

# Washington's Wood Energy Team 2017 Update on Activities in the State



David Van Holde P.E.

Director - DOE NW Combined Heat and Power Technical Partnership  
Washington State University Energy Program  
November 2017



Energy Program

WASHINGTON STATE UNIVERSITY

# Who We Are: The Washington Statewide Wood Energy Team



And some 80 participants... Can't list them all!



Energy Program

WASHINGTON STATE UNIVERSITY

# K-12 School Pellet Demonstration

- \$500K state capital funds, managed by Commerce and WSU.
- Installation of pellet boilers at two schools in WA., replacing diesel



Northport School

- Northport and Woodland Schools
- School projects in design / bid phase



Energy Program

WASHINGTON STATE UNIVERSITY

# Other SWET Assessments – Pre Design

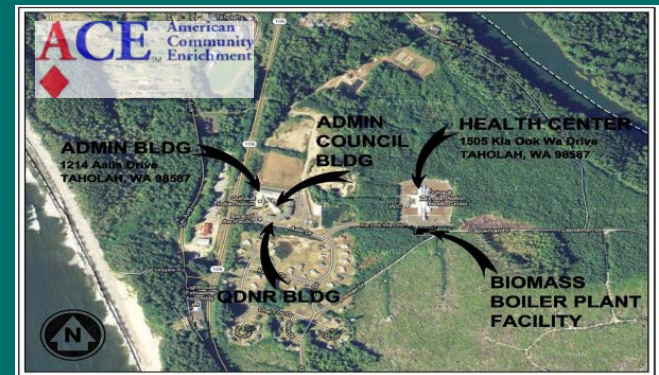
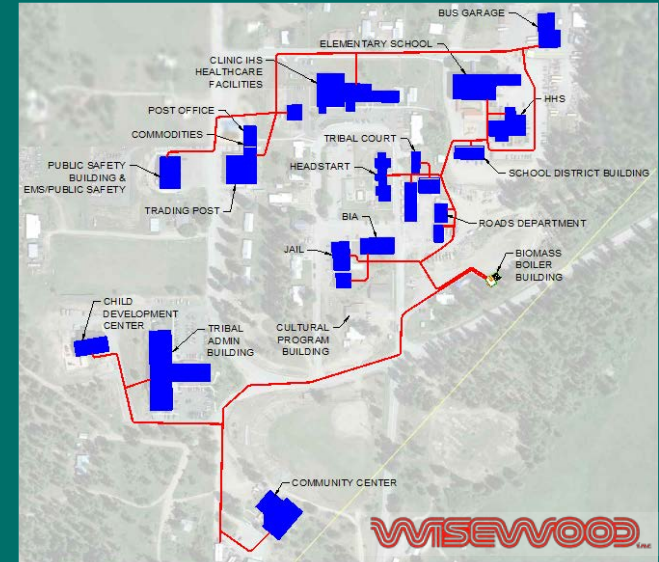
- Biomass Heating Feasibility Studies:
  - Town of Twisp (Okanogan County)
  - East Whatcom Regional Resource Center (Whatcom County)

	OPTION A	OPTION B	OPTION C	OPTION D
<b>SCENARIO DESCRIPTION</b>				
<b>HEATING CONCEPT</b>	Single building	Small scale district heating	Community scale district heating	Large scale district heating with future expansion
<b>PROPOSED LOCATION</b>	Town Hall	Town Hall	Town Hall or New Site	New Site
<b>BOILER RM AREA, SQ FT</b>	150	500	1000	2000
<b>DELIVERY FREQUENCY</b>	Monthly	Monthly/Weekly	Weekly	Weekly
<b>BIOMASS SYSTEM</b>				
<b>BOILER OUTPUT, BTU/HR</b>	200,000	500,000	1,700,000	3,000,000
<b>FUEL TYPE</b>	Pellets - imported	Clean Chip/Pellet – potential for local production	Wood Chip/Pellet – potential for local production	Hog Fuel – potential for local production
<b>FUEL COST, \$/TON</b>	\$175	\$75	\$60	\$30
<b>ENERGY PRODUCED, MMBTU/YR</b>	600	1500	5100	9000
<b>PROPANE EQUIVALENT, GAL/YR</b>	6,557	16,393	55,738	98,361
<b>OIL EQUIVALENT, GAL/YR</b>	4,348	10,870	36,957	65,217
<b>SYSTEM COSTS**</b>				
<b>EST. ROM PROJECT COST</b>	\$237,500	\$500,000	\$1,375,000	\$3,500,00
<b>AVOIDED COST</b>	\$50,000	\$125,000	\$250,000	\$500,000
<b>NET COST</b>	\$187,500	\$375,000	\$1,125,000	\$3,000,000
<b>EST. SAVINGS, \$/YR</b>	\$7,000	\$24,000	\$86,000	\$160,000
<b>EST. PAYBACK (NO INCENTIVE), YRS</b>	27	16	13	19
<small>*Costs provided for discussion purposes only.                      †Assumes conventional fuel cost of \$22.00/MMBtu, which is equivalent to the following:                      Propane: \$2.01/gal                      Heating oil: \$3.04/gal                      Electricity: \$0.08/Kwh</small>				



# Two Tribal Woody Biomass Projects: Quinault Nation (coast) & Spokane Tribe (interior)

- Designs in process:
  - Spokane Tribe: District heating facility to serve the village core of Wellpinit. Plan to ultimately connect 13 community buildings. Estimated use ~500 GT/yr. hog fuel sourced by local Tribal forest management
  - Quinault Nation: District energy serving 3 buildings Taholah village relocation for tsunami risk. Capacity for expansion as more buildings are constructed. Estimated use also ~500 GT/yr., of locally sourced slash/hog fuel.



# Not SWET – But Related and timely - 1,000 gallons of jet fuel from slash

-Northwest Advanced  
Renewables Alliance (NARA)

-Feedstock for the biojet is  
woody biomass from forest  
slash piles.

-Alaska Airlines used the  
fuel for a commercial flight  
from Seattle to Washington  
D.C. November 14, 2016



Energy Program

WASHINGTON STATE UNIVERSITY

# Washington Dept. Natural Resources: 20-Year Forest Health Strategic Plan

- Eastern Washington Plan - Goal 3:
  - Enhance economic development through implementation of forest restoration and management strategies that maintain and attract private sector investments and employment in rural communities.
  - *Support the development of wood energy systems at meaningful and appropriate scales.*

