ALASKA ENERGY AUTHORITY

GRIP 3: RURAL ALASKA MICROGRID TRANSFORMATION

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Alaska Energy Security Task Force
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ALASKA ENERGY AUTHORITY

Who We Are

Our Mission

Reduce the cost of energy in Alaska.

Created in 1976 by the Alaska Legislature, the Alaska Energy Authority (AEA) is a public corporation of the State of Alaska governed by a board of directors with the mission to “reduce the cost of energy in Alaska.” AEA is the state's energy office and lead agency for statewide energy policy and program development.

Why Pursue GRIP 3: Rural Alaska Microgrid Transformation?

Due to Alaska's remoteness, project costs are high. Department of Energy (DOE) funding would make possible many community projects awaiting procurement and construction. DOE funding could be used to complete several projects that will improve the quality of life in rural Alaska.

- Alaska Native Villages are considered for this concept, which would provide a resilient power system for underserved communities.
- Microgrid transformation projects will help local communities become resilient, while also supporting state resilience.
- Transformation to clean and reliable energy would benefit communities by:
  - Less diesel fuel being brought into the community
  - Local job creation
  - Reduce cost of power

Transforming Alaska's Rural Microgrids

Project Impact/Takeaway: The majority of Alaska's rural microgrids are powered by diesel generators, and this project will transform participating communities by facilitating the transition to locally sourced renewables.

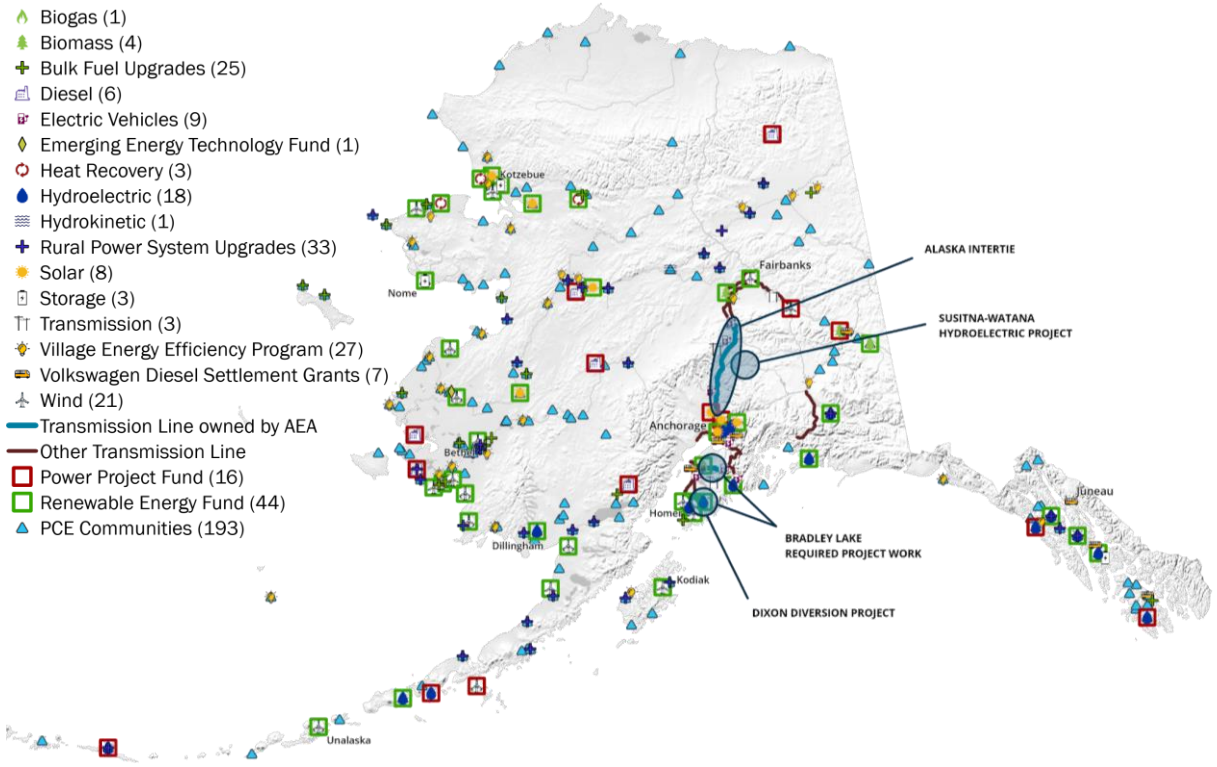
Project goals: Lowering the cost of energy in disadvantaged communities while reducing carbon emissions.

Technology: This project will utilize local wind, solar, and hydro matched with battery storage systems.

Impact: The combined use of these technologies will reduce rural community reliance on fossil fuels.

Total Project Costs	$500,000,000
Federal Share	$250,000,000
Match	$500,000,000

Alaska Renewable Opportunities



Renewable Energy Investment in Alaska by Energy Source 2010-2020

Primary Energy Source	Investment ($millions)	% of Total
Hydroelectric	$330	48%
Wind	$240	35%
Biomass	$30	5%
Geothermal (Testing and Assessment)	$30	4%
Solar	$10	2%
Other Renewables	$50	7%
Total	$690	100%

Investments in Alaska Renewable Energy Projects, 2010-2020

- $690 Million Invested
- 260 Projects
- 160 Communities
- 448 Million Pounds of CO_2 Offset Annually
- 15-20 Construction Jobs Per Million Invested

Project Teams and Outcomes

Principal Investigator	Rebecca Garrett	Benefits	Quantifiable	Measure	Tracking
Key Personnel	• Audrey Alstrom, PE • Conner Erickson • Karen Bell • Karin St. Clair	Decrease in Energy Burden	Tbtu/Million $	Site Energy Savings	
		Energy Cost Savings	2009 Baseline – annual and cumulative		
		Decreasing in environmental exposure	MMT	CO2 Reduction	2009 Baseline – annual and cumulative
Key Partners	• Alaska Center for Energy and Power (ACEP), • Alaska Municipal League, (AML) • Alaska Native Tribal Health Consortium (ANTHC)	Increase in access to low-cost capital	Million $	Capital availability	AAHA report on access to capital
		Increase in job creation and training	Job #s	Jobs and training opportunities	ASHBA report/DOL&WD
		Increase in clean energy jobs and enterprise creation	Business #s	Business development	ASHBA report/DOL&WD
Proposed Project Duration	• 96 months	Increase in community ownership	Municipal code	Adoption or revision	Community reporting/AML
		Increased parity in clean energy technology access and adoption	Municipal code	Energy technology reference	Community reporting/AML

Existing and Potentially Viable Projects

Listed below are examples of existing and potentially viable projects with construction costs that are well within this funding opportunity's parameters. The combined impact of these projects is estimated to offset 6,799,300 gallons of diesel fuel **annually**.

Project	Technology	Cost of Energy $/kWh	Anticipated Annual Gallons of Diesel Fuel Offset by Proposed Project	Project Status
Village	Hydro	$ 0.61	115,000	Ready for Construction
Village	Hydro	$ 0.61	20,000	Feasibility Study Complete
Connects Multiple Villages	Hydro	$ 0.45	1,558,033	Concept Design, and FERC Permitting
Village	Hydro	$ 0.80	40,000	Partially Constructed
Village	Hydro	$ 0.68	130,000	Ready for Construction
Village	Hydro	$ 0.70	37,000	Ready for Construction
Village	Wind/Solar/Battery	$ 0.38	2,448,293	Concept
Multiple Individual Villages	Solar/Battery	$ 0.75	80,000	Concept on per village basis (10 total)
Multiple Individual Villages	Wind/Battery	$ 0.75	80,000	Concept on per village basis (10 total)
Village	Hydro	$ 0.65	20,138	Ready for Construction
Connects 2 Villages	Hydro	$ 0.66	16,014	Concept
Village Wind Expansion	Wind/Battery	$ 0.37	400,000	Ready for Construction
Connects 2 Villages	Wind & Electric Boiler	$ 0.52	165,000	Design and Permitting
Connects 2 Villages	Wind/Battery	$ 0.60	270,000	Ready for Construction

Timeline for Award

Implementation Timeline

AEA provides energy solutions to meet the unique needs of Alaska's rural and urban communities.

Alaska Energy Authority

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