Koyukuk Tribal Council

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Koyukuk, Alaska
Weatherization and retrofitting of the City/ Tribal Council START program, Koyukuk City/ Tribal Council Office Final Report

Project Location: Koyukuk, Alaska
Duration of the Project: July 1, 2015 – September 30, 2015
Award Number: DE-EE006482

Tribe submitting report: Koyukuk Tribal Council

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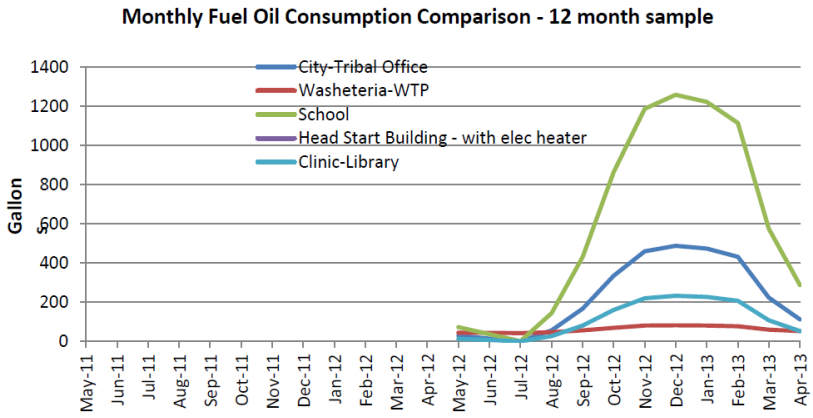
Executive Summary

Koyukuk Tribal Council applied to the Department of Energy Alaska START (Strategic Technical Assistance Response Team) Program in the spring of 2013 and was selected in the summer of 2013. Koyukuk Tribal Council acts as the governing body for the tribal people in Koyukuk, Alaska. Koyukuk Tribal Council works in partnership with the City of Koyukuk. The City of Koyukuk manages most of the services in the community including transportation and the village Washeteria which provides water to the whole community (our community doesn't have running water in the majority of our homes as of yet). Our goal in becoming a START community was to help the citizens, tribal members, and the Koyukuk community address our high cost of energy and save the tribe money as it struggles to provide vital services for all community members. The START program facilitated a movement in our community to improve the village's energy situation, it brought important community stakeholders to the table to discuss possible energy solutions and provide funding for the community to help weatherize second largest energy consumer (1st School) the City/Tribal Office the heart of our community government.

Figure 1 Photo: top-Koyukuk City/Tribal office during summer of 2014, bottom Graph taken from Energy Audit of Koyukuk

ENERGY AUDITS OF ALASKA THE VILLAGE OF KOYUKUK

Figure 3 – Fuel Oil consumption



Project Overview

In the summer of 2013, Koyukuk Tribal Council was accepted into the Department of Energy START Program to help the community reduce their high costs of energy, Weatherization began in late 2014. Located in the interior Alaska where winter temperatures can hover around minus 40 degrees Fahrenheit for long stretches of time, the cost of heating oil at $6.50 a gallon and Electrical Power $0.95/kWh is very high in Koyukuk. Koyukuk Tribal Council (the Tribe) does not own any buildings in the community, but they lease the first floor of the 2 story log City Office Building for their offices. Reducing the cost to heat and power this building will directly benefit the Tribe, allowing more money to be spent on personnel and/or other programs.

During the summer of 2013, energy specialists from the Alaska Energy Authority (AEA), the Department of Energy Tribal Energy Program (DOE), The Denali Commission, Alaska Housing Finance Corporation (AHFC), Interior Regional Housing Authority (IRHA), and Tanana Chiefs Conference (TCC) came to Koyukuk and hosted a community meeting to identify and prioritize the community's energy needs.

An array of options for the community were discussed including renewable energy, energy efficiency, community infrastructure needs and the high cost of heating of the Koyukuk City/Tribal Office. The Koyukuk City/Tribal Office was agreed upon by the community of Koyukuk based on the data provided by Energy Audits of Alaska. IRHA is the Community Based Development Organization for Koyukuk so the tribe requested IRHA to conduct the Weatherization on the Koyukuk City/Tribal Office. IRHA went back during the fall of 2013 to write up an estimate on the Koyukuk City/Tribal Office with DOE contracted personnel to write up an estimate.

In 2012 the City Office building used over $5,000 in electricity and nearly $21,000 in heating oil. The electric costs would be more than doubled if not for the State of Alaska Power Cost Equalization program. The PCE program subsidized just under 50% of the cost. PCE is always on the chopping block, though, and is not considered sacred by the State Legislature. A recent analysis by NREL staff shows that the work proposed by Interior Regional Housing Authority (IRHA) can save at least 50% of the current costs to heat and power to the City/Tribal Office. Seven thousand dollars, or half of the $14,000 savings, is significant money to the Koyukuk Tribe.

Work was planned during the late 2013 and early 2014, funds were distributed to the Tribe in middle of 2014, IRHA soon started the Weatherization after the funds were distributed to the Tribe to coincide with Koyukuk's Community BIOMASS Wood Fired Boiler project that was scheduled for the same time frame grant funding from Alaska Energy Authority.

Exterior work started in late summer August 2014, then interior work was conducted during the fall time October 2014, and the project finished in December of 2014. The City of Koyukuk pitched in $50,000 of their "future fuel sale profits" from their Construction of a new Koyukuk Health Clinic to fix the foundation and replace the flooring which would not be covered by the DOE START grant. IRHA's partner in Koyukuk's BIOMASS Wood Fired Boiler project in Koyukuk, Alaska was the Alaska Native Tribal Health Consortium (ANTHC), they started construction of Koyukuk's Community Boiler at the same time. Both IRHA and ANTHC worked together on the designs so that the City/Tribal office

building would be very insulated and prepared to accommodate the Wood Biomass Boiler System, which reduced the cost of heating and electricity in the building.

Objectives

The main objective listed in the approved Statement of Project Objectives (SOPO) is to reduce energy costs at the City/Tribal Office Building in Koyukuk by at least 50% through Energy Efficiency and Weatherization measures.

The other objective was to teach the community how they can reduce the costs of their energy consumption through energy efficient measures. This objective was completed when the DOE START traveled to Koyukuk to conduct an energy fair. There were several different booths that helped educate our community members on energy efficiency and provided LED lighting. They also provided window sealers to help reduce the cost of heat in our homes.

Description of Activities Performed (including Photos and Graphs)

The City/Tribal office building was constructed in 1983. It had all the original windows and had never been renovated. The buildings heating system did not operate properly and was very costly. All the heat would move to the upper floor. The first floor would never hold any heat and was often too cold for the employees to conduct business.

The work that IRHA performed on the building is listed here:

Task 1.0 Building Shell Insulation

Sub Task 1.1 Walls

- The foundation will be leveled so new doors and windows will fit correctly. To increase the thermal insulation of the building shell, interior walls will be furred out by 1 ½" to fit R-30 bats. A 6 mil vapor barrier air seal will be added. The exterior walls will be permachinked. Interior walls will have gypsum wall board installed for added insulation and fireproofing.

The existing foundation was replaced with a post and pad and leveled, task completed 10/21/14. The old insulation in the interior walls were torn out and walls were furred out 3 1/2". Insulation was replaced with an R-30 bat and walls and 6 mil vapor barrier was installed. Permachinking was completed by 6/30/2015. Interior walls was replaced with gypsum wall board, taped, primed, textured and painted, completed 12/21/14.

Sub Task 1.2 Ceiling

- The ceiling will be reinforced to hold R-100 in lid and blown-in cellulose insulation will be added to the roof cavity. Install gypsum wall board to interior ceilings.

Most of the R-100 in the ceiling was replaced in 2012 and is in real good condition. R-100 will be added where it needs to be reinforced. Re-enforcement and cellulose was completed by quarter ending

3/31/15. Interior ceiling was replaced with gypsum wall board, taped, primed, textured and painted, completed 12/21/14.

Sub Task 1.3 Floor

- Old plywood and insulation underneath the building will be demolished and replaced with new insulation, six inches of blue board and sealed in with new plywood. Existing interior flooring will be replaced with air-tight durable composite laminate flooring.

Old plywood and insulation underneath the building was demolished and replaced with new insulation, six inches of blue board and sealed with new plywood, completed 10/14/14. Interior flooring was replaced with air-tight durable composite laminate flooring, task was completed by 1/31/15..

Task 2.0 Energy efficiency and conservation technology

Sub Task 2.1 Interior lighting

- All interior lighting fixtures will be upgraded to LED. Task completed by 1/31/15.

Sub Task 2.2 Heating System

- Install a new boiler and baseboard heat to replace old boiler and electric heaters. Install a new wood stove, hearth, and stack. Install a tie in for the proposed biomass boiler planned for installation summer 2014.

New boiler and baseboard heat system was installed - task completed by 1/31/15. New wood stove, hearth and stack was installed - task completed by 1/31/15. ANTHC completed the biomass boiler and tie in task completed by 9/30/15.

Sub Task 2.3 Solar Panels

- Reconnect the solar array on the roof to the new service equipment. Task was completed by 3/31/15.

Task 3.0 Windows and Doors

Replace all doors and windows in the City Office. All windows were replaced by 12/19/14. All doors were replaced by 1/31/15.

Figure 2 Koyukuk Mayor Madros, Dena Strait and IRHA's Branden Roybal

Figure 3 Koyukuk TA Cindy explains electric rates to Levi

Figure 4 Koyukuk Office 1st floor prior to renovation note damaged floor.

Figure 5 Koyukuk 1st floor prior to renovation.

Figure 6 Koyukuk Office downstairs with woodstove, and monitor. Note water damage from roof leak around stove pipe vent.

Figure 7 Koyukuk old furnace located upstairs

Figure 8 Koyukuk Office before renovation

Figure 9 Koyukuk Office before renovations with old windows, old door and foundation.

Figure 10 Koyukuk upstair conference area before renovation

Figure 11 Koyukuk Upstairs before renovation

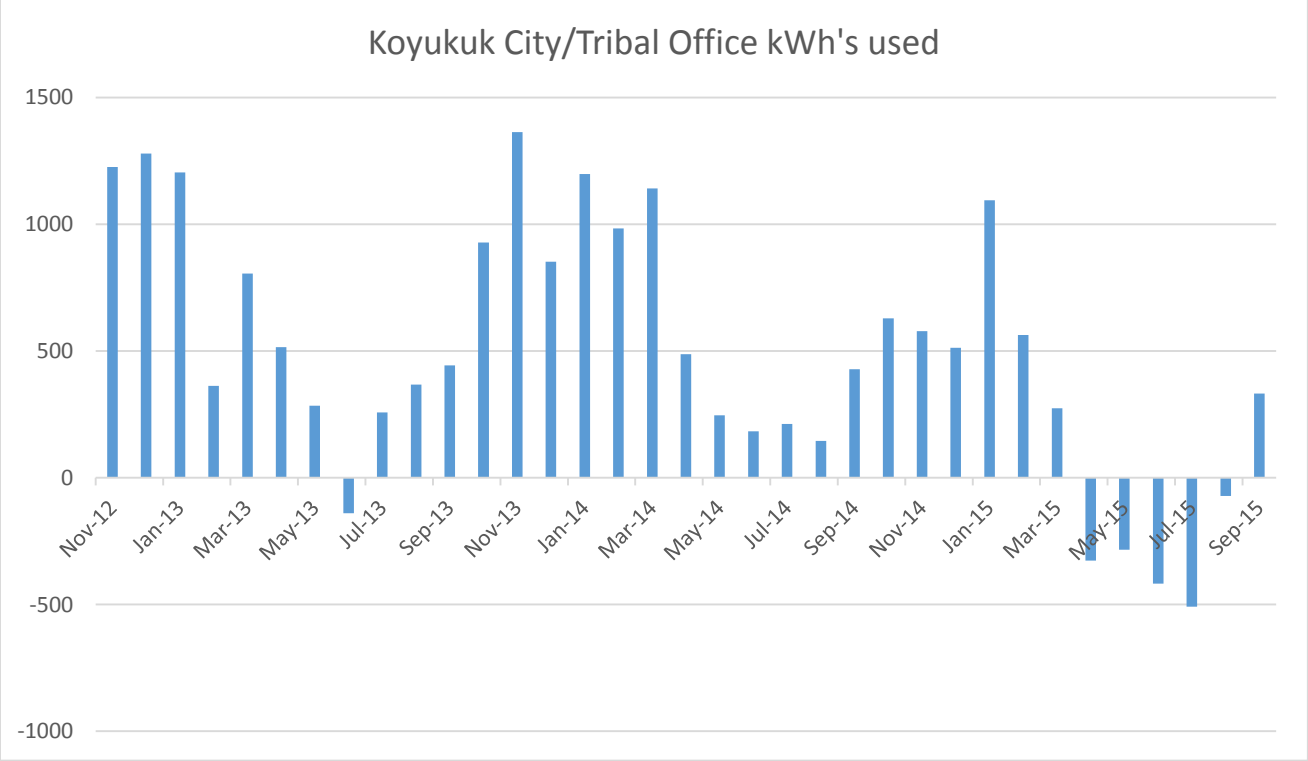
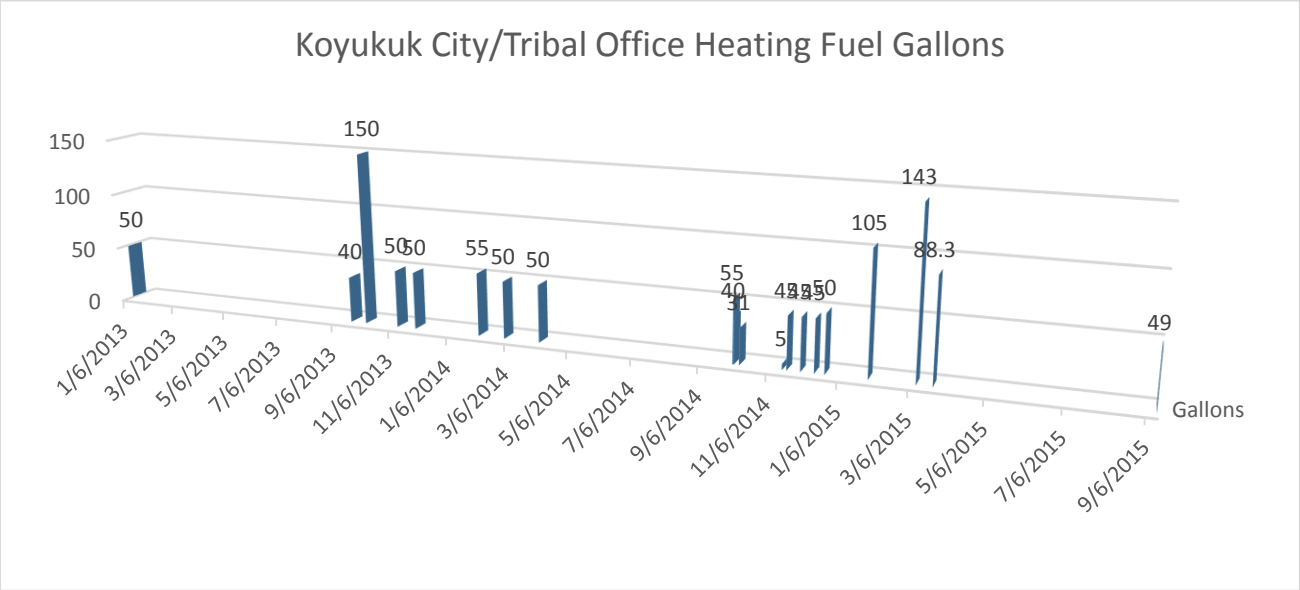


Figure 12 Koyukuk Entry area after renovation with new wood stove back up heat if generator breaks down and low temp register.

Figure 13 Koyukuk Office with new low temp register

Figure 14 The buildings new heating system (downstairs).

Figure 15 Koyukuk Office after renovations with new windows, new doors, and foundation.



Overview of Data

Conclusions

The Koyukuk Tribal Council and the Community of Koyukuk would like the express our sincere thanks and appreciation to the Department of Energy Alaska START (Strategic Technical Assistance Response Team) Program. We would also like to thank our Contractor/CBDO (Community Based Development Organization) Interior Regional Housing Authority for their work on the building, the Koyukuk Tribal Councils past and present and all of the community members who were hired to work on the building. The attention to Koyukuk's energy situation that occurred as a result of the START process and support had a very beneficial impact on our community.

Financially, being selected as a START community has brought in $723,000 worth of grant funding to our small community ($250,000 START, $273,000 BIOMASS, $200,000 VEEP grant) and has collectively save us thousands of dollars in energy costs. This funding has put local residents to work, created numerous jobs and helped move the community toward a more sustainable future.

In regards to comfort levels in the building that has increased dramatically. During the winter our tribal office workers feet were freezing due to a poorly insulated floor, now that it has been re-insulated and base board heat is now circulated through our building it is much warmer. We have seen double the amount of electricity being produced by our roof mounted solar panels, we are not sure if it was IRHA's electrical work or jacking up the building from IRHA's foundation work but that has helped our community a lot.

Recommendations

Much of our recommendations are issues with the process rather than the outcome of the START award.

- Be aware of the tight construction schedule that we have in Alaska and help us meet important deadlines for reporting and shipping of materials. Getting the paperwork in place to begin the

grant took a lot of time and energy. Helping us keep the construction schedule on time, perhaps by streamlining Alaskan projects, would be a huge improvement to the process.

- Mid-Project meetings facilitated by the DOE would help the tribe stay organized and help the project move forward in an efficient manner.

Lessons Learned

The tribe learned many lessons on energy efficiency and project management. Some lessons learned have been outlined below.

1. It is very important to ensure all staff members know their responsibilities and have a work plan before committing to a project of this scope and size.
2. When moving out of your office building for renovation you need to be prepared to schedule your meetings, elections, ect. at a different location. The location should be available and picked at an early date. Making it known for community members is essential.
3. Team work is crucial when re-locating your office temporarily. Organization skills were used significantly.
4. It is important that you include community members in projects like this and keep everyone updated.
5. Having the tribe and city work closely together on projects like this is more effective and efficient.
6. Preparedness - Packing an entire office building can be difficult. Being prepared and knowing where things are going in advance can shorten the process and can eliminate some confusion.