



# Woody Biomass Energy in Alaska



Biomass boiler (far left) with oil-fired back up boilers (center and right)



Small diameter, low-value wood suitable for use as wood fuel

## Background

According to the U.S. DOE Energy Information Administration, biomass accounted for more than 53% of all renewable energy consumed in the U.S. in 2010, with “wood and derived fuels” contributing ~25% of the total (<http://www.eia.gov/renewable/annual/trends/pdf/table1.pdf>). Alaska recognized this potential and has dramatically increased the number of wood-fired boilers in the State in recent years.

Wood fuel has several environmental advantages over fossil fuel. The main advantage is that wood is a home-grown, locally available, renewable resource offering a sustainable, dependable supply. Other advantages include the fact that the net amount of carbon dioxide (CO<sub>2</sub>) emitted during the burning process is ~90% less than when burning fossil fuel. Wood fuel contains minimal amounts of sulfur and heavy metals. It does not contribute to acid rain pollution and particulate emissions are controllable.

## Issues

Seventeen percent of all U.S. forest land is located in Alaska. While parts of Alaska are treeless tundra, ice fields and mountains, much of Alaska is heavily forested.

- For the forest landowner/manager, biomass utilization can provide opportunities to mitigate the costs associated with pre-commercial thinning, hazardous fuels reduction, forest restoration, and habitat enhancement (moose, deer and salmon are important sources of protein for many rural Alaskans).
- For the forest products industry, biomass markets can mean new, or more profitable, local opportunities to utilize processing by-products, such as sawdust and bark.
- For communities, biomass fuels can save facility operators money, create and sustain local jobs, and reduce local economic leakage (i.e., keep energy dollars in the community)

There are more than 100 communities in Alaska that are only accessible by air or water. The prices of petroleum fuels in these communities are among the highest in the nation. In 2012, heating oil prices in some remote communities, where winter temperatures can reach -60°F, exceeded \$10.00 per gallon, due largely to transportation costs. Some villages have had to close public libraries, community centers, and auxiliary school facilities, such as pools and gymnasiums, because they cannot afford to heat them.

## Programmatic Efforts

1. With Economic Action Program (EAP) funding from 2004–2008, Alaska Region State & Private Forestry was a key participant in the Alaska Wood Energy Development Task Group (AWEDTG), which was created to explore opportunities to increase the utilization of wood for energy and bio-fuels production in Alaska. With new Federal and matching State funds, AWEDTG was reinstated in 2011 and continued into 2012. A competitive application program was created, and selected public and not-for-profit applicants receive initial feasibility assessments for heating local facilities with wood. Twenty-five biomass conversion feasibility studies were conducted in 2012 and 17 are being conducted in 2013. A number of applicants from previous years have gone on to apply for and receive funding for engineered designs, construction, or both.
2. USDA agencies, led by the Forest Service and Rural Development, have been directed to develop a strategy known as the Tongass Transition Framework to help Southeast Alaska communities transition to a more diversified economy. Renewable energy, forest restoration, and young-growth forest management are a few of the components of the transition strategy. In partnership with the State Division of Forestry and U.S. Coast Guard, work on the Southeast Alaska Wood-to-Energy Initiative began in October 2012. Staff are providing direct technical assistance, conducting public outreach and education, and drafting a strategy document to convert 30 percent of southeast Alaska's heating oil consumption to biomass over the next 10 years..

## Recent Accomplishments

In Alaska, wood biomass heating systems have already been successfully installed in a number of non-industrial facilities. The first large non-industrial biomass system was commissioned in Craig, Alaska in April 2008. The system provides heat to the Craig elementary and middle schools and the nearby community pool. Using 4 to 5 thousand pounds of mill residues daily, the system saves the community ~\$85,000 annually in heating costs.

Some other operational systems include:

- Sealaska Corporation office building in Juneau, AK
- Schools in Tok, Delta Junction, Tetlin, Tanana, Thorne Bay, and Coffman Cove
- Washeteria in Tanana, AK
- Ionia Community Center in Kasilof, AK
- District heating system in Gulkana, AK
- USDA Forest Service, Southeast Alaska Visitor Information and Discovery Center in Ketchikan, AK
- Ketchikan Public Library in Ketchikan, AK
- GSA Federal office building in Ketchikan, AK
- U.S. Coast Guard facility in Sitka
- University of Alaska, Fort Yukon Campus, Fort Yukon, AK
- Galena Senior Center, Galena, AK

Several more biomass heating systems are currently in development, including:

- U.S. Coast Guard facilities in Ketchikan, and Kodiak
- Kenny Lake School in Kenny Lake, AK
- Fort Yukon School, Gymnasium, Vocational Education Center and Health Clinic, Fort Yukon, AK
- Susitna Valley High School in Talkeetna, AK (2011 Woody Biomass Utilization Grant recipient)
- City of Nulato, AK - water plant/washeteria/school (2012 Woody Biomass Utilization Grant recipient)
- Fort Greely, U.S. Army, Delta Junction, AK

## More Information

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