HAA AANÍ

Creating Sustainable Communities within Southeast Alaska

Biomass Solutions for Southeast: Creating the Demand and the Infrastructure for Commoditization of Wood

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Economies of Scale

- Boiler sales, installation, and service
- Delivery infrastructure
- Anchor demand loads
- Production
- Lowest prices
- Common place

Biomass

	Moisture Content (in %)	Thermal Value Absolute (in BTU/lb)	Transport Density (in lb/ft^3)
Wood Pellets	5	7,737	40.5
Forest wood chips, dry	30	5,416	14.6
Forest wood chips, wet	60	2,600	19.3
Heating Oil	-	18,260	52.9

Manufacturing Residues
45.5 mmbf ~ 53,000 Bone Dry Tons/Yr

Silvaculture Residues (18,000 Bone Dry Ton/Yr)

Lets Capture our Dollars

- 71,000 BDT currently available and unused
- Displaces 7,810,000 gallons of heating oil annually
- $31,240,000 @ $4.00/gal leaving our the Southeast Alaska region

Harvest Residuals (currently subject to pulp market)

Biomass for Heat

- Proven track record
- Commercially available to serve all building sizes
- Will lower heating costs (and stable)
- Cost effective to install
- User friendly

- Has not come to Alaska till now
- Users slow to adapt
- Early adapters are spread out
- Users do not see their supply
- All aspects of the industry are not in place for each community

Biomass for Electricity

- High Prices in some communities over $0.65 /kwh
- Solutions exist

- not on a personal use scale (big)
- Big appetities for wood
- Not the highest use of our wood
- Needs to be coupled to a waste heat user
- Not viable with out inter-ties

Southeast Alaska Projects

- USCG Sitka
- USFS Tongass Discovery Center
- GSA KTN Federal Building
- USCG KTN to electric (pellets later)
- USCG Studying Kodiak (10,00 TPY!)
- JNU NOAA USCG ADF&G Joint Use
- Kake School and City Bldgs
- Yakutat Kwann
- T&H Hope Building
- SEARHC
- T&H HUD JNU
- PNW Research Station Juneau*

Pellets = Green Jobs

- No fuel spills
- Pellet storage cheaper than oil tanks
- Industry does not compete with existing oil based companies
- Better utilization of our forest resource
- Add jobs to mills

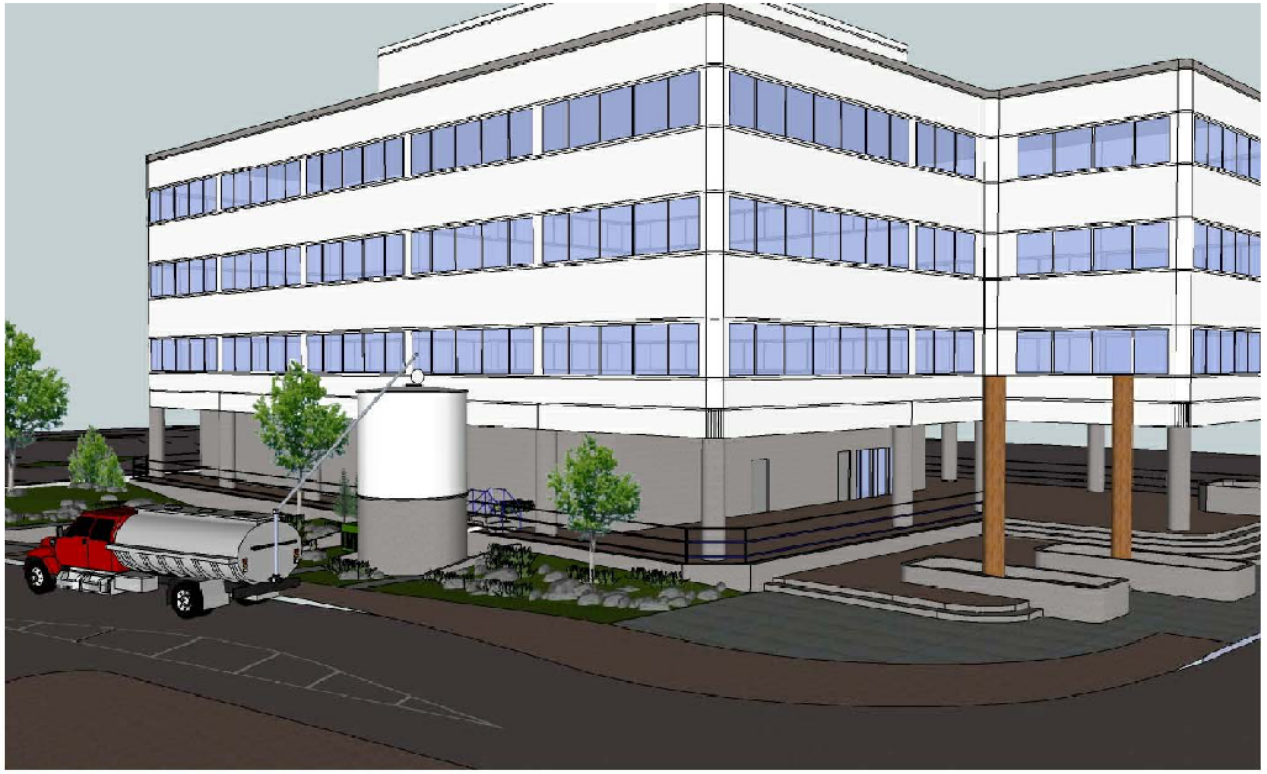
Commodity Pellets

- 40 lb bags by the pallet (50 bags per pallet)
- By the super sack (US Ton or Metric Tonne)
- Bulk deliveries
- Vending stations
- Distribution Silos
- Individual silos

Commodity Firewood $150 a cord (or less?)

- Palletized cordwood deliveries (possible containerized deliveries)
- Circular Saw Firewood Processor 7+ cords/hr
- Bobcat or like Skid Steer
- Flatbed delivery truck with self-loading forklift
- Extra – facility with covered storage for drying
- Wood source - negotiated from existing operational areas

The Sealaska Plaza Wood Pellet Boiler



1 MODEL VIEW

Jensen Yorba Lott Inc.

SEALASKA PLAZA

SEALASKA PLAZA
BIOMASS BOILER
JUNEAU, ALASKA

MODEL VIEW

MV-4

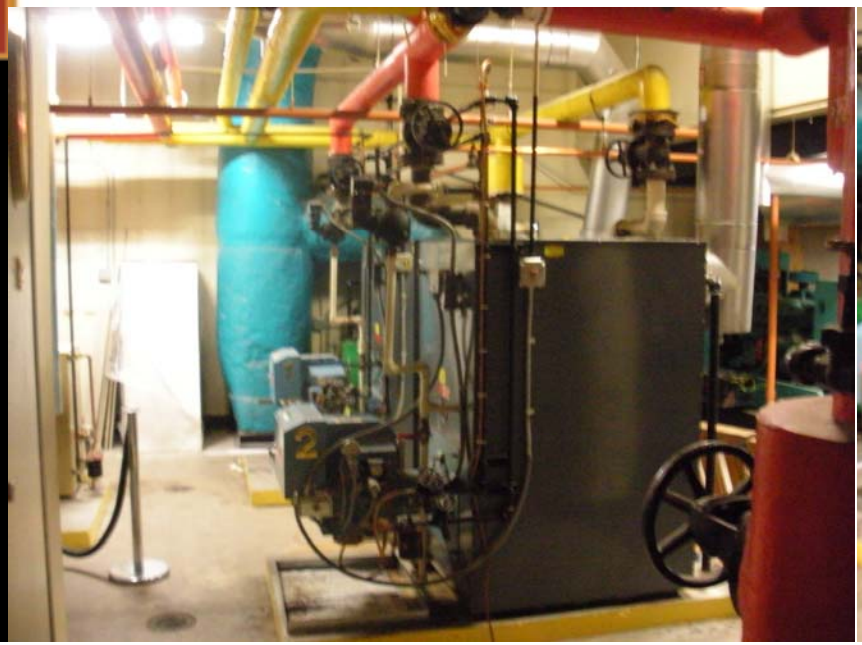
Project Timeline

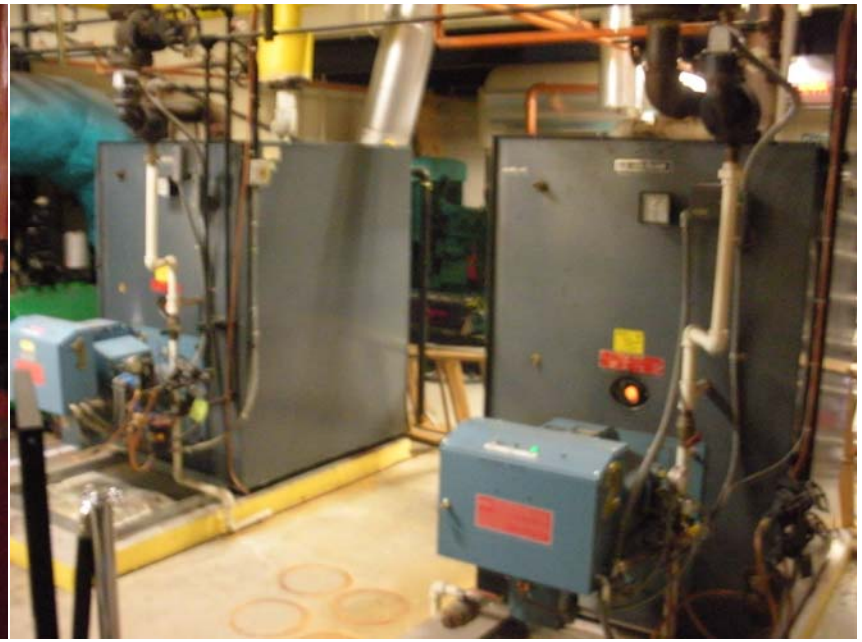
- Fall 2009 Emerging Energy Technology Grant
- Dec 4, 2009 Official News Release
- May 2010 Bulk Delivery Truck Arrives
- October 8, 2010 Boiler Set in Place
- November 19, 2010 Boiler Startup

ACEP
Alaska Center for Energy and Power

DENALI COMMISSION
10 Years Of Progress
1998-2008
ALASKA

Before





After

Sealaska Plaza's Wood Pellet Boiler:

Viessmann Pyrot 220Kw output

Annual consumption: 280 tons of pellets per year

Wood pellets and ash are moved automatically by screw augers


KOB
PYROT
HEATING SUPPLY
HEATING RETURN


HEATING SUPPLY
HEATING RETURN

No visible emissions from the Sealaska Plaza (cleaner than natural gas)

Sealaska Plaza: Proven

- 3,500 hours of successful operation. Since boiler startup November 19, 2010 our boiler has consumed over
- 120 tons of wood pellets which are equivalent to 13,200 gallons of heating oil
- At current prices of heating oil, the Sealaska wood pellet boiler has saved the corporation +**$19,044** in heating costs in 5 months

Wood pellets arrive by barge in shipping containers

Wood pellets trans-loaded into delivery truck

Auger delivery truck delivering 20 tons of wood pellets to the Sealaska Plaza silo

Wood Pellet Silo Tank Farm

- Eliminates super sacks, shipping pallets, trans-loading
- Reduced handling
- Reduces delivery costs
- Makes customers “feel more secure”
- Allows our delivery trucks to operate on their own time

300 Ton Facility

Containerized Installation

Nazko School B.C.

Sealaska Heritage Institute Center

Operational Costs

- Delivered wood pellets $300/ton = $2.52/gallon
- $4.17/gallon pellets 40% less
- <10 min/week
- Two 3 hr shut downs a year (~$500 ea)
- Saved over $20,000 this winter and the savings keep coming

Northwest Territory Summary:

425,000 sq/mi – 35,000 residents

(vs Alaska 586,000 sq/mi, +/- 600,000 residents)

- Approx. 15 commercial biomass boiler installations
- Many residential wood pellet stoves (up to 50% fuel savings vs oil/propane).

- **12,000 tons/yr** of pellet consumption, for a population base of 35,000 in just 4 years!

BIOMASS HEATING SYSTEMS FOR GNWT BUILDINGS

INSTALLED AND PLANNED WOOD PELLET BOILERS

OCTOBER 2009

Chief Jimmy Bruneau School, Behchoko
- One KOB 750 kW wood pellet boiler
- Expected fuel oil reduction of 155,000 litres per year
- Expected GHG reduction of 410 tonnes per year
- Installation completed in October 2009

Highways Maintenance Garage, Hay River
- One KOB 260 kW wood pellet boiler
- Fuel oil reduction of 100,000 litres per year
- Expected GHG reduction of 270 tonnes per year
- Installation to be completed in 2010

Diamond Jenness School

Harry Camsell School

Central Heating Plant Serving Four Schools, Hay River
- One KOB 1 MW wood pellet boiler
- Expected fuel oil and propane reduction equivalent to 318,000 litres of fuel oil per year
- Expected GHG reduction of 850 tonnes per year
- Installation to be completed in 2010
- Diamond Jenness School & new Tradeshop
- Harry Camsell School
- Ecole Boreale
- Princess Alexandra School

École Boréale

Princess Alexandra School

Schools to be heated by a central heating plant in Hay River

A BRIEF HISTORY

The first wood pellet boilers for a Territorial Government building were installed at the North Slave Correctional Centre in 2006. Arctic Green Energy (AGE) owns and installed the boiler, and sells heat to the Government of the NWT (GNWT). Thanks to the success of that project, the GNWT is now investing in its own wood pellet boilers for other facilities, where economically viable.

Since the cost to transport wood pellets is higher than that of other fuels, the most viable locations for wood pellet boilers are those closest to the source of wood pellets. Currently, that source is in La Crete in northern Alberta. Therefore, the GNWT is investing in wood pellet boilers in communities on the road network in the South and North Slave regions.

Kalemi Dene School, N'Dilo
- Three Bosch MESys 23 kW wood pellet boilers
- Expected fuel oil reduction of 30,000 litres per year
- Expected GHG reduction of 80 tonnes
- Installation completed in September 2009

North Slave Correctional Facility, Yellowknife
- Two BINDER 750 kW wood pellet boilers
- Fuel oil reduction of 587,000 litres in 2008
- GHG reduction of 1,560 tonnes in 2008
- Installation completed in November 2006

Legislative Assembly Building, Yellowknife
- One BINDER 300 kW wood pellet boiler
- Expected fuel oil reduction of 83,000 litres per year
- Expected GHG reduction of 220 tonnes per year
- Installation to be completed in 2009/10

École St Joseph School, Yellowknife
- One KOB 540 kW wood pellet boiler
- Expected fuel reduction of 102,000 litres per year
- Expected GHG reduction of 270 tonnes per year
- Installation completed in October 2009

Sir John Franklin School, Yellowknife
- One BINDER 750 kW wood pellet boiler
- Expected fuel reduction of 142,900 litres per year
- Expected GHG reduction of 380 tonnes per year
- Installation completed in February 2008

PWK School & Recreation Complex, Fort Smith
- One KOB 750 kW wood pellet boiler
- Expected fuel oil reduction of 200,000 litres per year
- Expected GHG reduction of 530 tonnes per year
- Installation to be completed in 2010

Thebacha College, Fort Smith
- One KOB 750 kW wood pellet boiler
- Expected fuel oil reduction of 200,000 litres per year
- Expected GHG reduction of 530 tonnes per year
- Installation to be completed in 2010

Health Centre, Fort Smith
- One KOB 750 kW wood pellet boiler
- Expected fuel oil reduction of 200,000 litres per year
- Expected GHG reduction of 530 tonnes per year
- Installation to be completed in 2010

Look around your town

- JNU Federal Building 150,000 gal
- State Office Building 125,000 gal
- Juneau Bartlett Hospital gets a fuel delivery every day!
- Big Apartment complexes
- State leased buildings
- Juneau School district over 1,000,000 gal

The More You Burn…

- The more you save
- The faster you will pay for your system
- Get away from feasibility studies
- Make change-overs common place
- Can you keep your existing system?

Contact:

questions
boiler room tours

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