclude wind data acquisition, which may be gathered via remote sensing (e.g. Lidar) ormeteorological towers, geotechnical reconnaissance studies, permitting roadmap, and generation ofcost estimates for project development. Conventional and alternative ownership and economicproject models will be considered. Conceptual design(s) will be generated based on the technicaland economic data generated from the feasibility study.

### DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Meteorological towers and geotechnical studies on state land may be subject to location-specific guidelines and should/must comply with management intent of the encompassing plan (most likely the Southeast Susitna Area Plan). Specifics will depend on the precise locations.

### DNR/DOF Feasibility Comments

No impact on DFFP; no comment

### DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: How closely is Knik Tribe working with MEA on this? No further comments.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, paludal peat deposits, bedrock; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

### DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Variable landslide hazard depending on which site they select; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be high in the vicinity of the parcel (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Knik Tribe Renewable Reconnaissance and Feasibility Study

**App #18004** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 7 |
| 2. Matching Resources (15) | 10.50 |
| 3. Stage 2 Feasibility (25) | 12.31 |
| 4. Project Readiness (5) | 1.83 |
| 5. Benefits (10) | 1.79 |
| 6. Local Support (5) | 1.00 |
| 7. Sustainability (10) | 3.67 |
| Total Stage 3 Score (100) | 38.10 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 49.25 |
| Benefit/Cost Ratio | 0.18 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 29 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 38.10 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,345,700 | $ |
| REF Grant Funds | $1,165,000 | $ |
| Matching Funds | $180,700 | $ |

| | |
|---|---|
| Cost of Electricity | $0.15/kWh |
| Price of Fuel | $1.61/Gal |
| Household Energy Cost | $3,170 |

## AEA Review Comments & Recommendation

**Partial Funding with Special Provision**

applicant should cite additional wind resource assessments.

**Election District: Matanuska-Susitna Borough Region**

# SEAPA Grid Resiliency (Tyee Hydro Upgrade)

**App #18005** **Standard Application**

**Project Type:** Hydro
**Applicant:** Southeast Alaska Power Agency (SEAPA)
**Applicant Type:** Utility
**Energy Region:** Southeast
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

The SEAPA Southeast Alaska Grid Resiliency Project (SEAGR) will increase generating capacity at the Tyee Lake hydroelectric facility and increase resiliency of the SEAPA electrical grid for:•Metlakatla and potentially Kake electrical interconnections•Petersburg, Wrangell, and Ketchikan beneficial electrification (load growth)•Voltage and Frequency stabilization due to grid expansion and load increases•Reliability with additional spinning reserves, increased inertia, and voltage support•Resiliency during extreme weather conditionsThe project would include installation of a third turbine and generator at Tyee. The third “unit” would have synchronous condensing capabilities, allowing it to be synchronized to the electric grid providing voltage support and frequency security through additional spinning inertia. Peak generation capabilities would increase 25% on the SEAPA system. Voltage support would increase while the third generator is operated in synchronous condensing mode, allowing for efficiency gains on existing units due to power factor corrections. Ancillary systems would be installed to support the third turbine to include 480V and 15kV switchgear upgrades/modifications.

## DNR/DMLW Feasibility Comments

PAAD - Tyee project is on State of Alaska Lands. This project is currently authorized under ADL 106841. Project may require an amendment to the current authorization. Projects such as this often need development plan details such as placement of infrastructure, transmission lines and access to be clearly defined in the amendment application. Permits may be required for feasibility studies and for access if access development is not within GAUs. if access involves material, a material sales contract may be needed. Further development of support facilities (directly related facilities) to the hydroelectric facility is considered appropriate in the flat terrain adjacent to the current structure (Central/Southern Southeast Area Plan, p. 3-210).

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Assuming SEPA has evaluated water availability Tyee Lake to justify installation of a third and generator, prior to the construction phase. No further comments.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, marine deposits (low-lying areas to the north), glacial deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Landslide hazard: High. Landslide hazards have not been assessed for the area, but the steep slopes and high precipitation in SE AK, paired with debris flow scars visible in Google Earth combine to make this likely a high hazard area; -This area has been subject to ashfall during the 1912 Novarupta-Katmai eruption (Mulliken and others, 2018). -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate in the vicinity of the parcel (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# SEAPA Grid Resiliency (Tyee Hydro Upgrade)

**App #18005** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.8 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 24.48 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 9.88 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 88.15 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 97.92 |
| Benefit/Cost Ratio | 7.56 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 2 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 88.15 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $22,592,510 | $ |
| REF Grant Funds | $4,000,000 | $ |
| Matching Funds | $18,592,510 | $ |

| | |
|---|---|
| Cost of Electricity | $0.14/kWh |
| Price of Fuel | $4.37/Gal |
| Household Energy Cost | $6,251 |

## AEA Review Comments & Recommendation

**Partial Funding**

Based on local cost of energy, there was some discussion on whether the $4M cap or the $2M cap would apply. If selected for funding, the final grant amount will need to be reduced to the $2M cap as outlined in the RFA for areas where the cost of power is under $0.20/kWh

**Election District: A-1**

# Unalakleet Battery Energy Storage System (BESS) Project

**App #18006** **Standard Application**

**Project Type:** Storage
**Applicant:** Unalakleet Valley Electric Cooperative Inc. (UVEC)
**Applicant Type:** Utility
**Energy Region:** Bering Straits
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

The proposed project will install a 1.0 MWh lithium-ion Battery Energy Storage System (BESS) with a 1000 kW grid-forming inverter at the Unalakleet Valley Electric Cooperative (UVEC) power plant. This critically needed BESS will enable full integration of the community's six 100 kW wind turbines into the standalone wind-diesel system, allowing for diesel-off operation, reduced fuel consumption, and elimination of wind curtailment—currently more than 50%. By stabilizing frequency and enabling greater renewable penetration, the BESS will more than double wind energy utilization from 12% to 30%, supporting long-term energy resilience, cost savings, and future renewable expansion in Unalakleet.

## DNR/DMLW Feasibility Comments

NRO; not state Land; Unalakleet Native Corporation No DMLW-managed lands identified in project. Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at the BESS site has been conducted prior to the construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, manmade deposits, lake deposits, marine deposits, paludal peat deposits; -PERMAFROST: Discontinuous (50-90%), to absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -No mapped west coast tsunami hazards outside of Bristol Bay. Highest tsunami hazards would be posed by meteo-tsunamis or submarine collapse of Yukon River delta system.; -Coastal flooding and erosion are expected to be minor-moderate concern to the Unalakleet Valley Electric Cooperative (UVEC) power plant because of its location (https://dggs.alaska.gov/pubs/id/30552), however there are major risks along the open coast of the community that can be significantly amplified by high tides and severe storm surge (https://pubs. usgs. gov/publication/ofr20151193). Even though some coastal elevation data has been collected as baseline erosion data (https://dggs.alaska.gov/pubs/id/31747), formal erosion rates over time or possible flood flood inundation extents have not yet been studied.; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Unalakleet Battery Energy Storage System (BESS) Project

**App #18006** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.96 |
| 2. Matching Resources (15) | 19.50 |
| 3. Stage 2 Feasibility (25) | 15.20 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 1.92 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 9.33 |
| Total Stage 3 Score (100) | 72.41 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 60.78 |
| Benefit/Cost Ratio | 0.50 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 11 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.41 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $1,515,135 | $ |
| REF Grant Funds | $1,060,595 | $ |
| Matching Funds | $454,540 | $ |

| | |
|---|---|
| Cost of Electricity | $0.65/kWh |
| Price of Fuel | $5.47/Gal |
| Household Energy Cost | $9,494 |

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

**Election District: T-39**

# Hoonah Battery Energy Storage System (BESS) Installation Project

**App #18007** **Standard Application**

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

## Project Description

The proposed project will install a 2 MW battery energy storage system (BESS) with 1–2 MWh of energy capacity to optimize Hoonah's use of its Gartina Falls run-of-river hydroelectric facility and to maximize the benefits of additional hydro resources under development. Gartina Falls is a ~425 kW hydro project (FERC P-14066) on Watchout Creek that is operating and was designed to produce ~1,810 MWh/year, supplying about 30% of Hoonah's electricity under typical conditions. The BESS will store excess hydro generation and provide grid stability during high-demand periods, particularly when large commercial loads such as the cruise ship docks and gondola at Icy Strait Point are operating. By enabling diesel-off operation, the Hoonah system will cut fuel use and associated costs while reducing hydro curtailment. By enabling diesel-off operation for roughly 2,500 hours per year, the Hoonah system will displace nearly 39,000 gallons of diesel annually, cutting fuel/operating costs by about $175,000 each year and avoiding nearly 400 tonnes of $CO_2$ emissions. Over the project lifetime, these improvements represent more than $2.6 million in avoided costs and over 7,900 tonnes of displaced emissions. Along with reducing hydro curtailment, the upgrades will boost renewable utilization, improve frequency stability and power quality, and strengthen long-term resilience for the Hoonah community while creating headroom for future renewable expansion.

## DNR/DMLW Feasibility Comments

Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at BESS site has been conducted prior to the construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, paludal peat deposits, marine deposits, bedrock (higher elevation areas and at depth); -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-High seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium-high landslide hazard: Hoonah experiences both deep-seated bedrock landslide and debris flows, but this site is in a valley bottom and therefore might have a lower hazard than the surrounding hillsides; -This area has been subject to ashfall from erupting volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas is modeled as moderate in this area, with limited testing (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Hoonah Battery Energy Storage System (BESS) Installation Project

**App #18007** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.2 |
| 2. Matching Resources (15) | 1.50 |
| 3. Stage 2 Feasibility (25) | 15.02 |
| 4. Project Readiness (5) | 4.83 |
| 5. Benefits (10) | 1.92 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 8.33 |
| Total Stage 3 Score (100) | 53.30 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 60.08 |
| Benefit/Cost Ratio | 0.53 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 25 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 53.30 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $2,350,000 | $ |
| REF Grant Funds | $2,350,000 | $ |
| Matching Funds | $00 | $ |

| | |
|---|---|
| Cost of Electricity | $0.71/kWh |
| Price of Fuel | $4.96/Gal |
| Household Energy Cost | $9,149 |

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

**Election District: A-2**

# Gambell Battery Energy Storage System Project

**App #18008** **Standard Application**

**Project Type:** Wind
**Applicant:** Alaska Village Electric Cooperative, Inc.
**Applicant Type:** Utility
**Energy Region:** Bering Straits
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

Alaska Village Electric Cooperative, Inc. (AVEC) is requesting $1,932,516 through an Alaska Energy Authority (AEA) Renewable Energy Fund (REF) grant to install a Battery Energy Storage System (BESS) at the Gambell power plant. The BESS, with a power capacity of 600 kilowatts (kW) and storage capacity of 540 kilowatt hours (kWh), would integrate into Gambell's recently refurbished Northern Power Systems Northwind wind turbines and existing diesel power plant to provide grid stability, and improve power quality and reserve capacity. Integrating a BESS into Gambell's hybrid system would alleviate the need to curtail a turbine and constantly run a large diesel generator. The proposed BESS would store a constant spinning reserve of energy allowing a shift of roughly 4,000 genset runtime hours from the largest to the smallest engines in the Gambell fleet, which in combination with the BESS would provide enough reserve capacity during any wind generation loss or fluctuation and allow the turbines to generate with negligible curtailment. The BESS would displace approximately 13,800 gallons of diesel fuel used for power generation saving about $83,500 annually and about $2,256,000 over the lifetime of the project. The BESS together with the upgraded wind system, would displace 72,200 gallons of expensive diesel generation annually, lower Gambell's fossil fuel reliance and help the community realize the full potential of their superb Class 7 wind resource.

## DNR/DMLW Feasibility Comments

NRO; Kukulget, Inc. and Sivuqaq, Inc. No state lands identified in project.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: 2019 Statewide Threat Assessment Rankings for Gambell: Erosion = Lower (51), Flooding = High (13), Permafrost = Moderate (15) The site is located in the northwestern part of St. Lawrence Island. The site is located on a flat part of the island close to the northern end of the runway at the Gambell Airport. The flat surface of Gambell and nearby surrounding lack fluvial features in aerial imagery suggests that there are no major streams flowing through Gambell. No wells in the DNR Well Log Tracking System (WELTS) database; no USGS stream gages. -The area near the community of Gambell was used as a U. S. Airforce base from 1948 to 1956 (Miller et al. , 2013). Gambell is underlain by course gravel and spilled hydrocarbons are present in the subsurface above the permafrost (depth of 8-10 feet) (Miller et al. , 2013). Low amounts of diesel range organics (DRO) have been measured in groundwater close to the water supply of the community (Alaska Department of Environmental Conservation, 2008). Some people from Gambell have elevated levels of PCBs (Miller et al. , 2013).; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, manmade deposits, lake deposits, paludal peat deposits, coastal deposits, marine deposits, bedrock; -PERMAFROST: Discontinuous (50-90%);

## DNR/DGGS Geohazards Comments

-Low seismic hazard.; -Tsunami hazard not assessed/modeled.; -No landslide hazard; -Coastal flooding or erosion hazard has not yet been assessed by DGGS in Gambell apart from collection of some coastal elevation profiles (https://pubs. usgs. gov/publication/ofr20151193; https://dggs.alaska.gov/pubs/id/31747). Erosion risk is much higher to the west and north of the village (and the airstrip). Flooding is not expected to be of major concern; however westerly storms can cause significant storm surge in the community. If the planned location is on the east side of the village, then erosion risk is relatively low, as is risk of flooding, as it would take >13 ft MHHW to cause still-water inundation near the wind turbines (https://maps.dggs.alaska.gov/akfit/).

# Gambell Battery Energy Storage System Project

**App #18008** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 25.49 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 17.53 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 1.58 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 74.61 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 70.12 |
| Benefit/Cost Ratio | 0.32 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 6 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 74.61 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $2,167,240 | $ |
| REF Grant Funds | $1,932,516 | $ |
| Matching Funds | $214,724 | $ |

| | |
|---|---|
| Cost of Electricity | $0.78/kWh |
| Price of Fuel | $6.70/Gal |
| Household Energy Cost | $11,548 |

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

**Election District: T-39**

# Atka Hydrogen Power Project

**App #18009** **Standard Application**

**Project Type:** Hydro, Storage
**Applicant:** Native Village of Atka
**Applicant Type:** Other
**Energy Region:** Aleutians
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

This project will completely phase Atka off diesel power, by replacing the backup diesel operation system with an integrated hydrogen fuel system. The integrated hydrogen system is comprised of two 100 kW fuel cells, storage, and an electrolyzer. Atka currently operates a pen stock hydroelectric power system that provides power to the community for the majority of the year;however, when maintenance is scheduled, technical issues arise, or water levels are not sufficient, the power grid reverts to diesel as the backup power generator. This project will leverage the preexisting hydroelectric system to store excess renewable power and use clean energy when the hydroelectric system is not operating, to create complete energy independence and renewable operation for Atka’s microgrid.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Not state land.

## DNR/DOF Feasibility Comments

Project appears to be in Aleutian Islands Refuge.

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at the hydrogen storage site has been conducted prior to the construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Tsunami hazard for Atka is modeled https://dggs.alaska.gov/pubs/id/30186 but this point is not within the modeled AOI in Atka. Maximum worst-case tsunami inundation 10-15 m, peaking 30 mins after worst-case scenario earthquake. Also 3. 4 m maximum semi-permanent tectonic subsidence; -Low landslide hazard.; -This area has been subject to ashfall from erupting volcanoes. -This area has limited testing for Radon, a naturally occurring cancer-causing radioactive gas (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Renewable Energy Fund: Round 18 Application Summaries

## Atka Hydrogen Power Project

**App #18009** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 24.06 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 12.64 |
| 4. Project Readiness (5) | 3.33 |
| 5. Benefits (10) | 1.50 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 5.67 |
| Total Stage 3 Score (100) | 69.70 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 50.58 |
| Benefit/Cost Ratio | 0.18 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 14 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 69.70 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $6,620,000 | $ |
| REF Grant Funds | $2,560,000 | $ |
| Matching Funds | $4,060,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.66/kWh |
| Price of Fuel | $7.50/Gal |
| Household Energy Cost | $10,896 |

### AEA Review Comments & Recommendation

**Full Funding with Special Provision**

This project is unique in that it is an emerging technology without well-defined standard assumptions, meaning it is difficult to validate the estimates provided by the applicant. There are no existing data points to which to compare against.

**Election District: S-37**

# NJUS Solar- Nome Banner Ridge Solar Farm

**App #18010** **Standard Application**

**Project Type:** Solar
**Applicant:** Nome Joint Utility System
**Applicant Type:** Utility
**Energy Region:** Bering Straits
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

Nome Joint Utility System (NJUS) proposes the construction of a 1 MW solar photovoltaic (PV) farm on the south slope of Banner Ridge, adjacent to its existing wind farm with two EWT wind turbines. The solar resource, integrated with the 2.5 MW/2.75 MWh Battery Energy StorageSystem (BESS) awarded to NJUS under REF Round 14, will provide renewable energy during the summer months when wind generation is limited.Because summer load demand is lower, this project will allow NJUS to operate its lower-capacity, lower-minimum-load Caterpillar generators in the new power plant, improving system efficiency and reducing fuel use.Looking ahead, NJUS anticipates expanding solar capacity to as much as 5 MW to support projected load growth tied to major regional developments. These include the Port of Nome expansion into the nation's first deepwater Arctic port, new mining projects such as Graphite One, and emerging national security infrastructure. Together, these investments are expected to drive significant increases in Nome's power requirements, making this solar project a critical first step in preparing for a more resilient, lower-cost, and sustainable energy future.

## DNR/DMLW Feasibility Comments

NRO; not state land; Sitnasuak Native Corporation Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-MINERAL RESOURCES: ARDF# NM232 is very close to this project. It is an inactive Au, Sb, Pb occurrence most recently explored in the 1990's. No active or recent mining claims exist in the area. -HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at the solar farm site has been conducted prior to the design and construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, manmade deposits, paludal peat deposits, marine deposits, bedrock; -PERMAFROST: Discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Moderate seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Low to no landslide hazard.; -This area has been subject to ashfall from erupting volcanoes. -This area has limited testing for Radon, a naturally occurring cancer-causing radioactive gas (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# NJUS Solar- Nome Banner Ridge Solar Farm

**App #18010** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.18 |
| 2. Matching Resources (15) | 9.00 |
| 3. Stage 2 Feasibility (25) | 20.39 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 6.33 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 72.91 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 81.58 |
| Benefit/Cost Ratio | 1.39 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 10 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.91 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $4,000,000 | $ |
| REF Grant Funds | $3,950,000 | $ |
| Matching Funds | $50,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.45/kWh |
| Price of Fuel | $6.33/Gal |
| Household Energy Cost | $9,141 |

## AEA Review Comments & Recommendation

**Full Funding**

Integration of the proposed system with the existing BESS system may prove challenging

**Election District: T-39**

# Knutson Creek Hydro Project - Geotechnical Investigations

**App #18011** **Standard Application**

**Project Type:** Hydro
**Applicant:** Pedro Bay Village Council (PBVC)
**Applicant Type:** Local Government
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The proposed project is an approximately 150 kW run-of-river hydroelectric project on Knutson Creek near Pedro Bay. The hydro project will provide nearly all (~96.4%) of the electricity needs of the village, as well as providing a significant amount of interruptible energy to heat the tribal council building and other community buildings in the village.

## DNR/DMLW Feasibility Comments

Appears to be mostly native owned land. Depending on extent of the hydro project, could extend on to State owned land and require authorization. Not state land, non-navigable waters.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Assuming Polarconsult/ PBVC has done their hydrologic due diligence and operates stream gage on Knutson Creek to come up with their 150kW estimate, especially since they estimate electricity provided to the 10th decimal (96. 4%). The relatively small (30 square mile) watershed looks like it's pretty responsive to precipitation, something to consider in penstock/storage siting & design.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, lake deposits, paludal peat deposits, bedrock; -PERMAFROST: Sporadic (10-50%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Low landslide hazard: Numerous areas of solifluction and small landslides were mapped in the hillsides around the site, but the town is in a relatively flat area; -This area has been subject to ash fall from erupting Alaska volcanoes. Past ash events include Aniakchak 1931, Augustine 1976 and 2006, Novarupta (Katmai) 1912, and multiple older tephras (Mulliken and others, 2018; Worden and others, 2018). -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be high in concentration in this area (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Knutson Creek Hydro Project - Geotechnical Investigations

**App #18011** **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) | 29.17 |
| Benefit/Cost Ratio | 0.25 |

**Project Rank**

| | |
|---|---|
| Statewide (of 35 Standard applications) | |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $10,801,470 | $ |
| REF Grant Funds | $850,000 | $0 |
| Matching Funds | $875,000 | $0 |

| | |
|---|---|
| Cost of Electricity | $0.82/kWh |
| Price of Fuel | $7.88/Gal |
| Household Energy Cost | $11,560 |

**AEA Review Comments & Recommendation** **Did Not Pass Stage 2**

**Election District: S-37**

# Kokhanok Community Center Biomass Heating Project

**App #18012** **Standard Application**

**Project Type:** Biomass
**Applicant:** Kokhanok Village Council
**Applicant Type:** Government Entity
**Energy Region:** Bristol Bay
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The Kokhanok Community Center Biomass Heating Project seeks funding for the construction of a cordwood biomass boiler to provide affordable, reliable heat for the Community Center. This system would displace approximately 4000 gallons of imported heating fuel annually, which is what would be required to heat the entire facility, and instead utilize approximately 35 cords per year of locally harvested cordwood. By doing so, the project will reduce dependence on costly imported diesel, create local employment opportunities, and provide a productive use for wood harvested through wildfire mitigation efforts.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at the biomass plant site has been conducted prior to the design and construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, lake deposits, paludal peat deposits, marine deposits, bedrock; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -This area has been subject to ash fall from erupting Alaska volcanoes. Past ash events include Aniakchak 1931, Augustine 1976 and 2006, Novarupta (Katmai) 1912, and multiple older tephras (Mulliken and others, 2018; Worden and others, 2018). -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be high in concentration in this area (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Kokhanok Community Center Biomass Heating Project

**App #18012** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 29.78 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 20.89 |
| 4. Project Readiness (5) | 4.17 |
| 5. Benefits (10) | 7.42 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 7.83 |
| Total Stage 3 Score (100) | 88.60 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 83.58 |
| Benefit/Cost Ratio | 1.43 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 1 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 88.60 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $396,000 | $ |
| REF Grant Funds | $312,800 | $ |
| Matching Funds | $63,200 | $ |

| | |
|---|---|
| Cost of Electricity | $0.84/kWh |
| Price of Fuel | $10.00/Gal |
| Household Energy Cost | $13,491 |

## AEA Review Comments & Recommendation

**Full Funding with Special Provision**

AEA notes that he B/C ratio is highly sensitive to the fuel price; both biomass fuel and conventional diesel heating fuel.

**Election District: S-37**

# Anchorage Waste-to-Energy Facility Reconnaissance, Feasibility, Conceptual Design, and Permitting

**App #18013** **Standard Application**

**Project Type:** Biomass
**Applicant:** Solid Waste Services, Municipality of Anchorage
**Applicant Type:** Government Entity
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

The Municipality of Anchorage (MOA) is developing a Waste-to-Energy Plant that will generate 20–30 megawatts of electricity—up to 10% of Anchorage's baseload. The facility will burn municipal solid waste (MSW), converting the energy into steam and then electricity. Details on facility components are in Section 5.4.4. This proven, mature technology produces useful byproducts andoffers many financial and non-financial (including environmental) benefits. It will help augment electricity supply in the face of a local and state-wide energy crisis, by providing a stable, local energy source. Additional benefits include: extending the Anchorage Regional Landfill's life by over 100 years; potential for district heating for MOA or Joint Base Elmendorf-Richardson (JBER); increased energy resilience for Anchorage and JBER; biosolids disposal that offsets capital and operational costs for Anchorage Water and Wastewater Utility (AWWU); thermal treatment of PFAS and hydrocarbon-contaminated soils, reducing costs for JBER and Southcentral Alaska and, reduced CO2 and methane emissions from landfill waste decomposition. This project supportslocal energy independence and keeps investment in Alaska. MOA Solid Waste Services is seeking grant funding to advance technical and economic feasibility studies, permitting, and design. The project is being shaped to maximize opportunities for local businesses and workers. MOA and its partners are eager to make this facility a model of Alaska's energy innovation.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Eventual location unclear/undetermined as of yet.

## DNR/DOF Feasibility Comments

Wood waste generated by local tree services could be another potential feedstock for a biomass project.

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding possible near site for 100-year event. Site is located at NW corner of Seward Highway and E. Dowling Road in Anchorage. The site is within the Campbell Creek watershed ~4500 feet east of Campbell Creek. Analysis of surface flooding from storm drain surcharging for a 100-year event would lead to some flooding in the southern part of the parcel along Dowling Road but not directly at the site (Munincipality of Anchorage Watershedf Management Services; https://storymaps. arcgis. com/stories/a665d31f80bb4a58bd81dd4cafbd7298). Historical groundwater well located ~900 feet NE of proposed site location encountered groundwater at ~38. 7 feet below ground surface in 1933, while second well ~2500 feet SW of site encountered groundwater at ~6. 2 feet in 1952 (USGS). Well log from Vern's Drilling found at DNR WELTS website (same location as first USGS well ~900 feet NE of site) shows well was drilled to a depth of 147 feet, consisted primarily of silty clay and gravel, and encountered groundwater at 35. 5 feet below surface.; -GEOLOGIC UNITS: Alluvial deposits, glacioesturaine deposits, eolian deposits, glacial deposits, glaciolacustrine deposits, manmade deposits; -PERMAFROST: Isolated (<10%);

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Nearby soils liquefied during the 1964 earthquake. Otherwise, landslide hazard is low/none.

# Anchorage Waste-to-Energy Facility Reconnaissance, Feasibility, Conceptual Design, and Permitting

**App #18013** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.62 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 17.14 |
| 4. Project Readiness (5) | 4.50 |
| 5. Benefits (10) | 2.42 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 9.33 |
| Total Stage 3 Score (100) | 71.01 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 68.58 |
| Benefit/Cost Ratio | 0.79 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 12 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 71.01 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $550,000,000 | $ |
| REF Grant Funds | $2,000,000 | $ |
| Matching Funds | $5,950,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $2.96/Gal |
| Household Energy Cost | $6,168 |

## AEA Review Comments & Recommendation

**Full Funding with Special Provision**

As exclusively an energy project, the economic benefits would not rise above a B/C ratio of 1.0 and would thus not make economic sense. However, AEA notes the broader public benefits would be far reaching.

**Election District: Anchorage (Municipality)**

# Wind Power in Scammon Bay

**App #18014** **Standard Application**

**Project Type:** Wind
**Applicant:** The Native Village of Scammon Bay
**Applicant Type:** Government Entity
**Energy Region:** Lower Yukon-Kuskokwim
**Proposed Phase(s):** Design
**Recommended Phase(s):** Design

## Project Description

This application proposes the final design and development of a 1MW wind turbine and an 864 MWh battery energy system (BESS) in Scammon Bay. Wind power in Scammon Bay would reduce the community's dependence on diesel fuel and the BESS would absorb power during periods of excess production and provide a source of short-term backup power. The proposed wind turbine and BESS would be owned by the Native Village of Scammon Bay and built on Askinuk Corporation land. The Native Village of Scammon Bay would sell the electricity generated by the wind turbine to the Alaska Village Electric Cooperative (AVEC), the rural electric utility cooperative, at 80% of the avoided cost of fuel. The proposed wind power system is based on modeling from a technical Renewable Energy Options Analysis report (See Appendix G) as well as community-identified energy priorities that include the need for long-term energy security.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Not state land according to description.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding from Kun River or any coastal inundation is not expected to affect site due to relatively high elevation. -2019 Statewide Threat Assessment Rankings for Scammon Bay: Erosion = Lower (57), Flooding = Moderate (40), Permafrost = Low (21) -Site is located in commuinity of Scammon Bay, within Yukon Delta National Wildlife Refuge along west coast and is ~4. 5 miles SE of Scammon Bay, ~5 miles SE of the Kun River, and ~9 miles from the Bering Sea coast. The site is located in a topographic saddle 600 feet higher than Scammon Bay with low-order drainage networks extending from the saddle. No wells in DNR WELTS website and no USGS stream gages found in Scammon Bay and surroundings.; -GEOLOGIC UNITS: Colluvial deposits, glacial deposits, bedrock; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Low landslide hazard: This area has not been assessed for landslide hazards. Solifluction is visible in Google Earth and could be a problem depending on which site they choose, but a problem that can be mitigated; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Wind Power in Scammon Bay

**App #18014** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 25.35 |
| 2. Matching Resources (15) | 1.50 |
| 3. Stage 2 Feasibility (25) | 14.41 |
| 4. Project Readiness (5) | 4.00 |
| 5. Benefits (10) | 1.92 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 8.67 |
| Total Stage 3 Score (100) | 57.84 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 57.63 |
| Benefit/Cost Ratio | 0.61 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 21 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 57.84 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $17,607,562 | $ |
| REF Grant Funds | $1,172,401 | $ |
| Matching Funds | $00 | $ |

| | |
|---|---|
| Cost of Electricity | $0.72/kWh |
| Price of Fuel | $8.85/Gal |
| Household Energy Cost | $11,482 |

## AEA Review Comments & Recommendation

**Full Funding**

based on EWT turbine technology; EWT recently went bankrupt.

**Election District: T-39**

# Solar in the Heart of the Railbelt

**App #18015** **Standard Application**

**Project Type:** Transmission, Solar, Storage
**Applicant:** Knik Tribe
**Applicant Type:** Government Entity
**Energy Region:** Railbelt
**Proposed Phase(s):** Design
**Recommended Phase(s):** Design

## Project Description

The Knik Tribe seeks support to complete final design, engineering, and permitting for a 1.4MW community solar farm in Wasilla, AK. Located at the Tribe's senior housing facility off Knik-Goose Bay Road, the project will be shovel-ready for construction once funding is secured. When built, it will generate 1.3M kWh annually, integrate 1.4MW/1.4MWh of battery storage, reduce electricity costs by 20% for over 300 Native households, and advance energy sovereignty while supporting workforce development, community resilience, and environmental restoration.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Exact location unclear, but seems to not be state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Close proximity of Cottonwood Creek suggests flooding is possible but may be mimimal based on historical discharge measurements. Site is ~0. 4 miles from Cottonwood Creek, which is located between Wasilla Creek to the east and Little Susitna River to the west. Stream gage located ~5 miles from the site measured discharge discontinuously between 1949 and 2000, with a maximum mean discharge of 55 cubic feet per second (cfs) (USGS). Five wells located between the site and Cottonwook Creek to the north exhibit a progressive westward decrease in groundwater depth from 32 feet in the east to 6. 5 feet in the west (DNR WELTS website). Gravel, sand, silt, and clay were encountered during drilling each of these wells. Based on stormwater analysis by DOWL (2017), the site and surroundings have a low impervious percentage of 0-10%, reflecting more natural drainage.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, paludal peat deposits; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Low landslide hazard: evidence of nearby liquefaction triggered by the 1964 earthquake; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate in the vicinity of the parcel (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Renewable Energy Fund: Round 18 Application Summaries

## Solar in the Heart of the Railbelt

**App #18015** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 7.04 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 15.25 |
| 4. Project Readiness (5) | 3.92 |
| 5. Benefits (10) | 2.04 |
| 6. Local Support (5) | 1.00 |
| 7. Sustainability (10) | 6.67 |
| Total Stage 3 Score (100) | 52.42 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 61.00 |
| Benefit/Cost Ratio | 0.45 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 26 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 52.42 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $4,687,913 | $ |
| REF Grant Funds | $292,640 | $ |
| Matching Funds | $52,720 | $ |

| | |
|---|---|
| Cost of Electricity | $0.15/kWh |
| Price of Fuel | $1.61/Gal |
| Household Energy Cost | $3,191 |

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

**Election District: Matanuska-Susitna Borough Region**

## 500kwh BESS + Installation, Integration, including upgraded controls

**App #18016** **Standard Application**

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

### Project Description

This project will install a modular, large-capacity battery energy storage system with an opensource management platform to improve reliability, support renewable integration, and provide long-term flexibility for future technologies. The modularity allows for added storage and ease of moving and installing.

### DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Inadequate/insufficient information to evaluate. The location provided is offshore, and no additional location information is available in description.

### DNR/DOF Feasibility Comments

No impact on DFFP; no comment

### DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Site will likely be prone to river erosion in future. 2019 Statewide Threat Assessment Rankings for Kongiganak: Erosion = Moderate (32), Flooding = Moderate (34), Permafrost = High (3) The site is located in the community of Kongiganak along the Kongnignanohk River within the Yukon Delta National Wildlife Refuge. Located in the middle of Kongiganak, the site is adjacent to the outer curve of the river. The erosion forecast of Buzard et al. (2021) places the site close to the erosion uncertainty line (i.e. unsure if erosion will occur at this line by 2075), but in general, the outer curve of the river will ultimately erode the area as exhibited by the southward progression of stream meanders. From 1952 to 2015, the Kongnignanohk River increased in width from 90 feet to 115 feet (Buzard et al. , 2021). The regular occurrence of storm surges, less resistant soils, and barge traffic drive the erosion of Kongiganak (U. S. Army Crops of Engineers, 2009). No wells in DNR WELTS website and no USGS stream gages found in Kongiganak and surroundings.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, lake deposits, paludal peat deposits, marine deposits; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

### DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -No tsunami hazard assessment performed in Kuskokwim Bay but recent events highlight potential for meteo-tsunami/storm surge flooding.; -Although no pdated erosion or formal flooding risk assessments have been published yet for Kongiganak, erosion (https://dggs.alaska.gov/pubs/id/30552) and/or flooding risk to the proposed structure is minor. From prliminary estimates, the area remained unaffected even by the recent Typhoon Halong impacts. The design and ease of moving the proposed modular system will allow fro future relocation, if environmental conditions and associated hazards change; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

## 500kwh BESS + Installation, Integration, including upgraded controls

**App #18016** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.7 |
| 2. Matching Resources (15) | 15.00 |
| 3. Stage 2 Feasibility (25) | 16.98 |
| 4. Project Readiness (5) | 4.67 |
| 5. Benefits (10) | 5.17 |
| 6. Local Support (5) | 1.00 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 75.52 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 67.92 |
| Benefit/Cost Ratio | 1.24 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 5 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 75.52 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $748,000 | $ |
| REF Grant Funds | $596,000 | $ |
| Matching Funds | $152,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.76/kWh |
| Price of Fuel | $6.70/Gal |
| Household Energy Cost | $10,283 |

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

**Election District: S-38**

# Crater Lake Power and Water Project

**App #18017** **Standard Application**

**Project Type:** Hydro, Storage
**Applicant:** Cordova Electric Cooperative, Inc. (CEC)
**Applicant Type:** Utility
**Energy Region:** Copper River/Chugach
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

Crater Lake is a perched lake located directly above an existing City of Cordova water treatment facility and water supply line to Cordova that sources water from the Crater Lake outflow, elevation 1547', at a downstream catchment at approximate elevation 200'. The project will build a dam storage impoundment at the lake outflow, drive a micro-tunnel lake tap into the lake and transportwater via a 16" penstock to a power plant at the base of the mountain at approximate elevation 100' to 1000kW Pelton turbine generator. The water will then be injected into the City Water Treatment Plant. The power would be delivered to Cordova via the CEC Humpback Creek transmission which passes near the Crater Lake power plant site and has significant excess capacity. A 2104 CEC Reconnaissance study and 2016 McMillen Feasibility Study (Appendix A,Appendix B, respectively) indicate that the project can deliver over 2,000,000 kWh of stored energy to offset diesel fuel generation, consistent with AEA goals and CEC strategic plan and serve current unmet and future demands of City water supply.

## DNR/DMLW Feasibility Comments

Project may include some State tentatively approved or patented lands which would require authorization. If it is determined that this is under DNR management, projects such as this often need development plan details such as placement of infrastructure, transmission lines and access to be clearly defined in the application. Permits may be required for feasibility studies and for access if access development is not within GAUs. if access involves material, a material sales contract may be needed. Crater Lake's shoreline includes state lands, though the lake itself is not listed among navigable waterways. Shoreline state lands are within Prince William Sound Area Plan subunit 27A, with management intent to "be retained in state ownership and managed for multiple use with primary emphasis on public recreation." No specific concerns, aside from preserving the land's multiple uses and public recreation intent.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Crater Lake has a tiny catchment area (< 200 acres / 0. 3 square miles). A thorough review of 2016 McMillen Feasibility Study is needed to evaluate precipitation and water availability estimates for the reported 2,000,000 kWh energy storage potential.; -GEOLOGIC UNITS: Glacial deposits, colluvial deposits, lake deposits, paludal peat deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium-high landslide hazard: large bedrock landslides have occurred in Cordova near this site; another could occur and it could be catastrophic; however we do not how likely that is. Rockfall and debris flows are more likely; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, has extremely limited testing in this area. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Renewable Energy Fund: Round 18 Application Summaries

## Crater Lake Power and Water Project

**App #18017** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 19.06 |
| 2. Matching Resources (15) | 21.00 |
| 3. Stage 2 Feasibility (25) | 16.77 |
| 4. Project Readiness (5) | 4.83 |
| 5. Benefits (10) | 2.00 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 76.16 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 67.08 |
| Benefit/Cost Ratio | 0.30 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 5 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 76.16 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $43,561,259 | $ |
| REF Grant Funds | $4,000,000 | $ |
| Matching Funds | $47,365,850 | $ |

| | |
|---|---|
| Cost of Electricity | $0.42/kWh |
| Price of Fuel | $3.86/Gal |
| Household Energy Cost | $8,632 |

### AEA Review Comments & Recommendation

**Withdrawn**

**Election District: C-5**

# Beluga Solar Array

**App #18018** **Standard Application**

**Project Type:** Solar
**Applicant:** Chugach Electric Association Inc.
**Applicant Type:** Utility
**Energy Region:** Railbelt
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

The Chugach Electric Association Beluga Solar Array Project is planned to be a 7MWdc/5MWac solar array built on Chugach owned property north of the Beluga Power Plant. The project uses a fixed tilt ground mount design and interconnects to a 24.9 kV distribution line which serves the Village of Tyonek. As planned, the solar array will offset over 54,000 MCF/year of Cook Inlet natural gas as calculated using generalized system heat rate estimates. The siting of the array leverages existing infrastructure and simplifies interconnection while streamlining development issues that can result from leasing land.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Minimal risk for flooding due to expected low discharge of small unnaned creek that flows just north of Beluga Power Plant and long distances from site to Beluga River (>5 miles) and Threemile Creek (>7 miles). The site is located just north of the Beluga Power Plant between the Beluga River to the north and Threemile Creek to the south and close to the Cook Inlet coast. A small creek flows through the northern part of the Beluga Power Plant. Two wells at the site were drilled to 171 feet in 1966 and encountered groundwater at ~55 feet below ground surface, and one well at the Beluga Power Plant south of the site was drilled to 313 feet in 1982 and encountered groundwater at 52 feet below ground surface (DNR WELTS website). There are no USGS stream gages on Beluga River or Threemile Creek.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacioestuarine deposits, glaciomarine deposits, paludal peat deposits, marine deposits, glacial deposits; -PERMAFROST: Isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium landslide hazard: Dozens of landslides and areas of liquefaction and lateral spread dot the landscape and river banks around the town of Beluga, many from the 1964 earthquake, but not all; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate to high in the immediate vicinity of the parcel. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Renewable Energy Fund: Round 18 Application Summaries

ALASKA ENERGY AUTHORITY

## Beluga Solar Array

**App #18018** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 8.58 |
| 2. Matching Resources (15) | 22.50 |
| 3. Stage 2 Feasibility (25) | 17.89 |
| 4. Project Readiness (5) | 5.00 |
| 5. Benefits (10) | 2.11 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 9.67 |
| Total Stage 3 Score (100) | 66.24 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 71.55 |
| Benefit/Cost Ratio | 0.77 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 18 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 66.24 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $13,267,000 | $ |
| REF Grant Funds | $2,000,000 | $ |
| Matching Funds | $24,534,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $1.61/Gal |
| Household Energy Cost | $3,887 |

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

**Election District: Anchorage (Municipality)**

# Akiachak Wind System Design and Integration

**App #18019** **Standard Application**

**Project Type:** Wind, Solar, Storage
**Applicant:** Akiachak Native Community
**Applicant Type:** Government Entity
**Energy Region:** Lower Yukon-Kuskokwim
**Proposed Phase(s):** Feasibility, Design
**Recommended Phase(s):** Feasibility, Design

## Project Description

This project requests $1,395,020 to implement recommendations of a recently completed study funded by the BIA Tribal Energy Development Capacity (TEDC), as well as a recent publication funded by the DOE Competitiveness Improvement Project (i.e., “Commercialization Implementation Plan for Distributed Wind Turbine Power for Kuskokwim River Villages, which was specifically written for Akiachak), and is a follow-up to a completed wind feasibility study funded by AEA REF (Round 14). The project will further evaluate the commercial viability of utility-scale wind systems as a cost-effective alternative to imported fossil fuels in western Alaska.This project will result in conceptual design studies for Akiachak, which will incorporate resource assessments, grid impact analyses, site selection, appropriate engineering, and construction readiness planning into one coordinated effort. This project ensures that the community advances toward construction with designs tailored for maximum renewable production, minimum lifecycle cost, and long-term energy resilience. At project completion, Akiachak will have:1. Validated project implementation plans 2. Grid hosting, system optimization, and integrated control analysis with recommendations for the most productive, cost-effective mix of generation, storage, and load control3. Fully engineered, permitting plans, and 65% project design packages 4. A clear path to construction funding, backed by precise technical and financial data

## DNR/DMLW Feasibility Comments

No specific locations identified as of yet.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding may be expected at some point in Akiachak due to an increase in regional flooding frequency and progression of river meanders. 2019 Statewide Threat Assessment Rankings for Akiachak: Erosion = Lower (54), Flooding = High (14), Permafrost = Moderate (13) The site is in the NE part of the community of Akiachak, just north of the Kuskokwim River in the Yukon-Kuskokwim delta area. For reference, Akiachak is ~28 miles NE of Bethel, ~140 miles north of the coast. Flooding from water level changes due to ice jams, spring breakup, and permafrost degradation is expected to lead to erosion that affects the area SW and SE of Akiachak (U. S. Army Corps of Engineers, 2008). The Kuskokwim riverbank is estimated to be eroding at a rate of 10 feet per year (U. S. Army Corps of Engineers, 2008), detailed measurements and analyses are needed to confirm this rate. Three wells just north of Akiachak were drilled to 278-300 feet in 1997-1998, with two encountering groundwater at 13 feet below ground surface and one reaching groundwater at 250 feet (DNR WELTS website). One well located close to the site in the eastern part of Akiachak was drilled to 201 feet in 1966, but no groundwater was reached (water encountered in upper 40 feet but not static) (DNR WELTS website). No USGS stream gages along this stretch of the Kuskokwim River.; -GEOLOGIC UNITS: Alluvial, colluvial, eolian, lake, paludal peat, and marine deposits present; -PERMAFROST: Sporadic (10-50%); isolated (<10%);

## DNR/DGGS Geohazards Comments

-Very low seismic hazard.; -Formal flood & erosion risk studies are still needed for Akiachak, and DGGS also hopes to provide updated surficial geologic mapping to the region. Depending on the location, flooding and erosion risk may be minor to major, but there are many safe locations for wind power development where the risk is low. The proposed conceptual design studies for Akiachak are planned to incorporate site selection and appropriate engineering, including consideration of any potential flooding and/or erosion risk;

# Akiachak Wind System Design and Integration

**App #18019** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 23.27 |
| 2. Matching Resources (15) | 3.00 |
| 3. Stage 2 Feasibility (25) | 13.39 |
| 4. Project Readiness (5) | 3.17 |
| 5. Benefits (10) | 1.25 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 6.33 |
| Total Stage 3 Score (100) | 50.91 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 53.58 |
| Benefit/Cost Ratio | 0.74 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 27 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 50.91 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $4,286,322 | $ |
| REF Grant Funds | $797,510 | $ |
| Matching Funds | $25,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.73/kWh |
| Price of Fuel | $7.21/Gal |
| Household Energy Cost | $10,539 |

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

**Election District: S-38**

# Kotlik Solar Battery Project

**App #18020** **Standard Application**

**Project Type:** Solar, Storage
**Applicant:** Kongnikilnomuit Yuita Corporation
**Applicant Type:** IPP
**Energy Region:** Lower Yukon-Kuskokwim
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The proposed project includes the design and construction of a 520-kW solar array and 560 kWh Battery energy storage system (BESS) for the community of Kotlik, Alaska. The project is expected to reduce diesel operational run time and diesel costs on the diesel generators, provide the Tribal Yup'ik community energy resiliency during power outages and environmental threats, and to generate revenue to offset operational costs for powering the community, and the IPP. The proposed project is expected to reduce electric utility fuel consumption by 22% or 32,998 gallons annually.

## DNR/DMLW Feasibility Comments

SCRO; GPS coordinate is displaced from Kotlik into the Ocean. No DMLW-managed lands identified in project. Inadequate/insufficient information to evaluate. The location provided is offshore, and no additional location information is available in description.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding and erosion are expected at this site as reflected by regular flooding since established in the 1960s (Cox, 2018). 2019 Statewide Threat Assessment Rankings for Kotlik: Erosion = High (11), Flooding = High (15), Permafrost = Moderate (18) The site is just south of the community of Kotlik, which is located at the confluence of the Little Kotlik River, Kotlik River, and Apoon Pass River in the northernmost part of the Yukon Delta National Wildlife Refuge. Kotlik was significantly affected by former Typhoon Halong, categorized as a Priority 3 location (Priority 1 = most urgent). There is only one well in the area, located ~13 miles west of the site. The well was drilled to 150 feet in 1963, which reached groundwater at 8 feet below ground surface (DNR WELTS website). There are no USGS stream gages in region.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, lake deposits, paludal peat deposits, marine deposits ; -PERMAFROST: Sporadic (10-50%); isolated (<10%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Flooding and erosion risk are relatively high in Kotlik. DGGS' Flood Impact Assessment identified eight major floods that impacted critical infrastructure like the airstrip and wastewater lagoon between 1964 and 2020, in addititon to many more moderate and minor floods impacting the community in the same timeframe (https://dggs.alaska.gov/pubs/id/30783; https://maps.dggs.alaska.gov/akfit/). Kotlik also has significant exposure to erosion (https://dggs.alaska.gov/pubs/id/30672; https://dggs.alaska.gov/pubs/id/30552).; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Kotlik Solar Battery Project

**App #18020** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 24.47 |
| 2. Matching Resources (15) | 15.00 |
| 3. Stage 2 Feasibility (25) | 14.57 |
| 4. Project Readiness (5) | 3.83 |
| 5. Benefits (10) | 1.79 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 8.33 |
| Total Stage 3 Score (100) | 70.50 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 58.30 |
| Benefit/Cost Ratio | 0.48 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 13 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 70.50 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $3,962,060 | $ |
| REF Grant Funds | $3,216,259 | $ |
| Matching Funds | $745,801 | $ |

| | |
|---|---|
| Cost of Electricity | $0.72/kWh |
| Price of Fuel | $8.37/Gal |
| Household Energy Cost | $11,083 |

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

**Election District: T-39**

# Solomon Gulch Hydroelectric Facility Pool Raise

**App #18021** **Standard Application**

**Project Type:** Hydro
**Applicant:** Copper Valley Electric Association, Inc.
**Applicant Type:** Utility
**Energy Region:** Copper River/Chugach
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

CVEA conducted a feasibility study in 2020 to evaluate the economic viability of raising the pool level of the Solomon Gulch Reservoir. The goal was to capture spill for later use in winter generation, thereby offsetting existing diesel generation. The engineering firm McMillen Jacobs collected generation data from both the Solomon Gulch plant and the CVEA main office. This data was summarized to analyze the load-following demands of Solomon Gulch, as detailed in theMcMillen Jacobs Associates (2020) Engineering Feasibility Report on the Solomon Gulch Pool Raise. Our review confirmed that additional generation from captured spill could effectively replace diesel generation in Glennallen during the winter months, while still permitting full generation from Allison Creek. CVEA would like to pursue the next steps of conceptual design.

## DNR/DMLW Feasibility Comments

Includes existing state land lease, ADL 67279 to CVEA. Raising the level of Solomon Lake would most likely require a lease amendment for ADL 67279. Solomon Gulch Reservoir is within Prince William Sound Area Plan subunit 21B, with management intent "for multiple use with appropriate protection for mountain goat habitat and the hatchery water supply."

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-MiINERAL RESOURCES:ARDF# VA130 is an approximate location of inactive gold placer mining along Solomon Gulch, which has not been active since the early 1900's. If Solomon Lake is expanded by a larger impoundment then potential placer gold may be covered by the lake. -HYDROLOGY COMMENTS: Would need to review CVEA/McMillen's 2020 report to evaluate Salomon Gulch Reservoir expansion. No further comments.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, manmade deposits, lake deposits, paludal peat deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Very high tsunami hazard for Port Valdez is modeled, including submarine slope failure and tectonic sources, or both https://dggs.alaska.gov/pubs/id/25055.; -High landslide hazard: Valdez was destroyed by ground failures triggered by the 1964 earthquake. The nearby steep slopes have landslide and snow avalanche scars; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate in the vicinity of the site (https://maps.dggs.alaska.gov/radon/). Indoor radon tests in Valdez range from 1. 2 to 4. 9 pCi/L. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Renewable Energy Fund: Round 18 Application Summaries

## Solomon Gulch Hydroelectric Facility Pool Raise

**App #18021** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 14.75 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 17.34 |
| 4. Project Readiness (5) | 4.83 |
| 5. Benefits (10) | 3.34 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 9.00 |
| Total Stage 3 Score (100) | 66.26 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 69.35 |
| Benefit/Cost Ratio | 1.06 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 17 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 66.26 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $10,192,432 | $ |
| REF Grant Funds | $1,490,136 | $ |
| Matching Funds | $300,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.10/kWh |
| Price of Fuel | $3.85/Gal |
| Household Energy Cost | $6,682 |

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

**Election District: O-29; R-36**

# Tuntutuliak Turbine Repair & Upgrades

**App #18022** **Standard Application**

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

## Project Description

Nacelle and Yaw Replacement for Turbine #1 is needed as the components caught fire not long after the turbine was installed due to faulty wiring. This was almost 10 years ago. We also need to rebuild 3 of the gear boxes to improve performance. We have blade extenders that have not been installed and we will get those on all 5 turbines – expected to increase energy production by 15%.The system was designed for 5 turbines to be operating and the effective functioning of the BESS/Battery requires all 5 turbines to be operational. When this replacement work is done, we will also be able to do standard maintenance on the other 4 turbines. In particular 3 turbines will have the gearboxes rebuilt and all 5 will have blade extenders installed.This hybrid system with the storage has the capacity to run with 3500 hours diesels. The blade extenders will increase the wind generated energy by 15%. Estimated that each turbine will generate 167,000kwh annually.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Construction activities should minimize impacts on other important land uses specified in the management intent: fish and wildlife habitats, harvest opportunities, dispersed recreation, commercial fishing, and generally trade, travel, and commerce. Authorizations related to recreation, public safety, utilities, communication lines, and other projects providing a public benefit are considered appropriate, subject to protections for habitat, harvest, and recreation values.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: 2019 Statewide Threat Assessment Rankings for Tuntutuliak: Erosion = Moderate (25), Flooding = High (27), Permafrost = High (3) Site located along meander southeast of community of Tuntutuliak. High likelihood of flooding based on location adjacent to river meander. In general, for several wells in Tuntutuliak, groundwater is relatively close to surface (<10 feet below ground surface) (DNR WELTS website). There are no USGS stream gages in region.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, lake deposits, paludal peat deposits, marine deposits; -PERMAFROST: Sporadic (10-50%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Flooding is a major hazard in Tuntutuliak, where nearly all floods on record qualify as major per National Weather Service-based criteria based on impacted infrastructure (https://dggs.alaska.gov/pubs/id/31279); however, the power plant and wind turbines are located at high enough elevation to remain safe from regular flooding (or erosion https://dggs.alaska.gov/pubs/id/30552) risk. However, from the estimated impacts from Typhoon Halong and based on a preliminary average flood height estimate of 5. 9 +/- 0. 5 ft MHHW (https://maps.dggs.alaska.gov/akfit/), even the power plant and trubines may have been impacted.; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Tuntutuliak Turbine Repair & Upgrades

**App #18022** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 23.89 |
| 2. Matching Resources (15) | 4.50 |
| 3. Stage 2 Feasibility (25) | 21.97 |
| 4. Project Readiness (5) | 4.50 |
| 5. Benefits (10) | 9.50 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 8.00 |
| Total Stage 3 Score (100) | 73.86 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 87.88 |
| Benefit/Cost Ratio | 5.80 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 8 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 73.86 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $598,000 | $ |
| REF Grant Funds | $565,000 | $ |
| Matching Funds | $33,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.75/kWh |
| Price of Fuel | $7.40/Gal |
| Household Energy Cost | $10,821 |

## AEA Review Comments & Recommendation

**Full Funding**

AEA notes that crane mobilization schedule may inform the project critical path and could result in cascading delays.

**Election District: S-38**

# Bald Hills Wind Feasibility and Conceptual Design

**App #18023** **Standard Application**

**Project Type:** Wind, Transmission, Storage
**Applicant:** Bald Hills Wind LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

Following recommendations by members of the Native Village of Tyonek, initial reconnaissance, and wind resource modeling, Bald Hills Wind has emerged as a promising early-stage renewable energy development that would extend west of Tyonek along a broad ridge/plateau system in an area where prior exploration for oil and gas has occurred. The Bald Hills Wind project would support a total installed wind power capacity of approximately 120MW and interconnect into the Beluga transmission corridor near the Beluga Power Plant, arguably one of the strongest points of interconnection along the entire Railbelt. The project could also host grid scale battery energy storage (BESS) which would bolster system flexibility, improving operator's ability to integrate If built, the project could significantly diversify the energy supply of the Railbelt grid and reduce rate-payer exposure to fuel price volatility, particularly as the region is expected to transition to imported liquid natural gas by the time this project would go online. This proposed project advances key development steps that enable an assessment of the project's feasibility and supports its conceptual design with a focus on site access, environmental, and engineering considerations.

## DNR/DMLW Feasibility Comments

Lease application on Mental Health Trust Land (MHT 9200838) Could require SCRO easement authorization depending on transmission line configuration. Mental Health Trust lands

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding and stream incision expected to be minimal due to lack of well established, high-order drainage network and low slope. Site located in small, primarily linear drainage network that flows SW down relatively gentle slope to trunk stream (Nikolai Creek) 600 feet lower in elevation. No wells in DNR WELTS website and no USGS stream gages found along Nikolai Creek or tributaries.; -GEOLOGIC UNITS: Colluvial deposits, glacial deposits, paludal peat deposits; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -High landslide hazard: slightly variable hazard dependong the selected site, landslides have been mapped along this whole hillside, plus dozens of areas of liquefaction and lateral spread dot the landscape and river banks around the town of Tyonek, many from the 1964 earthquake, but not all; -Potential volcanic hazard exists due to the nearby location of Mount Spurr; see https://avo. alaska. edu/explore/reference/2936 for details. Volcanic ashfall is also a likely hazard, including ashfall from eruptions of Mount Redoubt and other Cook Inlet volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be moderate to high in the immediate vicinity of the parcel. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

ALASKA ENERGY AUTHORITY

# Bald Hills Wind Feasibility and Conceptual Design

**App #18023** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.62 |
| 2. Matching Resources (15) | 10.50 |
| 3. Stage 2 Feasibility (25) | 12.64 |
| 4. Project Readiness (5) | 3.13 |
| 5. Benefits (10) | 2.21 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 5.00 |
| Total Stage 3 Score (100) | 47.59 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 50.58 |
| Benefit/Cost Ratio | 0.94 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 28 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 47.59 |

| Funding & Cost | Requested | Recommended | | |
|---|---|---|---|---|
| Total Cost Through Construction | $490,693,000 | $ | Cost of Electricity | $0.20/kWh |
| REF Grant Funds | $528,000 | $ | Price of Fuel | $2.96/Gal |
| Matching Funds | $80,000 | $ | Household Energy Cost | $6,168 |

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

**Election District: S-37**

# Elim Community Solar Project

**App #18024** **Standard Application**

**Project Type:** Solar, Storage
**Applicant:** Native Village of Elim
**Applicant Type:** Government Entity
**Energy Region:** Bering Straits
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The Native Village of Elim proposes to build a community-scale photovoltaic solar array and battery storage system in Elim, to be located next to the existing diesel power plant and bulk fuel facilities. The solar array and battery system will be locally owned by the Tribe, as an Independent Power Producer (IPP), with power produced by the system sold to the local utility – Alaska Village Electric Cooperative. The proposed project includes a360-kW solar array and 350 kWh BESS, including necessary power plant upgrades and integration work, and is projected to reduce power utility fuel consumption by 23,910 gallons annually. For the system's full design life, the Native Village of Elim will generate sufficient revenue through sale of renewable electricity to support the ongoing operation and maintenance of the system, using remaining net revenue to equitably distribute the benefits through residential subsidy programs. As the community streamlines their O&M and business practices, the battery energy storage system will both increase resiliency and reliability of power while also making potential future renewable energy developments simpler to integrate and more cost-effective.

## DNR/DMLW Feasibility Comments

NRO; Not located on State Land; Elim Native Corporation; Immediately adjacent to LSH 416 (Elim Airport) assigned to DOT through IWMA -2004-000135-0. Utility easement needed to cross LSH 416 if new powerline infrastructure is needed to/from airport or parrallel to the runway. Would be needed from DOT, not DNR. Not state land; adjacent to a LSH for airport, but no specific management intent, and no substantial state lands otherwise nearby.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding from streams is expected to be minimal due to low relief of landscape and dominance of small, low-order streams in area. However, Elim regularly experiences coastal flooding and erosion from storm surges. 2019 Statewide Threat Assessment Rankings for Elim: Erosion = Moderate (38), Flooding = High (14), Permafrost = Low (20) For the only well found at the DNR WELTS website for Elim, groundwater was encountered at 63 feet below ground surface. There are no USGS stream gages in region.; -GEOLOGIC UNITS: Colluvial deposits, eolian deposits (generally silt), manmade deposits, paludal peat deposits, marine deposits (along coast), bedrock; -PERMAFROST: Discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -No mapped west coast tsunami hazards outside of Bristol Bay. Highest tsunami hazards would be posed by meteo-tsunamis or submarine collapse of Yukon River delta system.; -Erosion hazard is moderate, and flooding risk is minor. Formal ground-based risk assessments have not yet been conducted.; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Elim Community Solar Project

**App #18024** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 23.67 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 15.79 |
| 4. Project Readiness (5) | 4.83 |
| 5. Benefits (10) | 1.83 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 9.00 |
| Total Stage 3 Score (100) | 74.12 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 63.15 |
| Benefit/Cost Ratio | 0.42 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 7 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 74.12 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $3,572,885 | $ |
| REF Grant Funds | $2,987,430 | $ |
| Matching Funds | $529,455 | $ |

| | |
|---|---|
| Cost of Electricity | $0.81/kWh |
| Price of Fuel | $5.75/Gal |
| Household Energy Cost | $10,721 |

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

**Election District: T-39**

## 500kwh BESS + Installation, Integration, including upgraded controls.

**App #18025** **Standard Application**

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

### Project Description

The scope of work includes the procurement, installation, and commissioning of a larger-capacity battery energy storage system with an open-source battery management platform. Grant funds will support the purchase of modular battery cabinets, power conversion equipment, integration with control systems, and skid packaging, as well as the labor for installation and commissioning.Matching funds and in-kind contributions will cover site preparation, electrical interconnection, and local support services, including coordination with utility staff and training. Together, these efforts will deliver a fully integrated, modular storage solution that enhances grid stability, enables increased renewable integration, and provides long-term flexibility for future energy technologies.

### DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. Inadequate/insufficient information to evaluate. The location provided is offshore, and no additional location information is available in description.

### DNR/DOF Feasibility Comments

No impact on DFFP; no comment

### DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding and erosion are expected at this site near Kwigillingok due to the location next to the Kwigillingok River, <4 miles from the coast, and within the Yukon Delta National Wildlife Refuge. 2019 Statewide Threat Assessment Rankings for Kwigillingok: Erosion = High (14), Flooding = Lower (52), Permafrost = Moderate (12) There is only one well for the area at the DNR WELTS website, which is located at the southern end Kwigillingok. The well encountered saltwater. There is one tidal gage east of Kwigillingok Airport but the link to the Alaska-Pacific River Forecast Center website does not work.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, lake deposits, paludal peat deposits, marine deposits; -PERMAFROST: Sporadic (10-50%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

### DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -This region has major flooding risk (https://dggs.alaska.gov/pubs/id/31538) and significant erosion exposure (https://dggs.alaska.gov/pubs/id/30552; https://dggs.alaska.gov/pubs/id/30672). Moderate to major flooding can be caused by high tides alone. The community and region were devastated by Typhoon Halong. Careful site selection is critical (https://maps.dggs.alaska.gov/akfit/); -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

## 500kwh BESS + Installation, Integration, including upgraded controls.

**App #18025** **Standard Application**

### Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 24.71 |
| 2. Matching Resources (15) | 15.00 |
| 3. Stage 2 Feasibility (25) | 14.08 |
| 4. Project Readiness (5) | 3.50 |
| 5. Benefits (10) | 1.42 |
| 6. Local Support (5) | 1.00 |
| 7. Sustainability (10) | 8.00 |
| Total Stage 3 Score (100) | 67.71 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 56.33 |
| Benefit/Cost Ratio | 0.65 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 16 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 67.71 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $751,000 | $ |
| REF Grant Funds | $598,000 | $ |
| Matching Funds | $153,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.67/kWh |
| Price of Fuel | $8.40/Gal |
| Household Energy Cost | $11,195 |

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

**Election District: S-38**

# ATU BESS Battery Replacement Project

**App #18026** **Standard Application**

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

## Project Description

ATU's BESS batteries have gone bad. They were originally purchased a number of years ago, however the system was not able to be installed/integrated until recently. In the meantime the batteries have gone bad.With new batteries, our system will be able to provide the full benefit to our community, without them, we have an expensive asset/BESS, estimated at $500,000 that isn't usable.Further the full renewable energy system – with turbines and thermal heat stoves do not function to receive their full benefit – this is an additional $3 mm in assets that are not being fully leveraged to benefit our community.

## DNR/DMLW Feasibility Comments

No DMLW-managed lands identified in project. No comments.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Regular flooding and erosion (1 ft/yr---Alaska Division of Community and Regional Affairs) are expected at this site in Atmautluak due to location next to Pikmiktalik River in the Yukon Delta National Wildlife Refuge. 2019 Statewide Threat Assessment Rankings for Atmautluak: Erosion = Moderate (40), Flooding = Lower (53), Permafrost = High (8) There is only one well for the area at the DNR WELTS website, which is located at the southern end of Atmautluak. The well encountered groundwater at 10 feet below ground surface. There are no USGS stream gages in region.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, lake deposits, paludal peat deposits, marine deposits; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very low seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Formal flood & erosion risk studies are still needed for Atmautluak; -This area has been subject to ash fall from erupting Alaska Peninsula volcanoes. -Limited radon test results exist in this area. Limited radon test results exist for southwest Alaska, including test values as high as 26. 95 pCi/L in Grayling. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# ATU BESS Battery Replacement Project

**App #18026** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 22.21 |
| 2. Matching Resources (15) | 15.00 |
| 3. Stage 2 Feasibility (25) | 12.17 |
| 4. Project Readiness (5) | 0.17 |
| 5. Benefits (10) | 4.00 |
| 6. Local Support (5) | 1.50 |
| 7. Sustainability (10) | 0.00 |
| Total Stage 3 Score (100) | 55.04 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 48.67 |
| Benefit/Cost Ratio | 1.18 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 24 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 55.04 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $519,500 | $ |
| REF Grant Funds | $444,500 | $ |
| Matching Funds | $75,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.66/kWh |
| Price of Fuel | $7.14/Gal |
| Household Energy Cost | $10,059 |

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

**Election District: S-38**

# Allakaket Village Community Solar and Battery IPP

**App #18027** **Standard Application**

**Project Type:** Solar, Storage, NaturalGas
**Applicant:** Allakaket Village Council
**Applicant Type:** Government Entity
**Energy Region:** Yukon-Koyuk/Upper Tanana
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The Allakaket Village Council requests $2,953,085 from the Alaska Energy Authority (AEA) Renewable Energy Fund (REF) grant for design and construction of a local solar energy PV array and battery storage in Allakaket, Alaska that would also serve Alatna, Alaska. The proposed project involves completing final solar design and construction of a 340-kW solar array with a 380-kWh BESS to supplement the existing diesel power generation system which serves Allakaket and Alatna. The proposed system would be owned and operated by the Allakaket Village Council and sell power to Alaska Power and Telephone (AP&T) the local utility, as an Independent Power Producer (IPP). The project is based on an existing technical feasibility study and would both support the additional demand that the planned piped water and sewer service will place on Allakaket and help offset utility bills used to support this system, providing long-term energy security and sustaining important community infrastructure.

## DNR/DMLW Feasibility Comments

NRO; GPS point is located 17 miles South east of Allakakut; not state land; US Fish and Wildlife - Kanuti National Wildlife Refuge. Allakaket, 50-84-0773. Koyakuk River is navigatable - Existing Utility ROW across the Koyakuk River Exists ADL 413893 Location given is in KNWR, 18 miles south of Allakaket; unclear whether location is accurate, but if so the project is not on state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Regular flooding and erosion are expected at this site in Allakaket due to location at confluence of Alatna and and Koyukuk rivers. 2019 Statewide Threat Assessment Rankings for Allakaket: Erosion = Moderate (43), Flooding = High (6), Permafrost = Moderate (10) There are numerous wells in Allakaket, with groundwater encountered at ~5-20 feet below ground surface (DNR WELTS website). There is one stream gage on Koyukuk River in northern part of Allakaket, but link to the Alaska-Pacific River Forecast Center website does not work.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, glacial deposits, glaiolacustrine deposits, lake deposits, paludal peat deposits, bedrock; -PERMAFROST: Continuous (90-100%) to discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Moderate seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Formal flood & erosion risk studies are still needed for Allakaket; -This area is generally not subject to ashfall from erupting Alaska volcanoes, although there is evidence for ashfall from much older (about 200, 000 years ago), very large events such as the Old Crow tephra. -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be medium to high in this area. Radon is a naturally occurring cancer-causing radioactive gas. The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Allakaket Village Community Solar and Battery IPP

**App #18027** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 30 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 16.82 |
| 4. Project Readiness (5) | 4.83 |
| 5. Benefits (10) | 2.09 |
| 6. Local Support (5) | 2.50 |
| 7. Sustainability (10) | 10.00 |
| Total Stage 3 Score (100) | 79.74 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 67.27 |
| Benefit/Cost Ratio | 0.69 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 3 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 79.74 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $3,407,376 | $ |
| REF Grant Funds | $2,953,085 | $ |
| Matching Funds | $433,291 | $ |

| | |
|---|---|
| Cost of Electricity | $1.06/kWh |
| Price of Fuel | $8.00/Gal |
| Household Energy Cost | $16,319 |

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

**Election District: R-36**

# Kenai Peninsula Energy Strategy Planning Project

**App #18028** **Standard Application**

**Project Type:** Hydrokinetic
**Applicant:** Chugachmiut
**Applicant Type:** Government Entity
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon, Feasibility
**Recommended Phase(s):** Recon, Feasibility

## Project Description

Chugachmiut will introduce wave energy to the Railbelt grid via the deployment of a wave energy converter (WEC) near the Alaska Native villages of Port Graham and Nanwalek on the southern Kenai Peninsula. For this proposal, Chugachmiut is seeking AEA funding for a three-year project which will accomplish critical feasibility studies and strategic planning as a foundational step to that project. This includes: economic impact and business feasibility studies; energy grid valuation and energy use studies; the hiring of an Energy Program Manager to oversee all facets of the project; and the formation of a Regional Energy Strategic Planning Group who will develop a Chugach Region strategic plan for developing renewable energy across marine, solar, and other resources.

## DNR/DMLW Feasibility Comments

Based on previous reviews portions of this project are on State held tide and submerged lands within the 3 mile limit. A wave energy converter, depending on location, will most likey require a tideland lease authorization if proposed to be located on state owned tidelands. Additionally, State authorized permits may be required to conduct feasibility studies. Exact location(s) unclear as of yet (upland locations provided, but project involves wave energy), but no obvious SUA or LDAs are present. Provided locations are not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Wave energy conversion technology is not commercially available. If Chugachmiut wants marine energy to be a major component of the KP Energy Plan, I'd suggest getting in WEC companies to think through how much of the resource (MW, MWh) is available prior to strategic planning around it.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, paludal peat deposits, marine deposits, bedrock; -PERMAFROST: Continuous (90-100%), discontinuous (50-90%), sporadic (10-50%); isolated (<10%), absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Regional (i.e., approximate) tsunami hazards for select Kenai Peninsula communities (including Port Graham) are modeled https://dggs.alaska.gov/pubs/id/30194 worst-case scenario inundation could reach ~15 m (~50 ft) in Port Graham.; -Low landlslide hazard, potentially rising to moderate, depending on which site is selected. This area has not been assessed for landslides, but they have occurred in the region, and landslide/snow avalanche scars are visible in Google Earth; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas is modeled as moderate in this area, with limited testing (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

ALASKA ENERGY AUTHORITY

# Kenai Peninsula Energy Strategy Planning Project

**App #18028** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 19.63 |
| 2. Matching Resources (15) | 13.50 |
| 3. Stage 2 Feasibility (25) | 13.03 |
| 4. Project Readiness (5) | 1.42 |
| 5. Benefits (10) | 4.00 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 2.00 |
| Total Stage 3 Score (100) | 55.57 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 52.12 |
| Benefit/Cost Ratio | 1.10 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 23 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 55.57 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $ | $ |
| REF Grant Funds | $1,202,442 | $ |
| Matching Funds | $416,869 | $ |

| | |
|---|---|
| Cost of Electricity | $0.17/kWh |
| Price of Fuel | $4.66/Gal |
| Household Energy Cost | $8,891 |

## AEA Review Comments & Recommendation

**Partial Funding with Special Provision**

Many of the line items are not in line with the intent of the REF program, which is to deploy renewable energy technology systems. For instance, this grant is not intended to hire a full time dedicated staff; but could rather be used to pay for existing personnel staff time. Furthermore, the level of travel listed does not align with an adjusted scope as outline by the previous sentence. I.E. regional planning meetings can be held to discuss outcomes

**Election District: C-6**

# Indian River Hydroelectric Project Construction (Phase 4)

**App #18029** **Standard Application**

**Project Type:** Hydro
**Applicant:** City Of Tenakee Springs DBA Tenakee Springs Electric Department
**Applicant Type:** Local Government
**Energy Region:** Southeast
**Proposed Phase(s):** Construction
**Recommended Phase(s):** Construction

## Project Description

The City of Tenakee Springs is constructing a hydroelectric project on Indian River. The project is a 180 kW low head, run-of-river plant displacing the use of approximately 30,000 gallons of diesel fuel annually, or 94% of annual electric utility diesel consumption.

## DNR/DMLW Feasibility Comments

PAAD - Indian River is not navigable for title purposes under AS 38.04.062. Indian River is anadromous and therefore public water per AS 38.05.126 as defined in As 38.05.965(21). I would hope that ADF&G is commenting about fish passage being maintained. Project may include some State tentatively approved or patented lands which would require authorization. If it is determined that this is under DNR management, projects such as this often need development plan details such as placement of infrastructure, transmission lines and access to be clearly defined in the application. Permits may be required for feasibility studies and for access if access development is not within GAUs. if access involves material, a material sales contract may be needed. An easement (ADL 108047), designated for development of the Indian River Hydro project, is present along the river immediately next to the provided location. But management intent of the unit around the easement (C33), where the provided location is situated, stipulates that "state lands within this parcel are [...] to be (only) used for dispersed recreation or public facilities associated with recreation." (NSEAP p. 3-320)

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: A few years USGS streamflow data available from the 90's. No active/ongoing public streamflow data. No further comments, assuming hydrologic due diligence and stream gaging of the Indian River has been conducted by contractor prior to the construction phase.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, marine deposits (near the coast), glacial deposits, paludal peat deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Moderate seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium landslide hazard: several debris flow and snow avalanche scars are visible in the hills near Tenakee Springs but this site is in a low lying, flatter area slightly away from the more hazardous steep slopes; -This area has been subject to ashfall from erupting volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas is modeled as moderate in this area, with limited testing (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency’s (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Indian River Hydroelectric Project Construction (Phase 4)

**App #18029** **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) | 36.00 |
| Benefit/Cost Ratio | 0.18 |

**Project Rank**

| | |
|---|---|
| Statewide (of 35 Standard applications) | |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $10,254,000 | $ |
| REF Grant Funds | $809,000 | $0 |
| Matching Funds | $5,622,500 | $0 |

| | |
|---|---|
| Cost of Electricity | $0.72/kWh |
| Price of Fuel | $2.22/Gal |
| Household Energy Cost | $6,501 |

## AEA Review Comments & Recommendation

**Did Not Pass Stage 2**

Based on AEA's economic evaluation, the B/C ratio came out to be much less than the applicant suggested. AEA's B/C calculation does not include the salvage value at year 50. AEA made adjustments to the annual O&M requirements for this calculation. AEA does not include the benefits of theoretical electrification (e.g. heating).Furthermore, There is some concern about previous work on this project being damaged by a storm in 2020; the updated risk assessment is still under review by FEMA with an estimated completion of 2027.

**Election District: A-2**

# Elfin Cove Hydro Final Permitting and Design

**App #18030** **Standard Application**

**Project Type:** Hydro, Storage
**Energy Region:** Southeast
**Applicant:** Community of Elfin Cove Non-Profit Corporation, Elfin Cove Utility Commission
**Proposed Phase(s):** Design
**Applicant Type:** Utility
**Recommended Phase(s):** Design

## Project Description

Hydroelectric project between Jim's Lake and tidewater. The FERC License authorizes a 105-kW project located on U.S. Forest Service land which is estimated to supply 82% of the community's electric demand.

## DNR/DMLW Feasibility Comments

PAAD - The unnamed stream is not navigable for title purposes under AS 38.04.062. Not state land.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No coordinates provided for Jim's Lake. Many small watersheds around Elfin Cove don't intercept much land area. A thorough review of the hydrologic studies submitted for the FERC Licensing process is needed to evaluate precipitation and water availability estimates for the reported 105-kW project.; -GEOLOGIC UNITS: Alluvial deposits, glacial deposits, colluvial deposits, paludal peat deposits, marine deposits, bedrock; -PERMAFROST: Absent; -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Potential tsunami hazards for Elfin Cove are modeled https://dggs.alaska.gov/pubs/id/29404 worst-case inundation in the 3 m (10 ft) range; -High landslide hazard: Elfin Cove sustained significant damage from downed trees during a September storm; -This area has been subject to ashfall from erupting volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas is modeled as moderate in this area, with limited testing (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Elfin Cove Hydro Final Permitting and Design

**App #18030** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 20.76 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 11.92 |
| 4. Project Readiness (5) | 3.83 |
| 5. Benefits (10) | 1.33 |
| 6. Local Support (5) | 2.00 |
| 7. Sustainability (10) | 7.00 |
| Total Stage 3 Score (100) | 63.34 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 47.67 |
| Benefit/Cost Ratio | 0.57 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 19 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 63.34 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $5,909,500 | $ |
| REF Grant Funds | $130,000 | $ |
| Matching Funds | $32,500 | $ |

| | |
|---|---|
| Cost of Electricity | $0.74/kWh |
| Price of Fuel | $5.04/Gal |
| Household Energy Cost | $9,402 |

## AEA Review Comments & Recommendation

**Full Funding with Special Provision**

AEA notes some concern around ongoing price escalation during the next two years as the applicant asks AEA to hold funds pending additional awards.

**Election District: A-2**

# Humpback Creek Storage and Upgrade Project

**App #18031** **Standard Application**

**Project Type:** Hydro, Storage
**Applicant:** Cordova Electric Cooperative, Inc. (CEC)
**Applicant Type:** Utility
**Energy Region:** Copper River/Chugach
**Proposed Phase(s):** Design, Construction
**Recommended Phase(s):** Design, Construction

## Project Description

The upgrade element of this project implements penstock water meter to measure results, turbine inlet valve efficiency upgrades, hydraulic upgrades to improve unit reliability and availability, turbine runner efficiency upgrades, generator, switchgear, conductor, and transformer upgrades to accommodate increased output from plant. The dam storage element will increase the head level of the low-head project to increase plant output with existing water availability. The storageelement will also allow CEC to better dispatch water flows to offset diesel fuel use by capturing excess water and storing it to use at times of lower water flow or higher grid peak energy use.

# Renewable Energy Fund: Round 18 Application Summaries

## Humpback Creek Storage and Upgrade Project

**App #18031** **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 35 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $50,636,358 | $ |
| REF Grant Funds | $4,000,000 | $0 |
| Matching Funds | $57,011,322 | $0 |

| | |
|---|---|
| Cost of Electricity | $0.42/kWh |
| Price of Fuel | $3.86/Gal |
| Household Energy Cost | $8,632 |

### AEA Review Comments & Recommendation

**Did Not Pass Stage 1**

Owing to AEA staff review, it was determined that the scope of the proposed Humpback Creek Storage and Upgrade project is sufficiently similar to previously funded REF projects related to the Humpback Creek hydroelectric facility:Rd 1 – grant #2195386 - $4MRd 3 – grant #7030009 - $4MRd 13 – grant #7013013 - $294kAs such, this project was found to have received REF funds in excess of the current Round 18 REF grant project funding limits of $4 million for projects located in high-cost energy areas, as stated in section 1.15 of the Round 18 Request for Applications (RFA) and will not be considered for further funding at this time.

**Election District: C-5**

# Chatanika Wind Feasibility and Conceptual Design

**App #18032** **Standard Application**

**Project Type:** Wind, Transmission, Storage
**Applicant:** Chatanika Wind LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

Chatanika Wind is a proposed wind facility 44 miles to the northeast of Fairbanks, south of the Steese Highway. Initial reconnaissance and desktop-level wind resource modeling has been conducted, indicating that this site holds the potential for up to 238MW of new wind power capacity, though given the current grid constraints in this part of the Railbelt, we would likely target an initial project size of 120MW. Located on state land, the project would interconnect to the nearby Fort Knox substation. If built, the project could significantly diversify the energy supply of the Railbelt grid and reduce rate-payer exposure to fuel price volatility, particularly as the Southcentral region is expected to transition to imported liquid natural gas and the GVEA is highly dependent on liquid fuels from the Alaska Pipeline, both of which are subject to global market price swings. The project would also deliver power directly to the large load at the Fort Knox gold mine and mill. This proposed project advances key development steps that enable an assessment of the project's feasibility and supports its conceptual design with a focus on initial wind resource assessment, wetlands mapping, and conceptual site access and turbine layout.

## DNR/DMLW Feasibility Comments

PAAD - This project will use RS 2477 ROW for access. No navigable waters per AS 38.04.062 within the proejct. NRO; state land; GS 1952; adjacent to RS 2477 237. Required adjudication: permit for any fieldwork that exceeds GAU. Cross-country travel permit if required for site access if not allowed under GAU. Future phases would require a lease for state land. Location is within ETAP subunit F-68 with management intent to protect and maintain wildlife and habitat values. Appropriate development includes certain types of utilities, communication facilities, roads, and similar types of projects that provide a general public benefit. DMLW Water Resources Section should be consulted prior to development to determine impacts to the reserved water resources in this unit.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Flooding and erosion from streams is expected to be minimal due to relatively low relief and dominance of smaller streams in area. Site is located in Interior Alaska in dissected but low-relief (<1000 feet) topography dominated by low-order streams. These low-order streams feed the Chatanika River. There are no wells in DNR WELTS website. One stream gage on Chatanika River ~18 miles north of site had peak discharge values >2000 cfs over 100 years ago.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, eolian deposits, paludal peat deposits, bedrock; -PERMAFROST: Discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Moderate seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Low landslide hazard: maybe higher depending on the selected site, landslides have not been mapped in this area but more than 100 were mapped in the same mountains closer to Fairbanks and it's likely they are present here too; -This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. -Radon, a naturally occurring cancer-causing radioactive gas, has been modeled to be high in this area (https://maps.dggs.alaska.gov/radon/). The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

ALASKA ENERGY AUTHORITY

# Chatanika Wind Feasibility and Conceptual Design

**App #18032** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.62 |
| 2. Matching Resources (15) | 7.50 |
| 3. Stage 2 Feasibility (25) | 18.11 |
| 4. Project Readiness (5) | 3.00 |
| 5. Benefits (10) | 8.21 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 5.00 |
| Total Stage 3 Score (100) | 55.93 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 72.42 |
| Benefit/Cost Ratio | 1.62 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 22 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 55.93 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $490,748,000 | $ |
| REF Grant Funds | $583,000 | $ |
| Matching Funds | $80,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $2.96/Gal |
| Household Energy Cost | $6,168 |

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

**Election District: R-36**

# Healy Volcanic Region Geothermal: Collaborative Data Collection and Subsurface Exploration

**App #18033** **Standard Application**

**Project Type:** Geothermal, Transmission, Storage
**Applicant:** Alaska Renewables LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Feasibility
**Recommended Phase(s):** Feasibility

## Project Description

This project partnership seeks to unlock investment in Alaska's first utility-scale geothermal power plants by targeting Interior Alaska's Healy Volcanic Region (HVR), the only volcanic zone directly intersected by the state's main Railbelt electrical grid. Preliminary seismic evidence in the region indicates a subduction-related magmatic reservoir within 12 km of the surface below the HVR. We hypothesize that this reservoir could support cost-effective Enhanced Geothermal Systems (EGS), enabled by high thermal gradient, accessible drilling depths, and direct proximity to Alaska's road and grid infrastructure.

## DNR/DMLW Feasibility Comments

NRO; GS 2201; Required Permitting for exploration and drilling infrastructures and TWUA or Water Right for exploratory well drilling. Cross-Country Travel for access for equipment. In the future phases: a lease and an easement would be needed. Location is within YTAP unit P-50, to be managed for its mineral values and resources and for its important caribou and moose habitats. Consult ADF&G and OHA prior to issuing an authorization involving a long-term or permanent use. Protect cultural resources.

## DNR/DOF Feasibility Comments

No impact on DFFP; no comment

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: Although the site is located adjacent to a relatively steep ridge, the short low-order streams are not expected to generate major flooding and erosion. For reference, the site is located at the base of a NW-SE-oriented ridge. Equally-spaced streams drain the northern side of the ridge with a local relief of ~1200 feet. The streams feed Buzzard Creek. No wells in DNR WELTS website and no USGS stream gages found at site and surroundings.; -GEOLOGIC UNITS: Alluvial deposits, colluvial deposits, glacial deposits, paludal peat deposits, bedrock; -PERMAFROST: Discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-High seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium landslide hazard: this site is near the base of a steep hillside, and there are more than 100 mapped landslides in the hills near Healy, some of which are very recent; -Potential volcanic hazard exists as this location is the unmonitored Buzzard Creek maars, two craters formed during phreatomagmatic eruptions about 3000 years ago. This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. Past ash events include Redoubt 1989, Novarupta (Katmai) 1912, and multiple older tephras (Mulliken and others, 2018; Worden and others, 2018). -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be high in the immediate vicinity of the parcel. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

# Healy Volcanic Region Geothermal: Collaborative Data Collection and Subsurface Exploration

**App #18033** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.62 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 21.52 |
| 4. Project Readiness (5) | 3.50 |
| 5. Benefits (10) | 9.63 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 7.67 |
| Total Stage 3 Score (100) | 72.93 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 86.08 |
| Benefit/Cost Ratio | 2.44 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 9 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 72.93 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $628,780,145 | $ |
| REF Grant Funds | $1,248,029 | $ |
| Matching Funds | $4,992,116 | $ |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $2.96/Gal |
| Household Energy Cost | $6,168 |

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

**Election District: O-30**

# Walker Dome Wind Final Design and Permitting

**App #18034** **Standard Application**

**Project Type:** Wind, Transmission, Storage
**Applicant:** Walker Dome Wind LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Design
**Recommended Phase(s):** Design

## Project Description

Following years of reconnaissance, initial field assessments, and land leasing discussions with the State of Alaska, this project has the potential to dramatically displace expensive fuel consumption for electricity generation in Alaska. Walker Dome is a project at the northern terminus of Alaska's Intertie that could provide power throughout the Railbelt and would support the community of Healy. Preliminary meteorological campaigns and environmental assessments conducted prior to 2011, as well as the nearby operating project Eva Creek Wind provide the basis demonstrating that Walker Dome Wind would be a viable resource addition to the Railbelt grid. Those data and conceptual designs support an 85.5MW project with a preliminary net capacity factor estimate of 30.75% with modern turbine technology. Now, the project is advancing into the core Phase III work of final data collection, studies, design and permitting.

## DNR/DMLW Feasibility Comments

MHT; QCD 8000033 Mental Health Trust land with a lease present for this project.

## DNR/DOF Feasibility Comments

No impact on DFFP

## DNR/DGGS Feasibility Comments

-HYDROLOGY COMMENTS: No comments. Assuming hydrologic due diligence and local drainage assessment at the site have been or are planned to be conducted.; -GEOLOGIC UNITS: Colluvial deposits, glacial deposits, paludal peat deposits, bedrock; -PERMAFROST: Discontinuous (50-90%); -See the first row for information related to suitability for construction material, susceptibility to frost action, thaw stability, and surface drainage and flooding potential

## DNR/DGGS Geohazards Comments

-Very high seismic hazard. Standard best building practices should be used to accommodate the regional seismic hazard.; -Medium landslide hazard: there are more than 100 mapped landslides in the hills near Healy, some of which are very recent; -Potential volcanic hazard exists; this location is on Jumbo Dome, an unmonitored volcano that most recently erupted about one million years ago. This area has been subject to ash fall from erupting Cook Inlet and Alaska Peninsula volcanoes. Past ash events include Redoubt 1989, Novarupta (Katmai) 1912, and multiple older tephras (Mulliken and others, 2018; Worden and others, 2018). -Radon, a naturally occurring cancer-causing radioactive gas, is modeled to be high in the immediate vicinity of the parcel. The Environmental Protection Agency's (EPA) Action Level for radon is 4 pCi/L; the EPA suggests homeowners consider radon mitigation for test results of 2–4 pCi/L. Any home, school, or building can have high levels of radon and should be tested.

ALASKA ENERGY AUTHORITY

# Walker Dome Wind Final Design and Permitting

**App #18034** **Standard Application**

## Stage 3 Scoring Summary

| Criterion (Max Score) | Score |
|---|---|
| 1. Cost of Energy (30) | 13.62 |
| 2. Matching Resources (15) | 16.50 |
| 3. Stage 2 Feasibility (25) | 20.02 |
| 4. Project Readiness (5) | 3.42 |
| 5. Benefits (10) | 9.04 |
| 6. Local Support (5) | 0.50 |
| 7. Sustainability (10) | 6.50 |
| Total Stage 3 Score (100) | 69.60 |

| Feasibility Analysis | |
|---|---|
| Stage 2 Tech & Econ Score (100) | 80.08 |
| Benefit/Cost Ratio | 1.81 |

| Project Rank | |
|---|---|
| Statewide (of 35 Standard applications) | 15 |
| Regional (of all applications) | |
| Stage 3 Ranking Score (100) | 69.60 |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $352,600,000 | $ |
| REF Grant Funds | $2,000,000 | $ |
| Matching Funds | $8,000,000 | $ |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $2.96/Gal |
| Household Energy Cost | $6,168 |

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

**Election District: O-30**

# Distributed Solar Resource Analytics: Ground-Truth Solar Observations

**App #18035** **Standard Application**

**Project Type:** Transmission, Solar
**Applicant:** Alaska Renewables LLC
**Applicant Type:** IPP
**Energy Region:** Railbelt
**Proposed Phase(s):** Recon
**Recommended Phase(s):** Recon

## Project Description

Alaska's distributed solar market is limited not by technology but by data. The patchwork of available solar irradiance data—largely derived from the National Solar Radiation Database (NSRDB) and indirect modeling—has failed to provide site-specific accuracy for pre-construction assessments or operational performance benchmarking. Notably, recent studies confirm "remarkable biases" in standard solar datasets, with errors ranging from 30-55% during peak insolation months. As a result, financiers, utility planners, and project developers face prohibitive performance risk, driving up costs and reducing adoption.

ALASKA ENERGY AUTHORITY

# Distributed Solar Resource Analytics: Ground-Truth Solar Observations

**App #18035** **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 35 Standard applications) |
| Regional (of all applications) |
| Stage 3 Ranking Score (100) |

| Funding & Cost | Requested | Recommended |
|---|---|---|
| Total Cost Through Construction | $610,500,000 | $ |
| REF Grant Funds | $350,000 | $0 |
| Matching Funds | $150,000 | $0 |

| | |
|---|---|
| Cost of Electricity | $0.20/kWh |
| Price of Fuel | $2.96/Gal |
| Household Energy Cost | $6,168 |

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

**Election District: Railbelt (Various)**