STRATEGY SPOTLIGHT

Evaluating the Costs and Benefits of Installing Hybrid Power Systems in Rural Alaska

As part of its broader efforts to address the energy challenges Alaska Native villages face through on-demand technical assistance, the DOE Office of Indian Energy is collaborating with the University of Alaska Fairbanks ACEP (Alaska Center for Energy and Power) to support in-depth technical and economic analysis of wind-diesel energy systems. The resulting report will evaluate the costs and benefits of installing hybrid power systems in rural Alaska to alleviate high energy costs by reducing dependence on imported fossil fuels.

Leveraging the enriched data made available through the ACEP study, the DOE Office of Indian Energy and NREL will develop basic and advanced financial models to inform wind-diesel project planning and development efforts as part of the larger effort to increase renewable energy generation in Alaska. A companion training program will be designed and offered to assist Alaska Native villages and corporations in using the models to evaluate the relative costs of deploying wind-diesel power systems vis à vis diesel and heating oil fuel systems.

Studies of existing wind-diesel power systems in Alaska will analyze how these systems are performing and reveal opportunities to mitigate the risk associated with wind energy development, improve project economics, and increase tribal capacity to deploy, operate, and maintain these integrated systems. Photo by NREL 13634

SUCCESS SPOTLIGHT

Strategic Planning Opens Doors for Isolated Alaskan Village

The Organized Village of Kake was one of the five Alaska Native villages selected for the 2012 Alaska START Program. Kake is only about 100 miles from Juneau, but because it sits on an island in the Gulf of Alaska, it shares challenges that more rural native comminutes have in accessing energy.

The community of less than 600 residents struggles with out-migration, loss of employment, and high energy costs that can top $0.60 per kilowatt-hour—six times higher than some neighboring communities, according to Gary Williams, executive director of Kake.

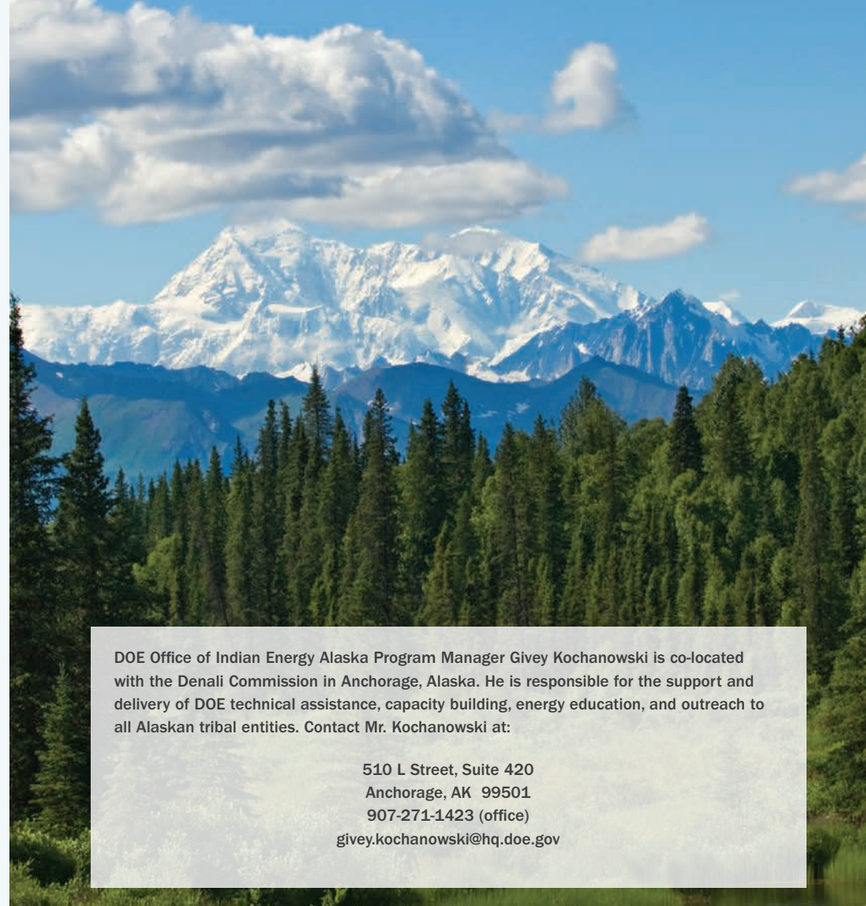
"Kake has been proactive in addressing these challenges by exploring better use of resources, pursuing biomass and wind projects, and looking at hydropower projects," said Dr. Brian Hirsch, senior project leader for START Alaska.

START activities in Kake kicked off with a strategic energy planning workshop facilitated by START team members and attended by key stakeholders in the community, including the housing authority, electric utility co-op, and various local and regional Native corporations.

The workshop helped the community strengthen its commitment to realizing its energy vision, prioritize energy projects, and identify which grant opportunities to pursue. Kake has already received one of the four grants it applied for.

"The planning process pulled information directly from our community members as well as our partners and gave them ownership of the end product," Williams said. "It has really helped focus our energy initiative to a fine tip. It has been phenomenal for our community."

Through the Energy Policy Act of 2005, the Department of Energy, through the Office of Indian Energy, is authorized to fund and implement a variety of programmatic activities that assist Tribes and Alaska Native villages and corporations with energy development, capacity building, energy infrastructure, reduction of energy costs, and electrification of Indian lands and homes. The Office also oversees tribal grants to support the evaluation, development, and deployment of energy efficiency and renewable energy projects on tribal lands that help save energy, expand the use of clean energy resources, and promote tribal economic development.



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ADVANCING EFFORTS TO ENERGIZE NATIVE ALASKA

Alaska is known for its wealth of energy resources. But in remote rural Alaska, that wealth is often out of reach. Many Native villages are facing an energy crisis as they struggle to absorb the impact of a threefold increase in their energy costs over the past decade. According to the Denali Commission, Alaska Native families are spending nearly half their monthly income on fuel for electricity and heating.

Energy Security Is a Critical Need

Because virtually all village infrastructure depends on available, affordable fuel, energy security has become a critical issue throughout Native Alaska. Village councils are tasked with forging new pathways to meet their communities' long-term energy needs. Operating on the principle that the actions they take today will affect the next seven generations, many village councils have adopted community energy visions with sustainability in mind. And yet the need to focus on the most basic immediate needs puts an immense strain on village resources and makes community and regional economic development a challenge.

The U.S. Department of Energy Office of Indian Energy Policy and Programs (DOE Office of Indian Energy), in partnership with the Denali Commission, is working closely with Alaska Native leaders to address the immediate crisis as well as future energy needs. Established by Congress to encourage, facilitate, and accelerate energy and energy infrastructure development on Indian lands, the DOE Office of Indian Energy provides Alaska Native leaders and their staffs with resources, skills, and analytical tools needed to develop sustainable energy strategies and implement viable solutions.

When limited storage capacity and a harsh winter led to a fuel supply shortage in the Native Village of Teller in the winter of 2012, the DOE Office of Indian Energy START team facilitated a solution that reduced costs and energy use related to fuel procurement, avoided fuel cost increases, and increased the village's energy security. Photo by Alex Dane, National Renewable Energy Laboratory (NREL) 20891

Alaska Strategic Program Initiatives

In response to requests from village leaders, the DOE Office of Indian Energy has developed program initiatives to advance community energy efficiency, renewable energy, and energy infrastructure projects in Alaska.

- **Memorandum of Understanding with the Denali Commission** fosters inter-agency collaboration to develop, coordinate, and implement programs, including the Strategic Technical Assistance Response Team (START) Alaska Program, which supports renewable energy and energy efficiency projects in rural Alaska Native communities
- **START Alaska Program** provides technical assistance to help Alaska Native villages displace diesel oil and reduce energy costs, and up to $250,000 for select eligible Alaska tribal governments to implement an energy efficiency or renewable energy project
- **On-demand technical assistance** focuses on residential energy efficiency, grantee support, strategic energy planning, transmission, interconnection of regional grids, and research and analysis
- **Financial assistance** grants for eligible Alaska Native villages and corporations to evaluate, develop, and deploy energy efficiency and renewable energy projects are offered through the DOE Tribal Energy Program's competitive grant program
- **Education and capacity building** efforts deliver customized resources such as webinars, workshops, and trainings on energy project development and financing in rural Alaska.

> ***"Tribal communities, entrepreneurs, and small businesses will benefit greatly from the technical resources and expertise provided by DOE. START will help Native American and Alaska Native communities increase local generation capacity, enhance energy efficiency and conservation measures, and create job opportunities in the new clean energy economy. Planning for the future is the key to success."***
>
> —Tracey A. LeBeau, Director
> DOE Office of Indian Energy

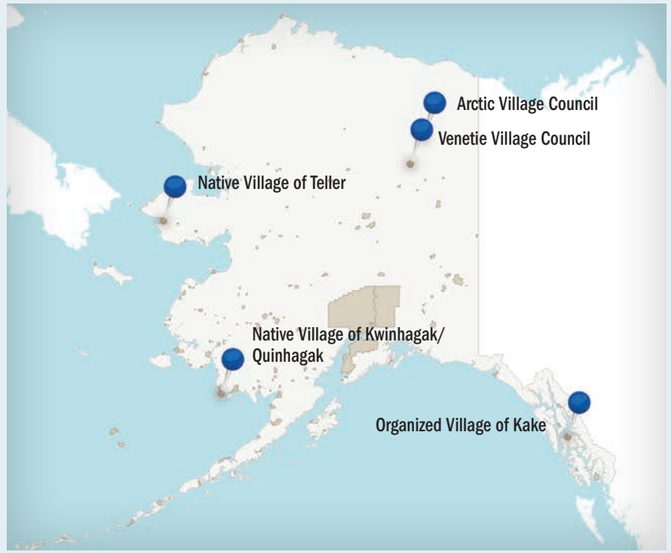
Resources

The DOE Office of Indian Energy provides a variety of resources to assist Alaska Native communities and organizations in advancing their efficiency and renewable energy development projects:

- **Energy Resource Library** – energy.gov/indianenergy/resources/energy-resource-library
- ***Indian Energy Beat* newsletter** – energy.gov/indianenergy/resources/newsletter
- **On-Demand Technical Assistance** – energy.gov/indianenergy/technical-assistance
- **Renewable Energy Course Curriculum for Tribes** – energy.gov/indianenergy/resources/education-and-training
- **START Program** – energy.gov/indianenergy/resources/start-program

START Alaska Program

To better position tribal energy and infrastructure projects for financing and construction, the DOE Office of Indian Energy partners with the Denali Commission to provide community-based assistance to federally recognized Alaska Native villages through the Alaska START Program.



Five Alaska Native villages were selected in 2012 to receive START assistance to support the development of next-generation energy projects in Native Alaska. Illustration by NREL

START technical experts from DOE and its national laboratories work hand-in-hand with tribal leadership and staff to analyze renewable energy resources, assist with the project development process, conduct market assessments, evaluate infrastructure, lead community strategic energy planning, and identify options for project financial support.

By building the human capacity needed to foster energy self-sufficiency, sustainability, and economic competitiveness, the DOE START Alaska Program seeks to spur clean energy project development on tribal lands.

Knowledge Is Power ... and in Rural Alaska, Power Is the Future

By providing reliable, accurate information, quality training, and expert technical assistance, these programs empower Native leaders and their staffs with the knowledge and skills they need to implement holistic, long-term solutions to their energy challenges—solutions with the potential to stabilize energy costs, enhance energy security, strengthen tribal energy infrastructure, and guide Alaska Native communities toward a sustainable energy future.

www.energy.gov/indianenergy