ACEP IN THE COMMUNITY

Results Driven Research
ACEP’s mission is to develop and disseminate practical, cost-effective, and innovative energy solutions for Alaska and beyond. ACEP researchers are passionate about bringing our research to communities, and working with Alaskans to find better ways to produce and use energy whether from renewable or fossil-based resources.

In 2013, ACEP researchers visited 60 communities across the state; conducting resource evaluations, visiting schools and working to develop projects.

Because no community in Alaska is alike - from cultures and available resources to infrastructure and utility structure - the ACEP in the Community program was developed with flexibility to meet communities where they are, suppling the expertise when it is needed.

City of Nome (Western Alaska)
The City of Nome currently has 2.7 MW of installed wind capacity and has been working with ACEP’s Power Systems Integration Program to understand the potential for adding additional renewable generation sources, such as geothermal energy, to the mix.

ACEP has been working closely with the local owners of Pilgrim Hot Springs, Nome Joint Utility Services, and other stakeholders to determine whether the geothermal resource is sufficient for providing reliable and affordable electricity to Nome. Original funding for this effort was the result of a partnership between ACEP and UAF’s Geophysical Institute to utilize an innovative remote sensing technique for assessing low temperature geothermal resources. Results of that program suggested the resource extended much further than originally thought, and helped pinpoint drilling targets for a more conventional resource assessment that included the drilling of 6 new wells.

After 4 field seasons, projections show that Pilgrim Hot Springs has the potential to generate at least 2 MW of electricity sustainably, which is sufficient to satisfy a sizable portion of Nome’s needs. If developed, Nome could substantially reduce its reliance on imported diesel fuel and benefit from stable electricity pricing over the coming decades.

City of Galena (Interior Alaska)
After severe spring flooding in 2013 residents of Galena invited a small group of technical energy experts, including ACEP, to assess their infrastructure

Left: Mud tent on site at Pilgrim. Right: Drill rig preparing for field work. Photos courtesy C. Pike, ACEP/UAF.
and provide recommendations about how to move forward with major energy projects. When the city expressed interest in adding solar PV capacity, ACEP worked with local stakeholders to understand their options for adding additional solar capacity under a range of possible development scenarios.

This work is now being used as a basis for assisting other communities in Alaska understand the prudent maximum targets for renewable generation.

City of Tok (Eastern Interior)

Diesel engines are the workhorses of Alaska’s rural communities, and maximizing their overall efficiency is one of the most effective and immediate ways to reduce energy costs. Organic Rankine Cycle (ORC) technology can be used to capture heat rejected from diesel engines and generate additional power, which improves overall cycle efficiency. This technology has been used for decades on large, industrial waste heat recovery applications, but smaller units compatible with rural Alaska power plants are still in the development stage.

ACEP responded to the opportunity for leveraging ORC technology to benefit Alaska communities by working with the local utility, Tanana Chiefs Conference and AEA. After 1,000 hours of lab testing at ACEP, a village scale ORC unit was deployed to the community of Tok.

The ORC unit as installed, utilizing waste heat from the Tok diesel cooling system, has the potential to generate over 200,000 kWhrs per year, saving over $60,000 per year in fuel and utilizing energy that would otherwise be lost.

Based in part on the work completed at ACEP, 3 additional units have been ordered to support other projects in the state and further offset energy costs.