



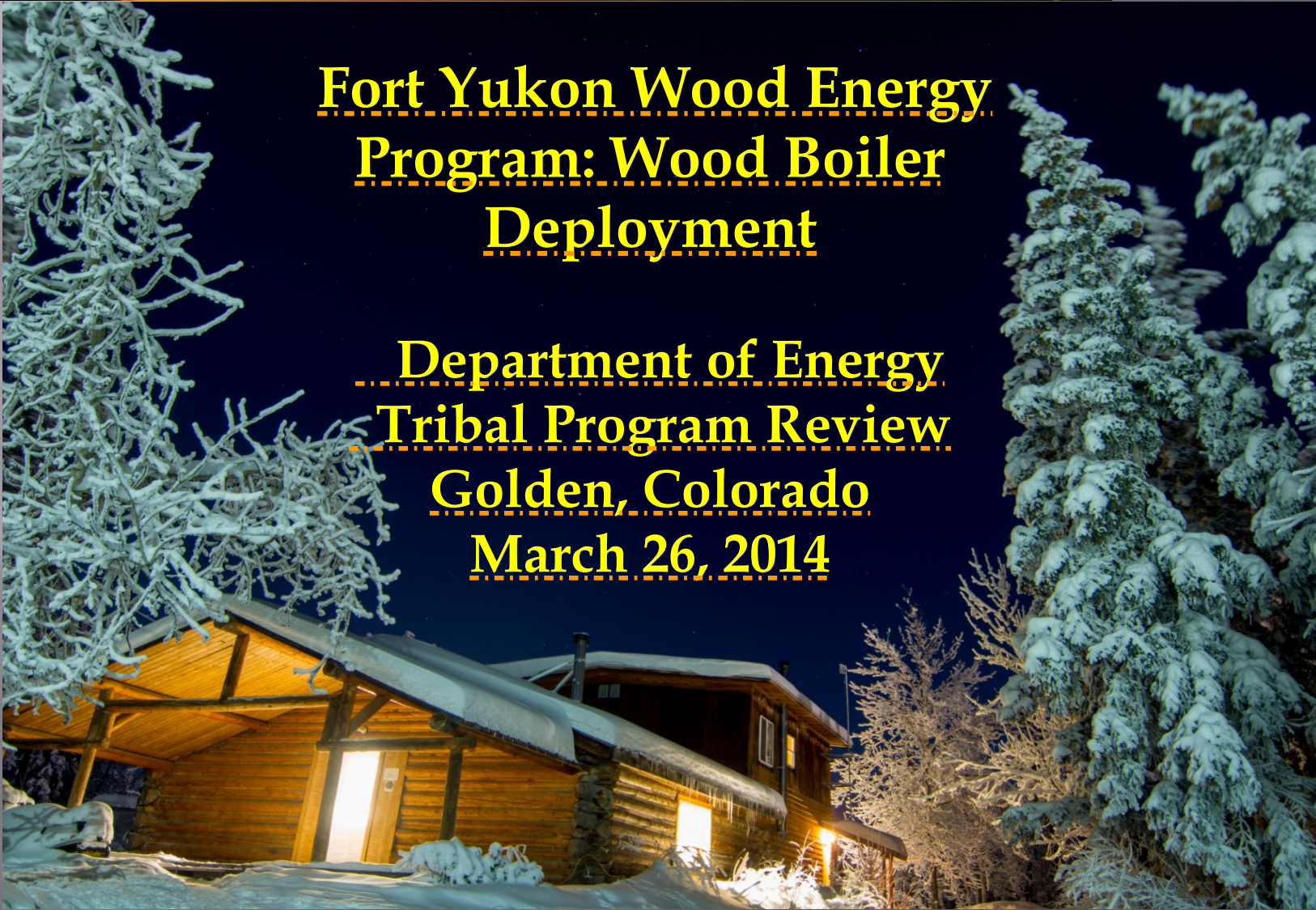
Council of Athabascan Tribal Governments

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CATG
Department of
Natural
Resources



Fort Yukon Wood Energy Program: Wood Boiler Deployment

Department of Energy Tribal Program Review Golden, Colorado March 26, 2014



Please contact
me for a full
list of citations.
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Our Organization



CATG is a consortium of 10 Gwich'in and Koyukon Athabascan tribes located throughout the Yukon Flats. Arctic Village, Beaver, Birch Creek, Canyon Village, Chalkyitsik, Circle, Fort Yukon, Rampart, Stevens Village and Venetie are the remote villages comprising CATG. The Yukon River and its tributaries, including the Porcupine, Chandalar, Birch Creek and Black Rivers, tie the people of the Yukon Flats villages together.



Where is Fort Yukon, Alaska?

The Village of Fort Yukon is located 8 miles North of the Arctic Circle.



Only accessible by boat during the summer, snow machine during winter, and plane. The FYU Biomass Project will be the first off grid, off road system biomass CHP in the world.

Why the Need?

Power Costs In Alaska Are Among The Highest The Nation

Gasoline = Ranges from \$7.50- \$8.50 per gallon . No 1 Diesel = \$7.00 per gallon .
Average house hold cost for oil = \$3,500 per year . Oil cost per year for school = \$210,000
Fuel cost for electrical generation = \$1.4 M
Cord Wood = \$275 - \$300 per cord
Kwh = \$0.51 (rate increase coming)
Propane = \$193 per 100 lbs tank



Project Objectives

- First off grid, off road system biomass CHP in the world
- New Power House (CHP) Facility construction
- Wood Chip Boiler
- District Heating loop providing heat to commercial buildings
I.e. School, AC, Radio Station, Water Plant, etc.
- Sustainable Forest Management program
- Create a for profit in-village wood energy utility to displace diesel energy
- Support training needs for field forestry technicians and supports workshops for education on key biomass issues for Fort Yukon and the Yukon Flats Villages.



Project Partnerships

Council of Athabascan Tribal
Governments (CATG)
Gwitchyaa Zhee Corporation (GZ Corp)
Alaska Village Initiatives (AVI)
Department of Energy (DOE)
Denali Commission
Alaska Energy Authority (AEA)
State of Alaska Division of Forestry (DOF)



Money Talks

This Project has multiple funding source (9.8million secured)

Planning/Trainings/Permitting (3 Million)

Final Design and Construction (6.8 million)

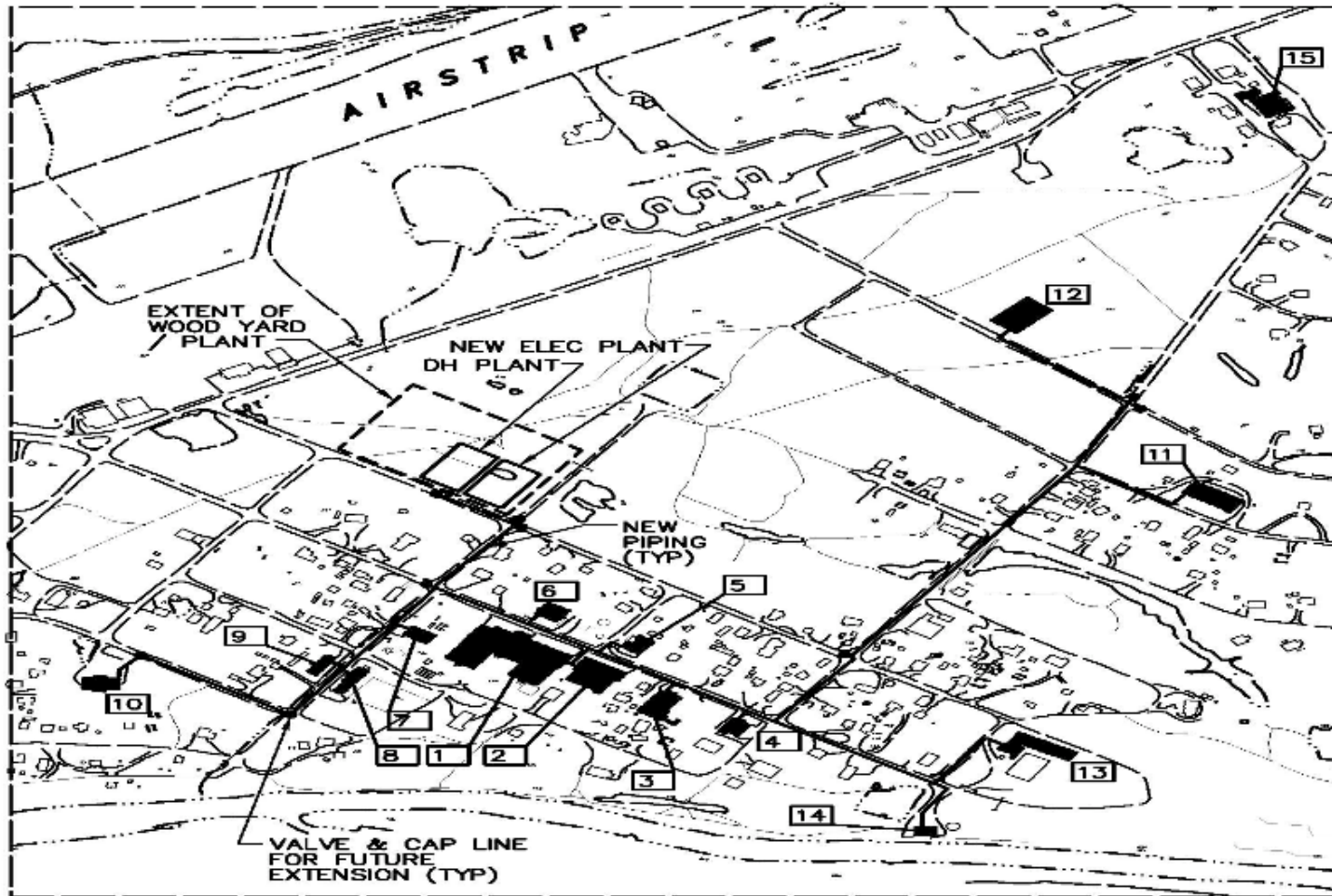
Construction Funding

Rural Utility Services (RUS \$3.5 million)

AEA Rural Energy Fund \$2.3 Million

DOE Tribal Energy Fund 990,000

The Loop



MAX PLANT 1
NTS



- | | | |
|----------------|--------------------|---------------------|
| 1. SCHOOL | 6. STATE BLDG | 11. CITY BLDG |
| 2. GYM | 7. SHOP | 12. NEW CATG CLINIC |
| 3. STORE | 8. DISTRICT OFFICE | 13. TRIBAL OFFICES |
| 4. POST OFFICE | 9. CHURCH | 14. WATER TREAT |
| 5. CATG OFFICE | 10. YUKON FLATS | 15. OLD CATG CLINIC |

Plans Change

CHP District Heating System End Users

Building	Fuel Usage (gal)
State Building (Court House)	6,158
KZPA Radio Building	4,000
School	17,000
School Gym	8,000
School Shop	3,000
School Administration Building	4,000
AC Store	4,000
Post Office	2,532
City Water Treatment Plant	18,000
Tribal Administration Building	2,000
Arctic Circle Baptist Church	760
Armory	1,000
UAF Building	8,073
Total	78,523

The five buildings, below, were evaluated to be served by extending the district heating system to the CATG Clinic. The total estimated fuel use of these five buildings is 19,800 gallons/year. However, based on modeling of the district heating system, it was realized that the piping heat losses and additional pumping energy to the heat these buildings is equivalent to 16,500-gallons/year of heating fuel - which is nearly equal to the total fuel use of the five buildings. To serve this heating load from the district heating system would require an additional 700-tpy of chips, of which over 300-tpy would be wasted in losses. So, rather than cut down an additional 25-acres of trees to heat the ground, a distributed chip-fed boiler will be installed at the Clinic to meet the current and future Clinic complex heating loads.

CATG Loop District Heating System End Users

Building	Fuel Usage (gal)	Future Use (gal)
City Office/Shop	6,000	
CATG Clinic	8,000	8,000
CATG Education Building	1400	
CATG Nat. Resource Building	1400	
GZ Corporation Office	3000	
Total	19,800	

Forestry Technician Training :

Forestry Technician Training

- September 23-27th, 2013.
- Measure portion of Harvest Area 1 near Ylotta Slough

Involvement

- Fort Yukon tribal members and Salish Kootenai Tribal College
 - basic forest skills - DBH tree measurement, GPS, and data collection.





- Why:
- Develop forest technician work force.
 - Apply field data collection, and best practices
 - Maintain sustainable harvest



Harvest Equipment Operator and Safety Training

November 4th – 7th : Classroom instruction, field time instruction, and FRPA training.

Selections based on:

- Previous experience
- Attentiveness
- Safety Awareness
- Work Ethic
- Comradery
- Common Sense

Overall Objectives:

- Operational Safety
- Operational efficiency
- Regulatory compliance



Gerald James pictured above (Fig 5) operating the Kubota
Pictured below (Fig 6), Cynthia James training on the New Holland.

Classroom Instruction and Equipment Analysis

Special thank you to all of the agency representatives who joined us in Fort Yukon!

AEA
AVI
DOF
GZ Corporation
Don Ryan
Stuart Marquardt
Shawn Champagne



Fig 1: William Wall, Alaska Village Initiatives, introduction and history of project to FYU equipment operator class.



Fig 2: Devany Plentovich, Alaska Energy Authority and Stuart Marquardt, Equipment and safety instructor.



Fig 3: Don Ryan, owner of Ryan's Equipment



Pictured L-R Fig 4:
James Durst AK Dept. Fish and Game, Bill Wall, Devany Plentovich, Don Ryan, Stuart Marquardt, Shawn Champagne Tok equipment operator, Mike Reggear, AK Division of Forestry

Equipment Training

New Holland Tractor and Kubota

Kubota Training:

- ❖ Cutting and Loading Capabilities
- ❖ Maintenance
- ❖ Falling Debris
- ❖ Proper timber cutting layout



Fig 8: Kubota KX080-3 with Ryan's Equipment 12" Feller Bunching Shear



Fig 7: New Holland TV 6070 mounted with 3 point hitch Tractor Mounted Crane (Nokka 4472)

New Holland Training:

- ❖ Safety
- ❖ Maintenance
- ❖ Proper functions, in the woods and around other machinery and hazards.
- ❖ Proper log skidding techniques.

Field Operator Training

- ▣ Harvest Equipment Operator and Safety Training
 - November 4th – 7th :
 - 3 days of classroom instruction, field time instruction, and FRPA training.
 - 23 people trained
 - Overall objectives
 - Operational Safety
 - Operational efficiency
 - Regulatory compliance



Pictured left to right, Cynthia James and Gerald James during operator training.

Harvest Process Development

Activities Associated with Biomass

- Harvesting, piling, drying, transporting, and chipping
- Weather Conditions
- Harvest Sites
- Transportation
- Safety

Outcomes:

- Train people
- Start harvest
- Data collection
- Document the process





Now What?

Once a program has been established in Fort Yukon, it is the intent of CATG Natural Resource Department in collaboration with the Village Tribes, Native Corporations and Private Lands to support the installation of programs in each of the villages in the Yukon Flats Region. The model program being developed in Fort Yukon will serve as the basis for all projects in interior Alaska.

Conclusion

There is no right or wrong.

Establishing key individuals
in your community.

Learn by doing-there will
always be room for
improvement.



“Indigenize It”



Council of Athabascan Tribal Governments

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Acknowledgements

Department of Energy (DOE)

Alaska Energy Authority (AEA)

Denali Commission

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Jeff Graham Stewardship Coordinator State
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Gwitchya Zhee Corporation (GZ Corp)

**We greatly appreciate contributions and partnerships
from the above agencies!**