

App #265 Kvichak River_Igiugig

Resource: Ocean/River

Proposed Project Phase: Construction
Design
Feasibility
Recon

Proposer: Igiugig Village Council d/b/a Igiugig Electric Company

AEA Program Manager: Lenny Landis

Applicant Type: Utility

Project Description

The Village of Igiugig is located at the outlet of Lake Iliamna, 240 air miles southwest of Anchorage, on the southern shore of the Kvichak River. Igiugig has a year-round population of 56 (predominantly Yupik, Aleut, and Athabascan) rising in summer to about 75. Igiugig also provides goods and services to six area tourism lodges and their respective clients and workforce of 90 additional persons per week. This lake outlet location provides an ideal site for the study, testing and implementation of river in-stream energy conversion that will also benefit other Alaska communities considering this form of renewable energy. A RISEC plant will convert available river kinetic energy into electric power, and feed into the existing Igiugig electric grid to reduce diesel fuel consumption at the Igiugig power plant. Direct beneficiaries include the Lake and Peninsula School District (LPSD) and Igiugig electric service customers.

Funding & Cost

Cost of Power:	\$0.60/kWh
Requested Grant Funds:	\$2,302,630
Matched Funds Provided:	\$94,200
Total Potential Grant Amount:	\$2,396,830
Existing RE Fund Grant Offer:	
AEA Funding Recommendation: (Not Constrained by Available Funding)	\$718,175

AEA Recommendation

- Full Funding
- ✗ Partial Funding
- ✗ Special Provision
- Not Recommended
- Did Not Pass Stage 1
- Withdrawn

AEA Funding Recommendation: \$718,175

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Scoring & Location



Overall Rank
(out of 60)



Stage 3 Total Score
(out of 100)

Energy Region: Bristol Bay

Election District: 36, Kodiak



Rank within Region
(out of 5)

Stage 3 Scoring Summary

<u>Criterion (Weight)</u>	<u>Score</u>
1) Cost of Energy (Max 30)	23
2) Funding Resources (Max 25)	11
3) Project Feasibility from Stage 2 (Max 20)	14
4) Project Readiness (Max 5)	4
5) Benefits (Max 10)	5
6) Local Support (Max 5)	5
7) Sustainability (Max 5)	4

AEA Review Comments

The Igiugig Village Council proposes a multi-stage project to test and develop a river instream energy conversion (RISEC) device. The Village would continue collaboration with the Electric Power Research Insititute and AEA on RISEC development. Phase 2 would perform a bathymetric profile of the Kvichak River, permitting and environmental analysis, and install two pilot turbines to test performance (2009 -11). Phase 3 would select a technology and complete final design and permitting (2012-13). Phase 4 would complete construction and commissioning (2012-14).

IVC has assembled a strong team of experienced engineering, technology, and geotechnical specialists. The project is the logical follow-up to earlier work by EPRI and AEA, and will provide valuable performance data on RISEC devices that is applicable throughout Alaska.

Recommend funding for Phase 2 at \$718,175 with the requirement that grantee must coordinate with other ongoing RISEC projects in Ruby, Nenana, and Eagle.

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Economic Analysis

Benefit/Cost Ratio
(Applicant)



Benefit/Cost Ratio
(AEA)



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DNR/DGGS Geohazards Comments

All projects proposing the development of permanent structures should conduct a geotechnical site survey to determine the potential detrimental effects from natural hazards such as flooding, earthquakes, active faults, tsunamis, landslides, volcanoes, liquefaction, subsidence, storm surges, ice movement, snow avalanches, and erosion, and incorporate appropriate measures to mitigate the risks. Projects may be required to perform a geohazards site survey as a condition of receiving construction permits, depending on location of proposed site.

DNR/DGGS Feasibility Comments

DNR/DMLW Feasibility Comments

Environmental concerns with new technology expected to be raised during permitting may slow this project.