



Investing In Alaska's Future Denali Commission Emerging Energy Technology Grant



In 2009, the Denali Commission released the EETG as a one-time public solicitation. This competitive solicitation, with a total funding opportunity of \$4 million, targeted alternative and renewable emerging energy technology proposals from Alaskan applicants. The Commission's goal was to develop emerging energy technology that had the potential of widespread deployment in Alaska and had the long-term goal of reducing energy costs for Alaskans.

Emerging energy technology is a critical phase in the development process of energy technology, linking research and development to the commercialization of energy solutions. Although the Arctic possesses bountiful energy resources, the Arctic also faces very unique conditions in terms of climate, environment, population density, energy costs, logistics, and the isolated nature of electrical generation and transmission systems. These conditions, challenging under the best of circumstances, lend the Arctic to being an ideal test bed for energy technology. Emerging energy technology provides a unique opportunity to meet Arctic energy needs, develop energy resources, and create global expertise.

ACEP served as the program manager of the EETG. In addition, ACEP worked with the funded projects, with oversight from the Commission, to identify critical performance data for collection, management, and dissemination. Data, analysis, and lessons learned were then compiled and made public upon project completion, providing the insight and lessons learned needed to accelerate the development of energy solutions for Alaska.

The one-time 2009 Denali Commission EETG solicitation was meant as seed money to demonstrate need and interest for emerging energy technology projects in Alaska. This demonstration proved successful, providing momentum in the Alaska Legislature for creating the Emerging Energy Technology Fund (EETF). This fund, administered by the Alaska Energy Authority (AEA), is financed by appropriations from the state legislature, federal appropriations, and contributions from other sources including \$4 million to date from the Denali Commission.



Collecting psychophiles in Fairbanks
– Laurel McFadden/CEC



Testing a hydrokinetic turbine in Eagle –
Todd Paris/UAF





EETG Project Descriptions

Denali Commission Emerging Energy Technology Grant



In total, 50 applicants applied to the first round of the solicitation, requesting over \$29 million in funding. Of these proposals, 15 were selected for a second round review, with nine proposals eventually being selected for awards. The following is a summary of the selected projects:

Seawater Heat Pump Demonstration Project, Alaska SeaLife Center, Seward
Installation and demonstration of a heat pump system “lifting” latent heat from raw seawater for use as building heat at the ASLC facility in Seward.

Psychrophiles for Generating Heating Gas, Cordova Electric Cooperative, Cordova
Investigation of the use of psychrophiles (cold loving microbes) to improve efficiency in biogas digestors for generating cooking and heating gas for Alaskan households.

Feasibility of Solar Hot Water Systems, Kotzebue Electric Association, Kotzebue
Demonstration of solar thermal hot water heating systems integrated into housing in an Arctic environment.

Commercial Scale Wood Pellet Fired Boiler, Sealaska Corporation, Juneau
Conversion of Sealaska’s corporate headquarters building from a diesel fired boiler system to a wood pellet fired boiler system.

Organic Rankine Cycle Heat Recovery System, Tanana Chiefs Council, TCC Region
Demonstration of the potential improved fuel efficiency of village diesel power plants in the TCC region through the use of an Organic Rankine Cycle (ORC) system for heat recovery from engine jacket water and exhaust.

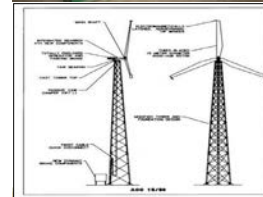
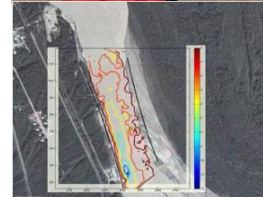
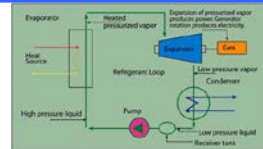
High Penetration Hybrid Power Systems, University of Alaska Fairbanks, Statewide
State-of-the-art power electronics to assess options for wind-diesel hybrid power systems to operate in a diesel-off mode.

Diesel-Off High Penetration Wind System, Kotzebue Electric Association, Wales, Alaska.
Demonstration of diesel-off configuration for a remote wind-diesel high penetration hybrid power system through the retrofit of existing equipment and controls in Wales, Alaska.

RiveGen™ Power System, ORPC Alaska LLC, Nenana
Development and demonstration of an in-river hydrokinetic system, the RivGen™ Power System, by ORPC Alaska, LLC.

Flow Battery Energy Storage Systems, Kotzebue Electric Association, Kotzebue
Analysis and demonstration of a flow battery system and its potential for energy storage in rural wind systems.

ACEP managed data collection activities for the projects funded under the EETG, providing a range of support functions including technical assistance, instrumentation specification and installation, data collection system programming and commissioning. For more information,, including detailed project information and lessons learned reports, please visit www.uaf.edu/acep



Alaska Center for Energy and Power

907.474.5402

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