

Biomass Technology Options

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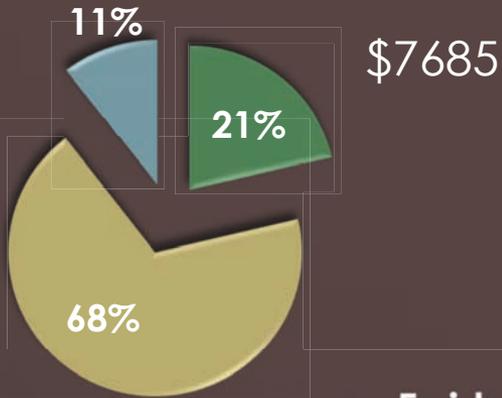


The Burden of Heating in Alaska

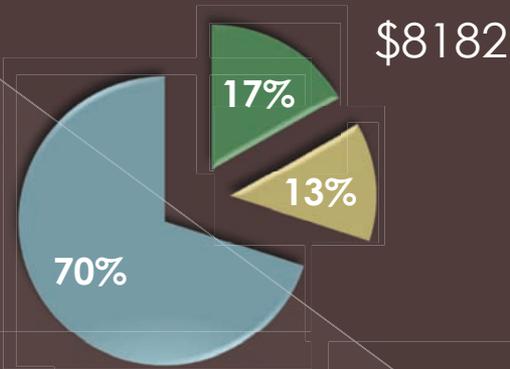
Break-down of Energy Costs

- Heating
- Transportation
- Electric (with PCE)

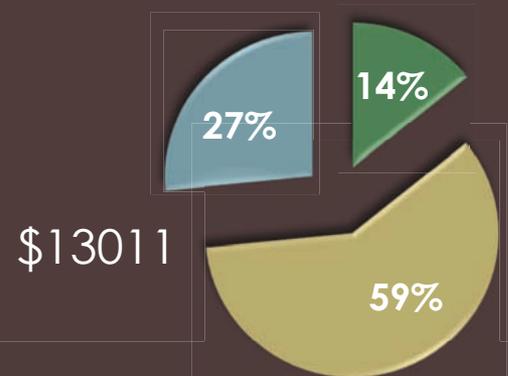
Ambler



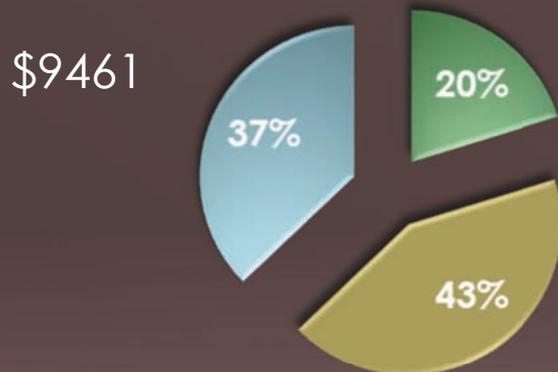
Anchorage



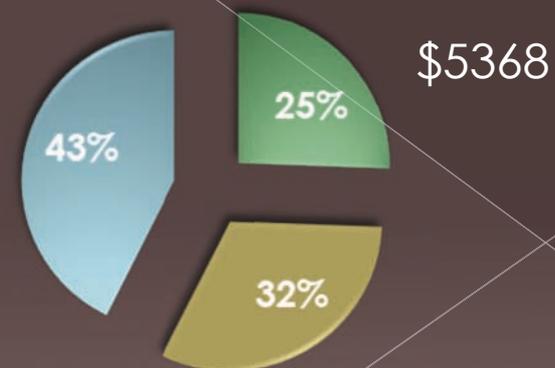
Bethel



Fairbanks



Southeast - Hydro



Cordwood Boilers





Gulkana Community Wood-Fired Boiler

Gulkana Community Wood-Fired Boiler

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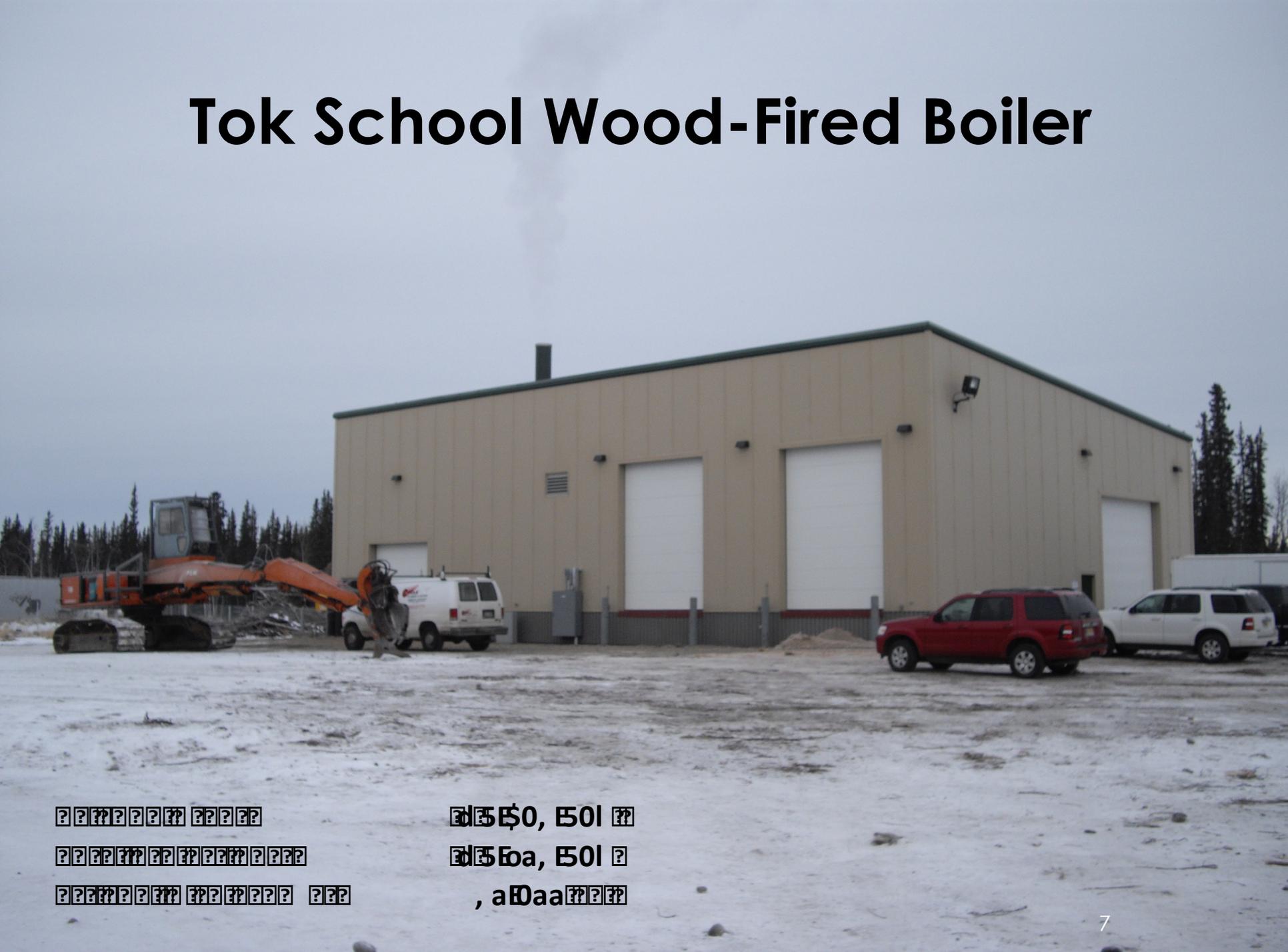


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Tok School Wood-Fired Boiler

Tok School Wood-Fired Boiler



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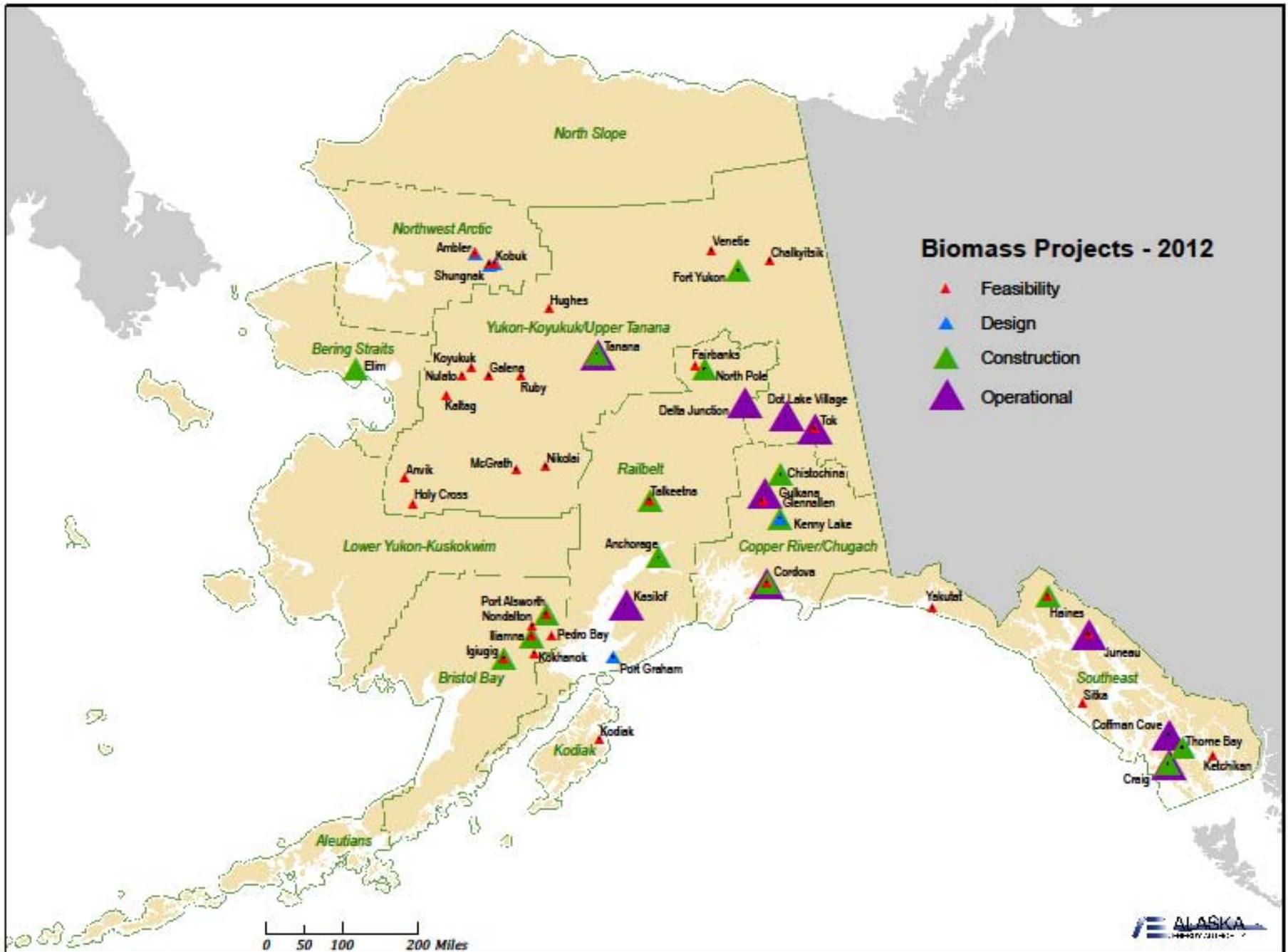
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Comparison of Technologies

Cordwood	Chips	Pellets
Manual Feed	Automatic Feed	Automatic Feed
Creates Local Part-time Jobs	Creates Local jobs	Potential Part-time job for pellet delivery (minimal)
Residential - Small Applications	Medium - Large Applications	Residential - Large Applications
Low Fuel Cost	Low Fuel Cost	Highest Fuel Cost
Low Operation/Maintenance Complexity	High Operation/Maintenance Complexity	Low Operation Complexity/ Mid Maintenance Complexity
Low Capital Cost	High Capital Cost	Low - Mid Capital Cost

Combined Heat and Power

- Production of electricity and useful thermal energy from a single source of energy
- Small scale biomass technology (less than 2 MW) is emerging
- Demonstration Projects
 - > Renewable Energy Fund
 - Cordova (Diesel)
 - Unalaska (Diesel)
 - Kotzebue (Diesel)
 - Chena Power (Biomass)
 - > Hoonah Micro-Scale
- Continuing to monitor technology development



Important Questions in a Biomass Project

- Is there a **sustainable** supply of biomass?
- Is there **community support** to operate and maintain a biomass heating or CHP system?
- Who is the community **champion**?
- Have all **energy efficiency** opportunities been completed?



Economic Development

- **Lowers energy costs, maintains cash flow within a community, and increases independence**
- Jobs Creation
 - > Construction
 - > Operation/Maintenance
 - > Harvest/Thinning/Resource Management
- Business Opportunities
 - > Equipment Suppliers
 - > Construction/Maintenance Services
 - > Heat Utilities
 - > Wood Pellet Manufacture
- Forest Products Industry Support
 - > Use for sawmill waste
 - > Use for forest health/thinning residue



Thank you

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Next Steps – Regional Planning

- Continue to conduct outreach to educate communities on heating opportunities
- **Incorporate Biomass and other heating options into the SEIRP**
- Initiate additional feasibility studies for biomass and diesel heat recovery
- Pursue partnerships and funding opportunities for design/construction of viable projects

District Heating Systems

- **Basic Infrastructure that provides heat to multiple buildings**
 - > Heating Source (diesel generator, biomass, etc.)
 - > Heat Exchangers
 - > Circulating pumps
 - > Underground piping
 - > Controls and Meters
- **Flexible**
 - > Can provide heat from multiple, different sources
 - > Power systems can be added in the future
 - > Can be expanded to grow with a community

Weighing your options

