Sealaska Biomass Projects: Creating The Demand, Proving the Technology

Sealaska Corporation
April 28, 2010
Today’s Lecture
(take notes)

1. Introduction
2. Southeast Alaska Pellet Supply/Demand
3. Sealaska Plaza Conversion
4. Other Renewable Energy Projects
Sealaska Corporation  
Nathan Soboleff

Synergy Systems Inc.  
Bob Wysocki

Ventek Energy Systems Inc.  
(Viessmann/KOB Boilers)  
Peter Brand
## Southeast Alaska Land Base

<table>
<thead>
<tr>
<th>Land Owner</th>
<th>Total Acres</th>
<th>Subject Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glacier Bay National Park</td>
<td>3,283,000</td>
<td>0</td>
</tr>
<tr>
<td>Tongass National Forest</td>
<td>16,800,000</td>
<td>244,000</td>
</tr>
<tr>
<td>Village/Urban Corporations</td>
<td>280,000</td>
<td>196,000</td>
</tr>
<tr>
<td>Sealaska Corporation</td>
<td>290,000</td>
<td>81,000</td>
</tr>
<tr>
<td>State of Alaska</td>
<td>296,000</td>
<td>21,245</td>
</tr>
<tr>
<td>Mental Health Trust</td>
<td>214,000</td>
<td>1,160</td>
</tr>
</tbody>
</table>

Subject acres are those that have been clear cut by conventional harvest.
Sources of Wood Residue Energy Product Raw Material Supply

- Silviculture treatments
  - Precommercial Thinning (PCT)
  - Commercial Thinning (CT)
- Improved timber harvest log utilization
- Wood residues from lumber manufacturing
Viking Lumber/Sealaska joint project  (May 2009)

- Viking Lumber produces
  - 50,000 green tons (gT) residual chips - pulp
  - 6,000 gT bark– hog fuel
  - 14,000 gT sawdust – hog fuel
  - 20,000 gT utility logs – pulp

- Conclusion = sufficient supply for a 10,000 ton to 25,000 ton pellet mill
What About Pellet Demand?

- Interviewed 82 stores in Alaska
- 32 sell pellets (40 # bags)
- All Alaska TOTAL demand = 2,359 tons
- Southeast Alaska demand = 190 tons
- Pellet manufactures are from
  - Oregon
  - Idaho
  - Washington
  - Missouri
  - British Columbia
  - Fairbanks Superior Pellet Fuels LLC (June 2010)
Supply/Demand Conclusions

1. Raw Material Supply = no problem

2. Manufacturing technology = no problem

3. Southeast manufacturing has a shipping advantage in Southeast Alaska over other manufacturers

4. Southeast not likely to compete to rest of Alaska

5. **LACK OF DEMAND IN SOUTHEAST ALASKA IS THE PROBLEM!**
Strategy

• Create Southeast Alaska commercial/industrial urban and rural anchor wood pellet demand

• Create SE Alaska urban and rural residential wood pellet demand

• Conducive for Southeast Alaska wood pellet producer
Southeast Aggregated Demand

- Electric usage as indicator for pellet demand
- Identified 12 districts throughout Southeast Alaska
- Public facility buildings within 1,000 feet of each other
  - Harbor offices
  - Police offices
  - City Hall
  - Aquatic center
  - Schools
  - USFS
  - USCG
  - Medical
  - State buildings
- 6 green lbs = 1 kWh

<table>
<thead>
<tr>
<th>Community</th>
<th>Aggregated kWh/yr</th>
<th>gT/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yakutat</td>
<td>68,724</td>
<td>206</td>
</tr>
<tr>
<td>Juneau USFS</td>
<td>352,512</td>
<td>976</td>
</tr>
<tr>
<td>Hoonah</td>
<td>41,472</td>
<td>124</td>
</tr>
<tr>
<td>Sitka</td>
<td>1,794,040</td>
<td>5,385</td>
</tr>
<tr>
<td>Petersburg</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Wrangell</td>
<td>663,840</td>
<td>1,992</td>
</tr>
<tr>
<td>Thorne Bay</td>
<td>102,750</td>
<td>308</td>
</tr>
<tr>
<td>Craig</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Klawock</td>
<td>67,428</td>
<td>202</td>
</tr>
<tr>
<td>Ketchikan USCG</td>
<td>4,081,080</td>
<td>12,243</td>
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<tr>
<td>Ketchikan</td>
<td>972,120</td>
<td>2,916</td>
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<tr>
<td>Ketchikan USFS</td>
<td>254,000</td>
<td>762</td>
</tr>
<tr>
<td>Total (gT/yr)</td>
<td></td>
<td>25,116</td>
</tr>
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Sealaska to Convert Plaza to Biomass Fuel

Juneau, Alaska— In 2010, Sealaska Corporation’s corporate headquarters in Juneau will become the first commercial building in Alaska to convert to renewable bio-energy. Sealaska will convert its corporate headquarters to a wood pellet fired boiler system. The Sealaska Plaza is currently heated by over 35,000 gallons of heating oil per year. Sealaska’s goal is to establish a green energy model that can be applied throughout Southeast Alaska. The effort is one element of Sealaska’s green initiatives to build sustainable Southeast Alaska economies. We believe this project will show that conversion to biomass can save money, reduce hydrocarbon-based footprints and create anchor demand for resources that can be manufactured within the region.”

Savings will be approx. 8400 tons CO2 over 25 yrs and over $1m in energy costs.
SIGNATURE PROJECT

Convert Sealaska Plaza to Wood Pellet Heat

Assumptions:
$2.50/gal
$300/ton pellets
Factbox:

- Approx. 350 employees
- Approx. Turnover of $100,000,000 in 2007
- Over 30 years of experience
- More than 15,000 systems running worldwide
The PYROT®
from 512,000 BTU to 1,800,000 BTU
(Sealaska is 750,000 BTU)

Approx 280 Tons/year
Timeline

- 2\textsuperscript{nd} week of June
- 1\textsuperscript{st} week of July
- 1\textsuperscript{st} week of September
Sealaska Bulk Wood Pellet Deliveries

Create the Infrastructure

New England Wood Pellet Photo
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!
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.
NWT Legislative Building
Being converted to wood pellet heating system
What else is Sealaska working on?

- Huna Totem ISP Gasifier
- Icy Straits Lumber: kiln repair, gasifier, and biofuel
- Southeast Greenhouses/Plant Nursery
- 8a government contracting
- In the future Sealaska will offer…?
  - Bulk wood pellets for commercial and residential consumers
  - Building conversions
Rural Village Opportunities Available TODAY!

CPC BioMax Unit

- 50 cents per kWh
- $3 - $8/gallon diesel
- Jobs and industry
- Create heat and electricity
- Greenhouse

Photo Courtesy of Community Power Corporation
Icy Straits Lumber Mill

- Family owned and operated since 1951
- Employs 20 in small town
- Losing it on energy prices
- Wood Dry Kiln
- Biodiesel genets
- Chip producer
- Gasifier
- Waste Heat
Icy Strait Point Tourism Development

- Hoonah, AK private cruise ship destination
- Quiet
- Very high heating and electric costs
- 100kw gasifier
Green Houses

• Mill residues
• Fish waste residues
• Plant nursery for silviculture
• Deer browse
• Local food production
• Wood pellet or wood chip heat
• Gasifier powered grow lights
Hydro Power

• Completed Black Bear Hydro Electric
  – At least 1 other installation
• Four Tidal generation stations:
  1) Southeast Alaska Intertie Project
  2) Southeast Alaska Anhydrous Ammonia Production
How Are Things Going?

- Daily calls
- Working out the bugs
- Change is here
- Other Southeast Alaska Biomass Projects
- Synergies
Southeast Alaska Biodiesel Synergy

Timber Industry
(Sealaska Corp & Icy Straits Lumber)

Cruise Ship Tourism Industry
(Royal Caribbean)

Commercial Fishing Industry
(Taku Renewable Resources)
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