

# Haines Central Wood Heating Construction



## Haines, Alaska



### Pellet boiler system heats low-income community housing

#### Project Overview

In partnership with the Alaska Energy Authority (AEA), the Chilkoot Indian Association (Association) installed two Pellaery PB 3550 boilers that provide heat through an insulated pipe distribution system to four Chilkoot Estates low income housing buildings. The project began as an attempt to reduce heating costs to one of these four-plexes, but expanded as benefits to the community became apparent.

#### Objectives

The main objectives of this project were for the Association to reduce their dependence on cost variable fuel oil while employing cleaner, renewable resources through the use of wood biomass. The goal was to displace 85-90 percent of the fuel oil used for heating a residential four-plexes.

#### Economic Feasibility

The system became operational in October of 2011. Between October of 2011 and December of 2014, it provided the community with 780 MMBtu of thermal energy and displaced 8,000 gallons of fuel oil. This displacement saved the community \$17,000.

#### Reasons for Installing this System

Because pellets were a new fuel to Haines, there were concerns about the reliability of the boiler technology and the stability of the pellet supply chain. The Pellaery Boiler was selected because it is a dual fuel system that can easily be converted from pellet fuel to fuel oil. However, since the start-up of the pellet system, there has been no need to use fuel oil.

#### Quick Facts

**Total Project Costs:** \$225,120

**Funding:** Renewable Energy Grant Fund: \$188,620  
Local Funds: \$36,500

#### Capital Costs

Design: \$18,400  
Construction: \$206,720

#### Equipment

Boiler Make/Model: (2) Pellaery PB 3550  
Output: Up to 170,000 btu/hr

#### Fuel Oil Offset

Annual savings: 2,666 gallons  
Comprehensive savings: 8,000 gallons  
(Oct. 2011-Dec. 2014)

#### Fuel Savings

Annual savings: \$5,666  
Comprehensive savings: \$17,000  
(Oct. 2011-Dec. 2014)



Haines low-income housing, photo courtesy of AEA.

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## Fuel Storage

The Association purchases Clean Burn wood pellets from the Lower 48 for \$425/ton in individual 40-pound bags. A significant portion of this cost is transportation to Alaska. Other Haines residents burning pellets can purchase their pellets through the Association at reduced cost. The Association supplies over 60 tons of pellets to local residents every year.

## Learning Experiences/Challenges

The Chilkoot Indian Association received a Renewable Energy Fund grant from AEA to install a GARN cordwood boiler system. They soon realized that the size and weight of the system would require extensive filling of wetlands to construct an adequate foundation due the weight of the Garn when filled with water. The extensive foundational requirements would exceed the available budget, so the Association decided to shift to a pellet-fired boiler. The boiler is a more compact, lighter, and less expensive option.

The biggest challenge Haines has faced is the high cost of importing pellets. Barging pellets up from the Lower 48 more than doubles the price. Though still competitive with oil, the differential has not been significant enough to drive a rapid transformation to a pellet economy. The association is currently exploring the feasibility of constructing a small local pellet mill, but small market size makes the economics challenging. They are continuing to explore ideas for reducing pellet costs and sourcing local biomass.



Pellet storage facility, photo courtesy of Dan Bihn.

## Community Benefits

Because the low income housing units are connected by underground insulated piping, they can share heat should one of the boilers go out. By opening and closing a few valves, hot water from one building can be shared with another. This provides backup redundancy and significantly reduces the wear and tear from cycling the boilers on and off. This project helps the community support its low-income residents and will hopefully inspire even more use of pellet or biomass fuel in the future.



*“Since the start-up of the pellet system, there has been no need to use fuel oil.”*

Clean Burn fuel pellets, photo courtesy of Dan Bihn.

## Project Contact information

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