

**Alaska Energy Authority
City of Craig
Wood Fired Boiler Project
Authority Contract Number #: 2195233
Grant Project Completion Report
April 2009**

Background

The City of Craig is located on Prince of Wales Island (POW) in Southeast Alaska. The city owns and operates the Craig Aquatic Center. The center includes indoor pools and a fitness area for use by the public. The Craig Aquatic Center shares a campus with the Craig Elementary and Craig Middle School buildings, both of which are operated by the Craig City School District.

In 2004 city staff first considered alternatives to lower energy costs at the aquatic center. Those alternatives included converting the heating system from propane to diesel, and converting from propane to wood heat. Two subsequent reports recommended that the city consider a conversion of the propane system, and the city chose to focus its efforts on a conversion to wood heat. Staff saw this option as promising because it offered a greater operational cost savings than a conversion to diesel, and because there appeared to be an ample supply of wood waste from local sawmills that could fire a wood boiler system. Local saw mill operators supported the idea of a wood burning system and stated their willingness to supply wood fuel to such a facility.

City staff and other interested parties eventually took two trips to inspect existing wood boiler systems in Western Montana and gauge the applicability of those systems to use in a Southeast Alaska setting. These trips provided useful information into designing a system that would likely work in Southeast Alaska's wet climate.

Efforts then began in earnest to arrange financing for the project. The city assembled financing from several granting agencies, and contributed its own funding toward the design and construction of the project.

Activities:

After receipt of bids from general contractors resulted in costs that exceeded the available project funding, the city redesigned the facility, hired employees to construct most of the facility, and contracted out the site work and mechanical portions of the project.

Project Funding & Cost:

The project expenses and revenue sources are shown in the tables below.

Revenue Sources	
Alaska Energy Authority	\$300,000
Denali Commission	\$300,000
USDA Forest Service	\$300,000
USDA NRCS	\$50,000
AEA Power Project Loan Fund	\$500,000
Balance by City of Craig	<u>\$63,435</u>
Total Revenue Sources	\$1,513,435

Expenses		
Site Work	\$50,000	
Boiler Assembly	\$350,867	
Boiler Freight	\$35,000	
Concrete	\$42,000	
Concrete Materials	\$3,500	
Rebar	\$20,109	
Force Account Labor	\$200,000	
Framing Package	\$28,936	
Freight	\$15,000	
Mechanical	\$600,000	
Electrical materials	\$50,000	
Electrical labor	\$10,000	
Project Manager	\$20,000	
Equipment Rental	\$10,000	
Engineering	<u>\$15,000</u>	
Sub total	\$1,450,412	
Contingency (5%)	\$ 72,521	
Total Estimated Expenses		<u>(\$1,522,933)</u>
Financing		<u>\$ 1,522,933</u>
Balance		<u>\$0</u>

Project Outcomes:

The facility became operational in April 2007, and operated until July. The system was closed for the summer and then restarted in October 2007 and remains in operation through the date of this report.

Problems Encountered:

The project has experienced some operational problems since it became operational, however these problems have solutions in adjustments that local staff will need to make in the operational of the system. None of the operational problems are unexpected or unusual given the complexity of the control systems that are designed into the project.

Conclusions and Recommendations:

The project has done what it was intended to do: reduce energy costs at the Craig Aquatic Center and the Craig Elementary and Middle School buildings. That said, there is room for improvement in the amount and reliability of this energy supply. City of Craig and school district staffs will continue to fine tune the operation of the boiler in the coming year to gain more benefit from the facility.

City representatives believe that similar projects could prove quite beneficial to other communities in Alaska that have high energy costs and a local supply of wood fuel.



View of gasifier, incline auger, and feed auger. Control panel is at photo left.



View of boiler. Note gasifier assembly in foreground at photo right.



Wood boiler building, looking south.