Rural Energy Program

Program Profile

Improving Health and Reducing Energy Costs in Rural Alaska

The Alaska Native Tribal Health Consortium (ANTHC) is a nonprofit Tribal health organization designed to meet the unique health needs of Alaska Native and American Indian people living in Alaska.[1] ANTHC is the largest Tribal health organization in the country, and is a consortium managed and operated by the people it serves. The ANTHC Board is composed of representatives from the 13 regional Tribal health organizations, and two representatives from Alaska's Unaffiliated Tribes.

ANTHC's Rural Energy Program, within the Division of Environmental Health and Engineering, aims to make clean water and sanitation systems in rural Alaska energy-efficient, sustainable, and affordable. Since 2010, the Rural Energy Program has worked directly with rural Alaska Native communities to improve sustainability and lower operating costs of sanitation systems and healthcare facilities through energy audits, energy efficiency upgrades, renewable energy projects, remote monitoring systems, and operator trainings. Throughout the lifecycle of these projects, ANTHC provides technical assistance to communities to help identify potential projects, prepare grant applications, and conduct financial planning.

Fast Facts

Program scope: Technical assistance with energy projects.

Communities served: Rural Alaska Native communities.

Funding: $25 million in funding from 16 different federal, state, regional, and philanthropic funding sources

Key partners: Federal and state energy agencies and research organizations, including the Alaska Energy Authority, Alaska Village Electric Cooperative, U.S. Department of Energy's Office of Indian Energy, the Denali Commission, USDA, and the Indian Health Service.

Promising practices: Reduce up-front costs and provide technical and planning assistance.

Water and sewer systems in rural Alaska are particularly expensive to operate because of the high cost of energy, harsh weather conditions, and the cost of shipping materials to remote communities. ANTHC's Division of Environmental Health and Engineering, through its installation of new water and sewer systems in rural Alaska, found that many rural communities struggled to afford the operating costs of their systems. In many cases, energy costs are responsible for nearly 40 percent of the total cost of sewer and water services in rural Alaska.[2] To address these high costs, ANTHC created the Rural Energy Program to find energy efficiency and cost saving opportunities for systems to make them more affordable. By making

[1] Overview, Alaska Native Tribal Health Consortium, 2023.
[2] Rural Energy Program, Alaska Native Tribal Health Consortium, 2023.

water and sewer systems more efficient, ANTHC helps communities keep their water running at more affordable rates and the communities benefit through sustainable access to clean water and lower monthly utility bills.[3]

To date, ANTHC's Rural Energy Program has saved rural Alaska communities $33 million through the development of clean energy projects.[4] In addition to all-inclusive project development and implementation support, ANTHC provides technical assistance for strategic energy planning, feasibility studies, and troubleshooting. As of July 2023, the Rural Energy Program had conducted feasibility studies in over 20 communities interested in community-scale renewable energy systems. These feasibility studies help communities determine the viability of implementing renewable energy and can be used to support future grant applications and planning efforts. Beyond the 20 communities at the feasibility study stage, seven other communities are currently working with ANTHC to secure grants to fund their renewable energy projects.

Community History

A majority of Alaska's communities are situated in remote areas that are off the road system and must rely on barge or airplane transport for essential goods and services. The remoteness of rural communities in Alaska also results in high fuel costs, as fuel is largely imported and access to connected energy infrastructure is limited, with most communities operating as isolated microgrids. All of the fuel used to meet the rural communities' energy needs must be shipped in via barge in the summer and stored for the following year in bulk fuel tank farms, which leads to some of the highest energy prices in the United States.[5] High fuel costs then drive up water and sewer costs, making them a significant burden to 56 percent of rural Alaska communities.[6]

Additionally, water and sanitation systems in rural Alaska Native communities are expensive to operate and maintain. Many of rural Alaska's water systems must be built above ground due to permafrost, which means most systems are not able to benefit from underground insulation. As such, a large amount of energy is needed to keep water heated and flowing in the harsh Alaska

[3] ANTHC Renewable Energy Overview, Alaska Native Tribal Health Consortium, 2023.
[4] ANTHC Update: Rural Energy Program [email], Alaska Native Tribal Health Consortium, 2023.
[5] Holdmann, Gwen P., Richard W. Wies, and Jeremy B. Vandermeer, 2019. Renewable energy integration in Alaska's remote islanded microgrids: Economic drivers, technical strategies, technological niche development, and policy implications. *Proceedings of the IEEE* 107.9: 1820–1837.
[6] Sustainability Solutions for Water & Sewer Infrastructure in Remote Alaska Native Communities, Alaska Native Tribal Health Consortium, 2023.

climate to prevent catastrophic freezes with costly consequences. In fact, the cost of energy associated with maintaining these systems in rural Alaska Native communities is 60 to 260 times higher per capita than the national average.[7]

Although the primary focus of ANTHC's Rural Energy Program is to reduce the operating costs of water and sanitation systems, the program also aims to ensure the reliability and longevity of communities' essential public health infrastructure. For example, the Rural Energy Program has installed remote monitoring systems in over 100 communities to troubleshoot sanitation and energy systems. These monitoring systems can detect problems early, preventing costly repairs by monitoring system temperatures, flow rates, and water level and pressure.[8]

Community Engagement

As a Tribal health organization governed by a board of directors that represents each region in Alaska, ANTHC is directly accountable to the Alaska Native people it serves. ANTHC staff regularly get feedback from frequent and meaningful interactions with members of rural Alaska Native communities when implementing projects. As a result of this accountability and communication, the Rural Energy Program prioritizes ensuring that the benefits of energy projects go to local households.

ANTHC provides communities easy access to its Rural Energy Program. If rural Alaska Native communities need technical assistance, they can simply submit a request to the DOE Office of Indian Energy and request no-cost support from ANTHC through this federal partnership. ANTHC then provides the technical assistance and can partner with the community to develop the project and submit grant proposals to secure funding. Once funding is awarded, the Rural Energy Program helps the community design and construct the project, but the community has full ownership of the infrastructure.[9]

Beyond connecting directly with rural communities, the Rural Energy Program regularly attends regional and statewide conferences to engage its stakeholders and present updates on its technical assistance and program offerings. ANTHC also has a broad network of other staff in

[7] Sustainability Solutions for Water & Sewer Infrastructure in Remote Alaska Native Communities, Alaska Native Tribal Health Consortium, 2023.
[8] Rural Energy Program, Alaska Native Tribal Health Consortium, 2023.
[9] Dustin Madden, Rural Energy Program manager, 2023. Personal Communication.

the Division of Environmental Health and Engineering who work closely with community contacts and share information across departments.[10]

Key Partners

In addition to partnering with participating communities, the Rural Energy Program works closely with a wide variety of partners, including:

- Alaska Energy Authority (AEA) – The state's lead agency for energy policy and program development that is a key source of funding for designing and constructing projects.
- Alaska Village Electric Cooperative (AVEC) – A nonprofit electric utility that serves residents in 59 locations in rural Alaska.
- U.S. Department of Energy's Office of Indian Energy – A federal office that provides technical assistance, financial assistance, and education and capacity building for energy projects to American Indian Tribes and Alaska Native communities.
- U.S. Department of Agriculture (USDA) – A federal agency that provides funding for technical assistance as well as construction of projects through the High Energy Cost Grant opportunity.
- Denali Commission – An independent federal agency designed to provide critical utilities, infrastructure, and economic support throughout Alaska.
- Indian Health Service – A federal agency within the Department of Health and Human Services that provides funding and support to rural Alaska Native communities.

AEA, the Office of Indian Energy, USDA, and the Denali Commission have provided funding for a variety of projects implemented by the program. Research organizations have played an important role in vetting new technologies and overcoming barriers to project implementation.[11] ANTHC also consistently maintains and develops relationships with federal funders to expand the Rural Energy Program. Partnerships have played a significant role in the Rural Energy Program's success.

The Indian Health Service (IHS), the federal healthcare provider and advocate for American Indians and Alaska Natives, is another important ANTHC partner. In the past, IHS provided a variety of services to Alaska Native people living in rural communities throughout Alaska, including the management of sewer and water systems.[12] Under the 1993 Indian Self-

[10] Dustin Madden, Rural Energy Program manager, 2023. Personal Communication.
[11] Dustin Madden, Rural Energy Program manager, 2023. Personal Communication.
[12] Alaska Area, Indian Health Service, 2023.

Determination Act, ANTHC took over the delivery of these services in Alaska through a compact agreement.[13] IHS continues to be the primary funder of water and sewer infrastructure in rural Alaska Native communities.

Funding Mechanism

The Rural Energy Program provides no-cost technical assistance to Tribal governments, Alaska Native regional and village corporations, inter-Tribal organizations, and Tribal energy development organizations that are interested in developing and implementing energy efficiency upgrades, renewable energy projects, and remote monitoring systems. ANTHC does not provide funding to these communities directly, but helps Tribal entities apply for funding opportunities and create deliverables that will support future grant applications.

The U.S. Department of Energy's Office of Indian Energy plays a key role in funding ANTHC's technical assistance efforts, and the Rural Energy Program uses multiple funding streams to maximize its impact. In total, ANTHC's Rural Energy Program receives funding through competitive grants from 16 different organizations, including AEA and the Denali Commission; other federal, state, and regional government organizations; and nonprofits. Currently, ANTHC has secured over $25 million in funding for active energy-related projects in 80 communities across rural Alaska.

In 2014, ANTHC partnered with the Pilot Station community to complete energy efficiency work on its water and sewer system. Initial results demonstrated that the community benefitted from a 66 percent reduction in fuel use and a 33 percent reduction in electricity consumption from the upgraded system. The project had an estimated combined annual savings of over $11,000.

- Rural Energy Project Success Stories, Alaska Native Tribal Health Consortium, 2023.

Program Impact

Since the start of the program in 2010, ANTHC has worked with Tribal communities to develop and implement clean energy projects, saving communities more than $33 million to date, with additional savings every year.[14] The Rural Energy Program has supported large clean energy projects in 86 communities, and, on

[13] Dustin Madden, 2023. Personal Communication.
[14] ANTHC Update: Rural Energy Program [via email correspondence], Alaska Native Tribal Health Consortium, 2023.

average, ANTHC has saved each household in these communities more than $600 annually. Overall, 7,745 households in these 86 communities benefit from the savings.[15] ANTHC views these communities as just the beginning, as the program's goal is to ensure every rural community served can afford to operate its water and sewer systems, along with having access to clean water. ANTHC aims to secure more funding through the Inflation Reduction Act to increase the benefits of its program to more communities.

Barriers and Challenges

Reducing the cost of water and sewer systems and making them more efficient can be challenging and expensive. To make projects more cost-effective, ANTHC has explored integrated energy solutions that extend benefits beyond the water treatment system. For example, the Rural Energy Program installed a heat recovery system in one Alaska community that captured excess heat from the community's diesel power plant and piped it to a nearby water treatment plant. The community was then able to heat additional buildings with this system, expanding the benefits of the project to schools, Tribal offices, and city buildings. Beyond this example, ANTHC regularly works with utilities to implement heat recovery systems to help communities save on heating bills and reduce emissions through recovered heat.

The remoteness of rural Alaska communities creates additional challenges for projects. Materials shortages have been common in recent years due to global supply chain disruptions as well as an increase in federal funding opportunities for rural infrastructure, which has increased the demand for infrastructure materials. With a short construction window in rural Alaska, these delays can multiply impacts and delay construction. Materials must also be shipped in via barge, and only once rivers are free of ice, which makes shipping delays and barge delays common in rural Alaska. Complicated logistics combined with the harsh Alaska climate can lead to major delays in receiving supplies, which can increase costs and slow the pace of projects in rural Alaska Native communities.

Rural Alaska Native communities also face significant challenges in trying to access federal funding for energy infrastructure projects. Many grants require matching funds, which can pose a barrier as communities with the highest infrastructure needs often have the fewest resources. Additionally, many grant application requirements require specific expertise, such as that of an engineer or a specialized grant writer, which many small rural communities cannot afford. As such, the Rural Energy Program provides engineering and grant writing support to ensure that

[15] ANTHC Update: Rural Energy Program [email], Alaska Native Tribal Health Consortium, 2023.

Alaska Native communities can access the federal infrastructure funding for which they are eligible.

Recommendations from the Field

Building trust and partnering with Alaska Native people in the communities ANTHC serves has ensured the success of the Rural Energy Program. As a nonprofit Tribal health organization, ANTHC includes representation from the 229 federally recognized Tribes in Alaska and is accountable to the communities it serves. Collaboration and partnership with each community is critical to the success of ANTHC's work. By design, since ANTHC is a Tribal organization in an interconnected state with a small population, it is imperative for ANTHC to be responsive to ideas and concerns from Alaska Native people living in rural communities across Alaska. By sending program staff to regularly work in and engage with communities, ANTHC has been able to gain community trust and develop a reputation as a strong, committed partner.

Through its close work with communities, ANTHC has found that stakeholders prefer simple operations and maintenance systems rather than complicated, high-maintenance systems. For this reason, ANTHC prioritizes finding ways to reduce maintenance costs for its projects. The Rural Energy Program has successfully navigated implementation challenges to save Alaska Tribes millions of dollars through clean energy projects. The program serves as an example to other Tribal energy programs just getting started.

For More Information

- Rural Energy Program Website
- Department of Energy Technical Assistance Request
- Program Success Stories