

## Statement of Interest In Developing Wood-Fired Heating Projects

*Information from this form will be used in ranking your project for a pre-feasibility assessment that will be conducted by a contractor hired on behalf of the Alaska Wood Energy Task Group.*

*Not all applications can be funded*

Electronic copies of this form can be downloaded from the Alaska Energy Authority website at  
<http://www.akenergyauthority.org/biomasswoodenergygrants.html>

It is preferred that Statements of Interest are submitted electronically (via e-mail) but paper copies will be accepted via mail (no fax).

<b>Applicant:</b>	Fairbanks North Star Borough		
<b>Eligibility:</b>	<input checked="" type="checkbox"/> <b>Local Government</b> <input type="checkbox"/> School <input type="checkbox"/> State Agency <input type="checkbox"/> Not-For-Profit Organization <input type="checkbox"/> Federal Agency <input type="checkbox"/> Federally Recognized Tribe: <input type="checkbox"/> ANCSA Corporation: <input type="checkbox"/> Other: <input type="checkbox"/> Commercial Enterprise (identify industry sector):		
<b>Contact Name:</b>	Ben Loeffler		
<b>Mailing Address:</b>	1885 Marika Road		
<b>City:</b>	Fairbanks		
<b>State:</b>	AK	<b>Zip Code:</b>	99709
<b>Telephone:</b>	459-1335		
<b>Fax:</b>			
<b>Email:</b>	bloeffler@fnsb.us		

Please refer to Frequently asked Questions for more information on completing this Statement of Interest.

**Please respond to the following evaluation criteria: (Attach additional pages as necessary)**

**1. Please include a short paragraph on what your objectives are with this project.**

The Fairbanks North Star Borough (FNSB) seeks to engage with the Alaska Center for Energy and Power (ACEP) in a pilot project to examine the performance of a wood-fired hydronic boiler system at a borough-owned building. The objectives of the FNSB project will be similar to ACEP's Biomass Boiler Performance Evaluation Studies in Gulkana, Tanana and Delta Junction (for more information, please see: <http://acep.uaf.edu/projects/biomass-boiler-performance-evaluation-study.aspx>).

As part of its Economic Development Strategy, the Fairbanks North Star Borough seeks to find new ways to provide affordable clean energy in the FNSB and surrounding regions. FNSB would like to create an opportunity to demonstrate biomass heat generation and increase utilization of local sustainable biomass energy resources.

**Questions 2-3 are specific to individual buildings. Applications can include more than one building. PLEASE SUBMIT A COPY OF THIS PAGE FOR EACH BUILDING**

**Facility Identification/Name: PEARL CREEK ELEMENTARY**

**2. Facility information**

Approximate size (square footage) of building	62,982
Type of construction (wood, cement, etc.)	Steel/wood frame
Age of building	1983
What is building used for?	Elementary school
Has building had a recent energy audit?	2012 by AHFC
What is the age of the current heating system?	1983
What type of current heating system is in place? (Radiant, forced air, baseboard etc.)	Oil fired boilers, fin tube, unit heaters, glycol air handlers

**3. Current fuel situation**

Type of fuel used (#1 fuel oil, #2 fuel oil, propane, etc.)	#1
Annual fuel consumption (gallons)	15,088
Cost of fuel per gallon	\$2.85
Cost of electricity per kWh	20 cents

**Please attach other facility information that would be useful, such as Maps, Photographs, As-built Survey, etc.**

**Facility Identification/Name: WELLER ELEMENTARY**

**2. Facility information**

Approximate size (square footage) of building	65,259
Type of construction (wood, cement, etc.)	Block/steel/wood frame
Age of building	1983
What is building used for?	Elementary school
Has building had a recent energy audit?	2012 by AHFC
What is the age of the current heating system?	1983
What type of current heating system is in place? (Radiant, forced air, baseboard etc.)	Oil fired boilers, glycol air handlers, fin tube, unit heaters

**3. Current fuel situation**

Type of fuel used (#1 fuel oil, #2 fuel oil, propane, etc.)	#1
Annual fuel consumption (gallons)	11,583
Cost of fuel per gallon	\$2.83
Cost of electricity per kWh	20 cents

**Please attach other facility information that would be useful, such as Maps, Photographs, As-built Survey, etc.**

**Facility Identification/Name: TWO RIVERS ELEMENTARY**

**2. Facility information**

Approximate size (square footage) of building	22,200
Type of construction (wood, cement, etc.)	Block/wood frame
Age of building	1982
What is building used for?	Elementary school
Has building had a recent energy audit?	2012 by AHFC
What is the age of the current heating system?	1982
What type of current heating system is in place? (Radiant, forced air, baseboard etc.)	Oil fired boilers, glycol air handlers, fin tube, unit heaters

**3. Current fuel situation**

Type of fuel used (#1 fuel oil, #2 fuel oil, propane, etc.)	#1
Annual fuel consumption (gallons)	6,740
Cost of fuel per gallon	\$2.81
Cost of electricity per kWh	20 cents

**Please attach other facility information that would be useful, such as Maps, Photographs, As-built Survey, etc.**

**Facility Identification/Name: SALCHA ELEMENTARY**

**2. Facility information**

Approximate size (square footage) of building	13,608
Type of construction (wood, cement, etc.)	Wood frame
Age of building	1963
What is building used for?	Elementary school
Has building had a recent energy audit?	2012 by AHFC
What is the age of the current heating system?	1984
What type of current heating system is in place? (Radiant, forced air, baseboard etc.)	Oil fired boilers, glycol air handlers, fin tube, unit heaters

**3. Current fuel situation**

Type of fuel used (#1 fuel oil, #2 fuel oil, propane, etc.)	#1
Annual fuel consumption (gallons)	4,858
Cost of fuel per gallon	\$2.80
Cost of electricity per kWh	20 cents

**Please attach other facility information that would be useful, such as Maps, Photographs, As-built Survey, etc.**

**Questions 4 – 10 are general questions – answer only once per application – not required for every building.**

**4. Presence of high-hazard forest fuels** Describe any forest fires or insect outbreaks in the past 5 years:

- Discuss any activities to utilize dead/dying material:
- Discuss any activities or programs that would mitigate the effects of future fires or infestations:

Interior Alaska experiences annual wildfires that pose threats to FNSB communities. The forested areas around Fairbanks constitute a fire protection zone where active fire breaks and hazardous fuels reduction efforts are maintained. To the southeast, the 2012 Delta blow-down event created significant salvage areas, which pellet manufacturer Superior Pellets has a timber sale agreement in place to harvest.

**5. Resource Issues**

- Where would you plan on getting wood from?
- Discuss the ownership of nearby forest lands and any agreements there may be to harvest trees (live or dead) from those lands.
- Discuss the extent and sustainability of local forest resources and wood supply:
- Discuss wildlife habitat or other forest health issues you may have:
- Is there a LAND MANAGEMENT PLAN in place for the area of wood source?
- Do you have access to other wood (i.e. drift wood, wood pellets, bio bricks etc.)?

Boilers could be run on wood pellet or wood chip fuel purchased from Superior Pellet Fuels, LLC located between Fairbanks and North Pole. The Alaska Division of Forestry has a Forest Management Plan in place for the Tanana Valley State Forest (<http://forestry.alaska.gov/management/tvsfmp>). Maintenance of the Fairbanks fire protection zone produces biomass as part of hazardous fuels reduction efforts. The existing commercial lumber and firewood industry produces waste for conversion into wood pellet fuels. The local commercial wood pellet business, Superior Pellet Fuels, LLC has significant capacity.

**6. Availability of local wood processing residues (e.g., slabs, chips, bark, sawdust, shavings, etc.) -**

- List any known wood processors near your community. Include owners' names and contact information.
- What do those processors currently do with their residues?

Northland Wood Products is the borough's largest wood processing facility, and sells wood residue to Superior Pellet Fuels for processing into pellet logs. Northland is located at 4000 South Cushman St, Fairbanks, AK 99701 and their phone is 907.452.4000. Superior Pellet Fuels also processes raw timber from fire reduction and salvage harvests into pellets. Superior Pellets is located at 1595 Wescott Dr, North Pole, AK 99705 and their phone number is 907.488.6055.

## **7. Wood Fuel Availability**

- What type of woody biomass are you interested in for your system (pellets, chips, cordwood, etc)
- Provide anticipated cost for the woody biomass planned on being used.

FNSB is interested in considering both pellet and wood chip systems. Current commercial prices for wood pellets from Superior Pellet Fuels are \$275 per bulk ton, which Superior Pellet Fuels equates to \$19.60 per MMBTU in an 85% efficient boiler. They currently produce 3,000 tons annually, and have existing capacity to produce up to 35,000 tons annually. Wood chips are also available at \$70.50/ green ton spruce, \$59.40/ green ton other + delivery (\$5/green ton).

## **8. Discuss community support/advocacy, or which agency will be the project champion for this project**

- Please tell us about your community advocate (or advocacy group)
- Does your community have any other wood energy systems? If yes, please identify the system.
- Have you had any meetings to discuss wood energy?

The FNSB community has a long history of pursuing higher energy efficiency and lower cost sustainable energy. This community support is reflected in the initiatives of the local government to pursue energy projects in its facilities. FNSB has an active Stove Change-Out program to exchange inefficient wood stoves with high efficiency, low emissions units.

The Borough employs an Energy Management Engineer dedicated to pursuing the FNSB's energy goals. The Energy Management Engineer is now jointly funded with the Alaska Center for Energy and Power (ACEP), providing an important link between ACEP's expertise and the Borough's energy initiatives. The Energy Management Engineer will work closely with ACEP's biomass experts to champion this project and communicate its impacts to the community.

## **9. Please provide a narrative or description on how you see this project being operated and maintained in your community.**

This project will build on existing FNSB Department of Public Works expertise in facilities operation and maintenance. The project will be overseen by the Energy Management Engineer as a showcase project for successful biomass energy utilization in the Borough. The system will be operated and maintained by professional FNSB maintenance crews.

**10. Discuss what, if any, public benefit will result from this project.**

As the Fairbanks area works to improve its PM2.5 air quality issues, there is a lingering public association of biomass energy with inefficient pollution emitting wood stoves. This project offers the opportunity to publicly demonstrate the clean-burning high-efficiency operation of modern biomass boilers and the economic benefits of biomass energy compared to imported heating oil. Increased acceptance of wood pellet heating systems will have economic benefits both for the consumer, and the local wood pellet industry. Existing local pellet production has a capacity of 35,000 tons per year, well in excess of its current output of 3,000 tons per year. Future biomass heating may be integrated into recycling programs to compound the benefits of recycling efforts. Utilization of local sustainable energy resources will lessen the impact of future heating fuel price increases.

The Borough looks highly on the integration of biomass heating and education curriculum demonstrated in Southeast Alaska, and sees similar potential for integrating biomass and greenhouse projects in its schools. Pearl Creek Farm currently has a student run garden that grows produce for both use in the school and sale to the community.

**11. Please include any other information that should be considered for this project.**

Below is the FNSB analysis performed while selecting the candidate buildings. These four buildings offer a range of heating requirements that may be better suited to different size biomass systems. All have existing heating systems which are over 30 years old and due for replacement. Analysis is based on pellet fuel source, although chip fuels may prove more economical.

		School			
		Pearl Creek	Weller	Two Rivers	Salcha
Square Footage	sqft	62,982	65,259	22,200	13,608
Annual Fuel	gal/yr	15088	11583	6740	4858
Peak Month	gal/mo	4500	3600	2000	1700
Peak Month	MMBTU/mo	621	497	276	235
Peak Month Avg. Heating Rate	BTU/hr	862,500	690,000	383,333	325,833
Fuel Cost	\$/gal	\$2.85	\$2.83	\$2.81	\$2.80
<b>Annual Fuel Energy</b>	<b>MMBTU/yr</b>	<b>2082</b>	<b>1598</b>	<b>930</b>	<b>670</b>
<b>Annual Oil Cost</b>	<b>\$/yr</b>	<b>\$43,001</b>	<b>\$32,780</b>	<b>\$18,939</b>	<b>\$13,602</b>
Oil Boiler Efficiency		80%	80%	80%	80%
MMBTU Delivered	MMBTU/yr	1666	1279	744	536
Cost/MMBTU Delivered	\$/yr	\$25.82	\$25.63	\$25.45	\$25.36
Heating EUI	kBTU/sqft	33	24	42	49
Heating ECI	\$/sqft	\$0.68	\$0.50	\$0.85	\$1.00
Wood Boiler Efficiency		85%	85%	85%	85%
<b>Annual Pellets Required</b>	<b>tons/yr</b>	<b>119</b>	<b>91</b>	<b>53</b>	<b>38</b>
<b>Annual Pellet Cost</b>	<b>\$/yr</b>	<b>\$32,661</b>	<b>\$25,074</b>	<b>\$14,590</b>	<b>\$10,516</b>
<b>Expected Wood Cost</b>	<b>\$/MMBTU</b>	<b>\$19.61</b>	<b>\$19.61</b>	<b>\$19.61</b>	<b>\$19.61</b>
<b>Expected Annual Savings</b>	<b>\$/yr</b>	<b>\$10,340</b>	<b>\$7,706</b>	<b>\$4,349</b>	<b>\$3,086</b>

**Return Statement of Interest to:**

Karen Petersen  
University of Alaska  
Cooperative Extension Service  
P.O. Box 19190  
Thorne Bay, AK 99919  
(907) 821-2681  
[khpetersen@alaska.edu](mailto:khpetersen@alaska.edu)