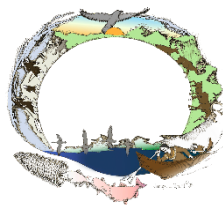


Community Energy Action Plan

Birch Creek, AK



Tanana
Chiefs
Conference

November 2018

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Introduction

The high cost of energy and living is no surprise to rural Alaska. Simple, efficient design coupled to an innovative mindset is the winning combination that allows us to survive and maintain a quality life in such a unique place with respect to our surroundings.

This Community Energy Action Plan or (CEAP) was designed to produce tangible energy project results for the community. It was created with the cooperative input of your respected community leaders. Use this CEAP as a basic manual to set each action item into motion and to generate conversation with other residents in your community. If you've read this far, that leader is likely you. Keep this CEAP on top of your desk, kitchen table or back pocket. Don't be afraid to wrinkle the pages or get it dirty. It is meant to be used.

The Tanana Chiefs Conference Energy Department is available to assist you with your community energy projects. If you have questions, please don't hesitate to call us at: 452-8251 x3130.

Birch Creek Energy Action Items

New Housing Construction Design Optimization

There are four new housing units proposed to be built in Birch Creek during the summer of 2019. The timing is prime to design for the highest efficiency, durability and indoor air quality while keeping logistic costs to a minimum. TCC Energy works in cooperation with the Cold Climate Housing Research Center and Interior Regional Housing Authority and other housing authorities to provide housing design assistance that is most appropriate for each unique location. When the design assistance is used, each housing unit can be expected to attain a high efficiency 6 star energy rating while holding up reasonably well to hard usage by occupants and maintaining a healthy indoor air environment. The housing materials and construction methods are designed and planned to minimize the cost of logistics and perform well in each respective location.

It is advisable to arrange group meetings with TCC, CCHRC, IRHA and Birch Creek tribal representatives early this Winter to ensure design optimization comes to fruition by late Spring. TCC can assist setting this action item in motion by arranging group meetings and acting as a liaison between each respective entity.

Efficient Wood Stove Integration or Change Out

Integrating an efficient wood stove into the design of a new home to offset the consumption of heating fuel is good common sense throughout the interior. Upgrading to efficient catalytic models such as a Blaze King is a great idea if older, inefficient models such as barrel stoves are still used in existing homes.

The TCC Energy Assistance Program can assist with the purchase of efficient wood stoves and the necessary hardware for a safe installation.

For questions how to apply, call TCC Energy Assistance Coordinator, Tawnya Peter at 452-8251 x3457.

Community Wide LED Lighting Upgrade

Converting incandescent or florescent bulbs and fixtures to high efficiency LED units will decrease the electrical load in the village and allow the utility to operate smaller capacity generators which will reduce diesel consumption. This is being done with great success across many interior villages. It will make good sense to upgrade not only the entire community but the airport runway lights as well since they add a significant load to the power generation equipment.

Edwin Bifelt, founder & CEO of Alaska Native Renewable Industries has completed many LED upgrade projects throughout interior villages and is a knowledgeable and experienced contact to assist in spearheading your LED upgrade project. Edwin can be reached at: 687-2296.

Power Plant Operator Training

The power plant operator is responsible for keeping the lights on in your community. It is known that having a well trained PPO performing consistent scheduled maintenance on the power generation equipment is the most cost effective way to run an efficient and reliable utility.

It is highly recommended that the tribe arrange to have each PPO attend an AVTEC Power Plant Operator training course in Seward. The training course is sponsored by the Alaska Energy Authority and is free of charge to all employed PPO's throughout Alaska. The TCC Employment & Training Department can assist with travel expenses to and from Seward.

For additional information, the AVTEC training facility can be reached at 478-5389. The TCC Employment & Training contact is Evelyn Ekada. She can be reached at 452-8251 x3199.

Power Cost Equalization Enrollment

The Power Cost Equalization endowment fund was originally established by using a portion of Alaska's oil revenue to offset the high cost of rural electricity. Birch Creek is one of the last remaining communities that has not yet enrolled in the PCE program. By taking full advantage of this program, the community will likely save several thousands of dollars. The most efficient way to ensure that Birch Creek is properly enrolled and maintains timely and accurate PCE reporting requirements is to establish a service contract with a business that specializes in PCE.

Connie Freidenburg is knowledgeable and experienced with PCE and electric utility business. Utility Management Assistance is a business that she founded that has assisted many rural communities maximize their PCE benefits. Connie can be reached at 907-444-6220.

Power Plant Waste Heat Recovery

The heat produced from the diesel generators in the power plant can be utilized by pumping hot engine cooling fluid to nearby building via a heating circuit. This concept has been successful in many rural communities and helps to reduce the cost of heating public buildings.

Alaska Native Tribal Health Consortium will assist with the feasibility assessment, engineering and construction of a waste heat recovery project. Contact ANTHC Project Manager, Brian Sanford at 729-1900 x5673 for additional information.

Solar Electricity

Solar panels or photo voltaic systems are a proven and reliable means to capture renewable energy throughout interior Alaska. The systems offset electrical consumption and perform best during summer when there is an abundance of sunlight and continue to produce a significant amount of electricity well into the shoulder seasons. Solar energy capacity is growing across interior Alaska and TCC Energy continues to support many villages with their PV projects by assisting with finding sources of funding, procurement, design, and construction. Projects in the TCC region range in size from smaller systems that serve individual buildings up to larger, more sophisticated utility scale systems that serve the whole community.

It is advisable for the village to clearly identify an “energy champion” or individual(s) that have a strong interest in renewable energy and energy efficiency before pursuing a PV project. TCC Energy has had great success working with energy champions in many villages throughout our region. It is a great pleasure to work with such enthusiastic individuals and the success of future projects will hinge upon their contribution.

When the community is ready to take on a PV project, TCC Energy will be happy to assist in making it happen.

Heavy Equipment Upgrades

Volkswagen Auto Company is providing funds to tribes as the result of a settlement that stemmed from the falsification of vehicle emissions information. Tribes in Alaska are eligible to upgrade their older, non emission compliant heavy equipment, trucks, generators and other diesel powered equipment. The Birch Creek power plant generators are not eligible since they are relatively newer units that meet a tier compliant emission level. However, the heavy equipment and dump truck are eligible. If awarded, a tribe must fully decommission the old equipment before putting new equipment into service. The old equipment must be destroyed and not sold on the secondary market or put back into service at a later date. The latest tier compliant equipment will likely be more sophisticated and costly to service but considering the value of new equipment, it is still advisable to upgrade. The diesel power industry has

gravitated towards tier IV emission compliancy due to government policy and is not likely to change in the foreseeable future.

TCC Energy can assist Birch Creek with the application process and documentation to participate in the VW settlement.

Residential Energy Audits

The State of Alaska's funding for the Weatherization program is minimal, but Alaska Community Development Corporation has Federal Funding for Weatherization for low income homeowners. Applications are available for ACDC, and 6-7 homeowners will need to apply to the program before Tanacross can be considered for additional weatherization work. Applications can be found at <http://www.alaskacdc.org>

Community-wide Oil Boiler Maintenance

Oil boilers are the backbone of heating systems in remote Alaska. Usually when renewable heating systems are installed, the oil boilers are left in place to serve as a back-up heating source. Because it is unlikely that oil boilers will be replaced in the near future, periodic cleaning and inspection of these boilers should be scheduled on an annual basis. While individual boilers have specific maintenance requirements, there are general recommendations for regular cleaning and inspection activities:

1. Replace all wear parts affected by use, including gaskets to re-seal the combustion inspection covers that were removed to clean the fireside.
2. Inspect the fireside of the heat exchanger and clean any fouling.
3. Remove the burner and thoroughly wash and clean the mesh. This should be done even if the burner appears to be clean. After washing the burner, reinstall it and use the fan test option to blow dry the burner. DO NOT fire the burner while wet.
4. Replace old igniter, flame rod and gaskets
5. Select the right water treatment to prevent scale. Water side scale is equivalent to having a thin film of insulation between the furnace gases and boiler water. It can drop a boiler's efficiency by as much as 12% - 21%.
6. Re-start the equipment and adjust combustion using a calibrated analyzer. A water tube manometer will be necessary to check for proper draft readings.
7. Inspect electrical connections for corrosion and proper connection.
8. Clean the condensate trap

NOTE: Refer to the manufacturer specific manual for the recommended inspections and maintenance of individual oil boilers before performing annual inspection.

Michael Hirt, Program Head of the Construction Trades Technology at the University of Alaska Fairbanks offers a weeklong oil boiler maintenance workshop. He periodically offers the course in **Fort Yukon**. This class includes hands on training with community boilers, and attendees will be qualified to conduct annual boiler inspection and cleaning services.

Motivation

The action items mentioned in this CEAP are a just a few attainable examples to reduce energy consumption. There are many more and the village is only limited by its imagination and ingenuity.

All it takes is for you to set the ball in motion to make Birch Creek more energy independent and self-sufficient.