



# COMMUNITY HEATING WITH LOCAL WOOD

## HAINES BIOMASS DISTRICT ENERGY

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**Southeast Conference**

September 21, 2017

Haines, Alaska

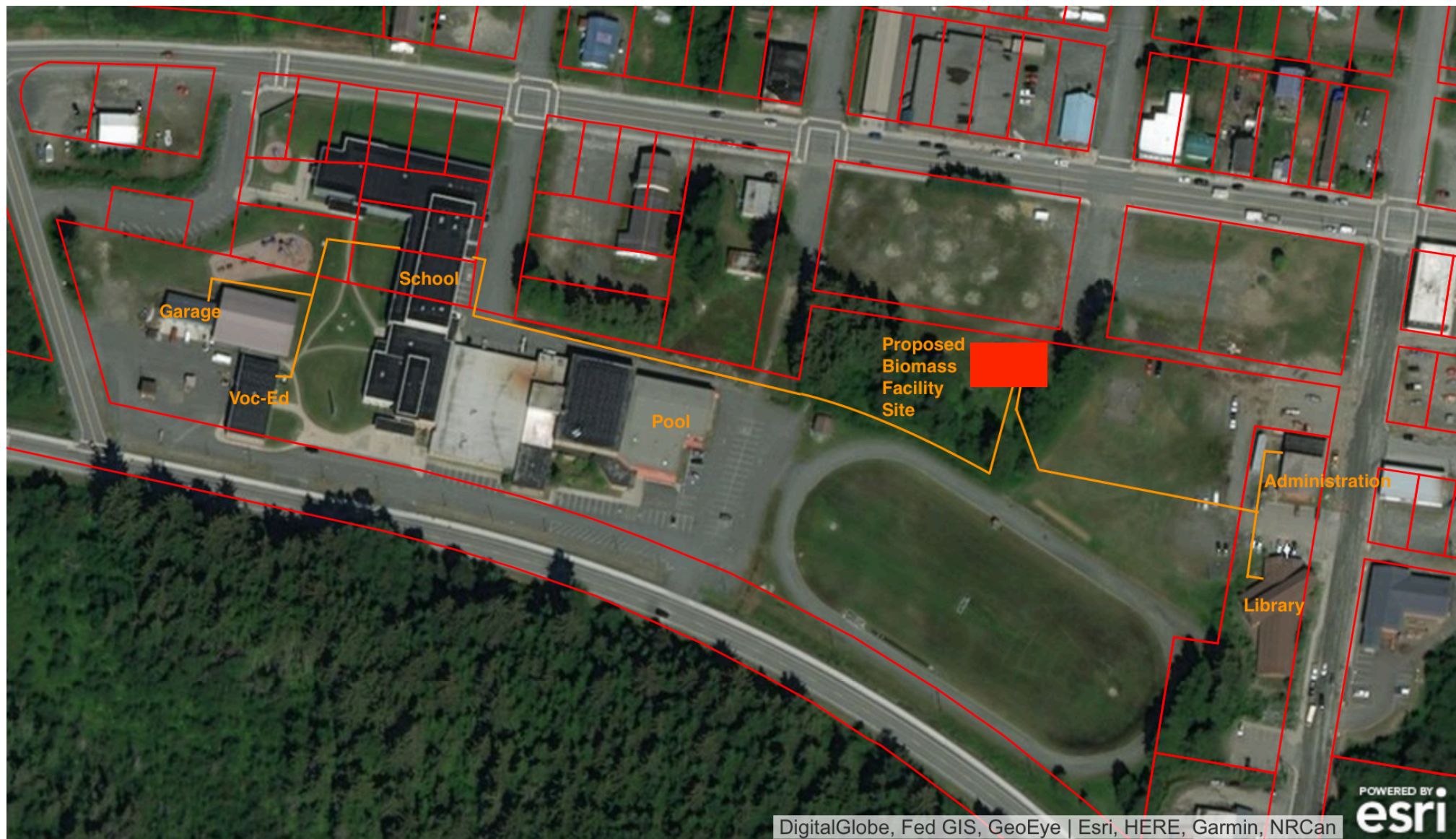




## PROJECT BACKGROUND



- **20XX Borough secures project funding:** construction through AEA and design through US Forest Service
- **2015 the Borough came into possession of ACT boiler equipment:** three boilers, two pellet silos and augers, and two thermal storage buffer tanks
- **2017 Borough retains Wisewood Energy to develop construction documentation** for a biomass boiler to serve the School, Pool, and future greenhouse
- **Borough objectives:**
  - Utilize existing ACT boiler equipment if possible
  - Enable use of pellets in the short-term, and locally-produced wood chips in the long-term
  - Consider inclusion of Library and Admin buildings for expanded district heating



WE

# COMPARISON OF BIOMASS BOILER TECH

BOILER TYPE	ACT CP 1350 and CP 1700 	VISSMANN PYROT 400 	VISSMANN PYROTEC 720 	FRÖLING TM400 	KOHLBACH K8 800 
OUTPUT CAPACITY	1.36 MMBtu/hr (400kW) 1.7 MMBtu/hr (500kW)	1.36 MMBtu/hr (400 kW)	2.46 MMBtu/hr (720 kW)	1.36 MMBtu/hr (400kW)	2.73 MMBtu/hr (800 kW)
NUMBER OF BOILERS NEEDED	2	2	1	2	1
FUEL SPEC	Wood pellets Wood chips: <30% mc, <1.25"	Wood pellets Wood chips: <35% mc, <2"	Wood pellets Wood chips: <50% mc, <2"	Wood pellets Wood chips:* <45% mc, <2-4"	Wood chips: <55% mc, <6"
BOILER COST ESTIMATE**	\$30-60,000 for refurbish	2 x \$250,000 = \$500,000	\$350,000	2 x \$150,000 = \$300,000	\$500,000
RECOMMENDED	No	No	No	Yes	No

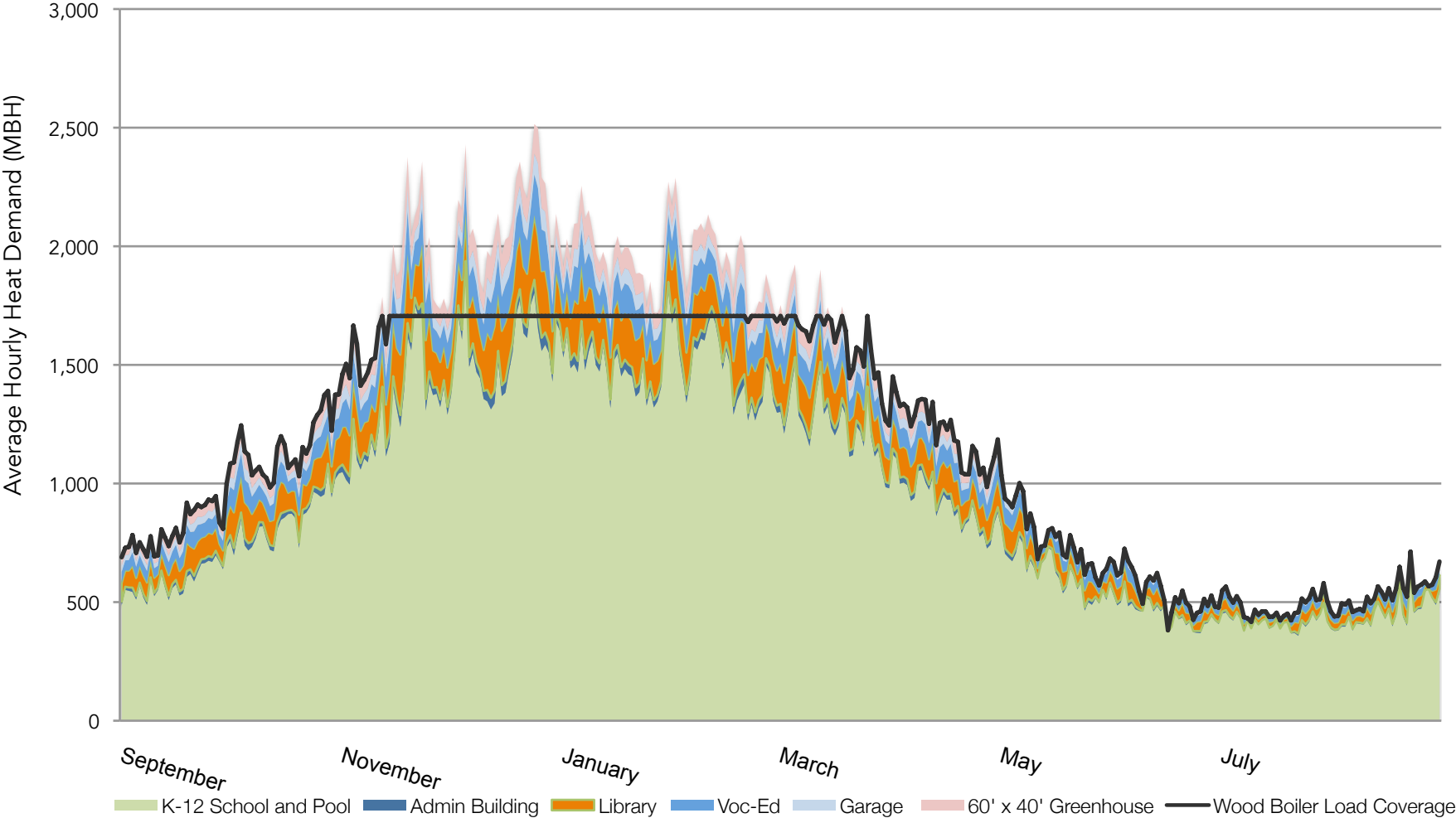
\*The Fröling TM400 can accept wood chips up to <4" with a hydraulic ram in-feed system.

\*\*Cost estimates are for boiler unit only, and do not include fuel storage feeding equipment.

Note: Boilers are rank ordered by fuel quality, from most refined fuel specification to most coarse.

# ENERGY ANALYSIS

## Estimated Heat Load Coverage by New Wood-Fired Boiler



# PRELIMINARY OPERATING COSTS

FACILITIES AVE. ANNUAL OIL USE (GAL)		AVE ANNUAL COST (\$) AVE ANNUAL HEAT DEMAND (MMBTU)	
FUEL OIL	\$140,300	WOOD FUEL	\$63,300
ELECTRICITY	\$23,600	ELECTRICITY	\$10,700
OPERATIONS	\$8,000	OPERATIONS	\$13,000
		TRIM FUEL (PROPANE)	\$10,500
<b>TOTAL</b>	<b>\$171,900</b>	<b>TOTAL</b>	<b>\$97,500</b>

ASSUMPTIONS			
OIL	\$3.17/GAL	PROPANE	\$2.00/GAL
ELECTRICITY	\$0.21/KWH	WOOD FUEL	\$130/GT

Approx. \$74,000 in savings estimated for year one

# **NEXT STEPS**

- **Evaluate impact of dropping buildings**
- **Execute contract for next scope of work**
- **Initiate detailed mechanical design**



WISEWOOD ENERGY

THANK YOU!

Technology in Service of  
Community and Environment



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