

Turning Residual Wood Into Energy



Presenter:
RAY GREENE

GOALS

Develop Strong Local Biomass Energy Initiatives in order to...

- Dramatically reduce fossil fuel use
- Utilize extensive available residual wood
- Reduce energy costs
- Establish some energy independence

BACKGROUND



- In 1995 BC Government shut down beehive burners across province
- Results of this closure in small communities throughout BC...
 - 30% job loss
 - return to open burning of residual wood
 - no air quality improvement
 - 1000's of **tons** of potential carbon neutral fuel still being wasted
- Recent national fossil fuel reduction incentives support **clean sustainable** wood-burning energy production

OPEN BURNING DID NOT IMPROVE AIR QUALITY



SUSTAINABILITY



=



- 2 Kg of wood shavings produce 25,000 BTUs of energy
- A 1L propane canister produces 25,000 BTUs of energy
- Both are powerful energy sources, but only one is sustainable

Example of Community Initiative: School Heating

BC Municipality



Municipality forms Energy Committee

- 1 Decision made to form Energy Supply Company*
- 2 Energy Supply Company (ESCO) formed*
- 3 Recommended that ESCO Board Members not be elected officials of the Municipality, School District or Regional District*

Energy Committee



Energy Supply Company

Energy Committee explores Alternative Energy Opportunities



School District

To save funds and reduce fossil fuel use, the local School District becomes an energy customer

HOW ESCO WORKS

- **ESCO GETS THE FUEL**

- FUEL SUPPLY CONTRACT
- Coordination of fuel processing, preparation, storage and delivery
- Residual wood in the form of chips or pellets

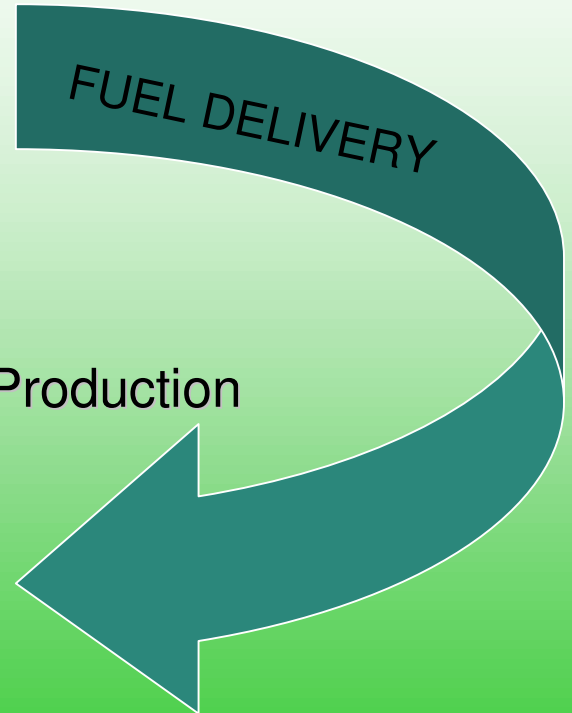
- **THE CLIENT GETS THE BENEFIT**

- ENERGY SUPPLY CONTRACT
- e.g. School burns 100,000 liters of propane per heating season
- The same BTU value can be supplied from residual wood
- Existing systems would require minimal modification to install a “best available technology” heating system

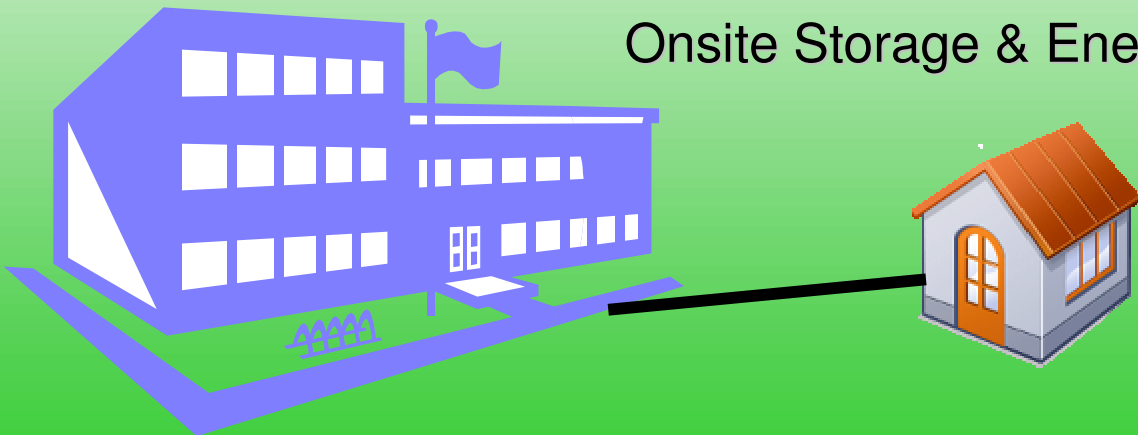
The Procedure



Processing and storage

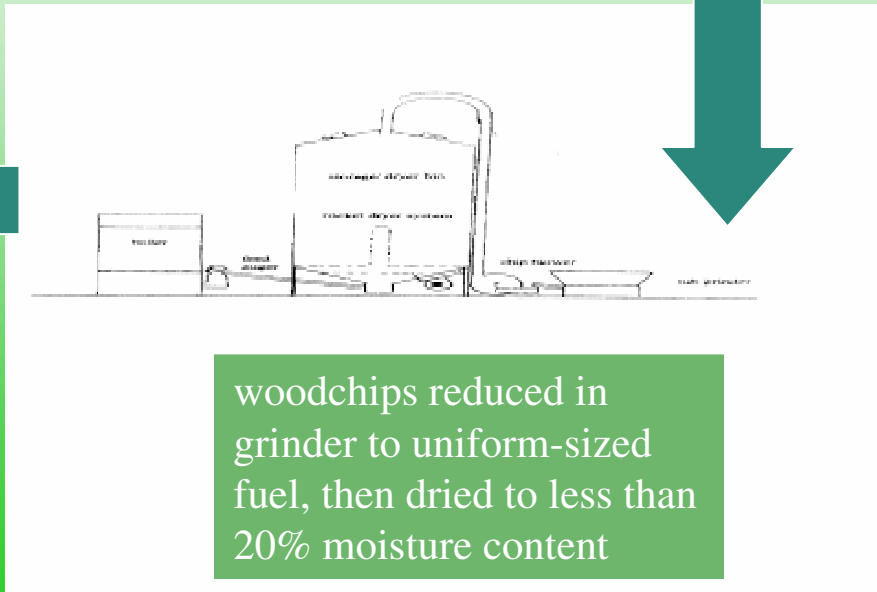


Onsite Storage & Energy Production

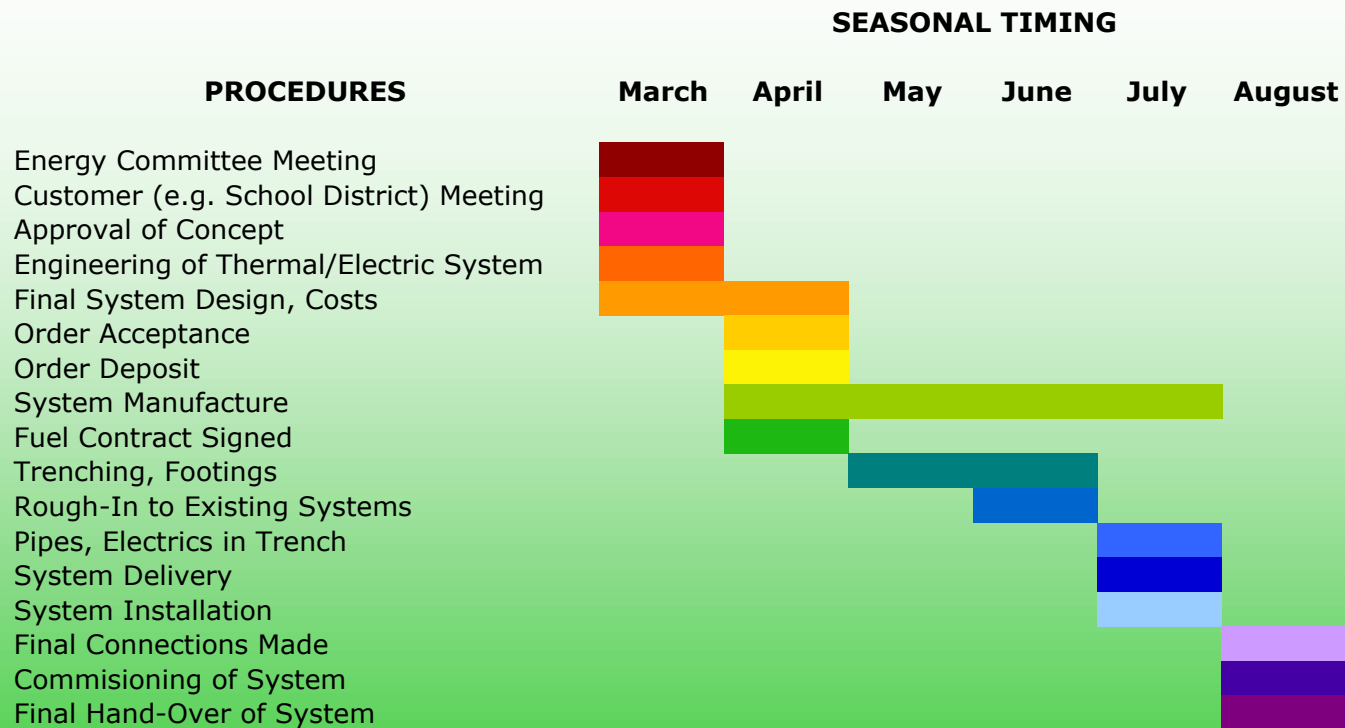


Biofuel hot water system connected to existing boiler

FROM WASTE TO FUEL



EXAMPLE OF BIOFUEL ENERGY PROJECT PLANNER



EXAMPLE OF AVAILABLE LOCAL RESIDUAL WOOD



EXAMPLE OF AVAILABLE LOCAL RESIDUAL WOOD



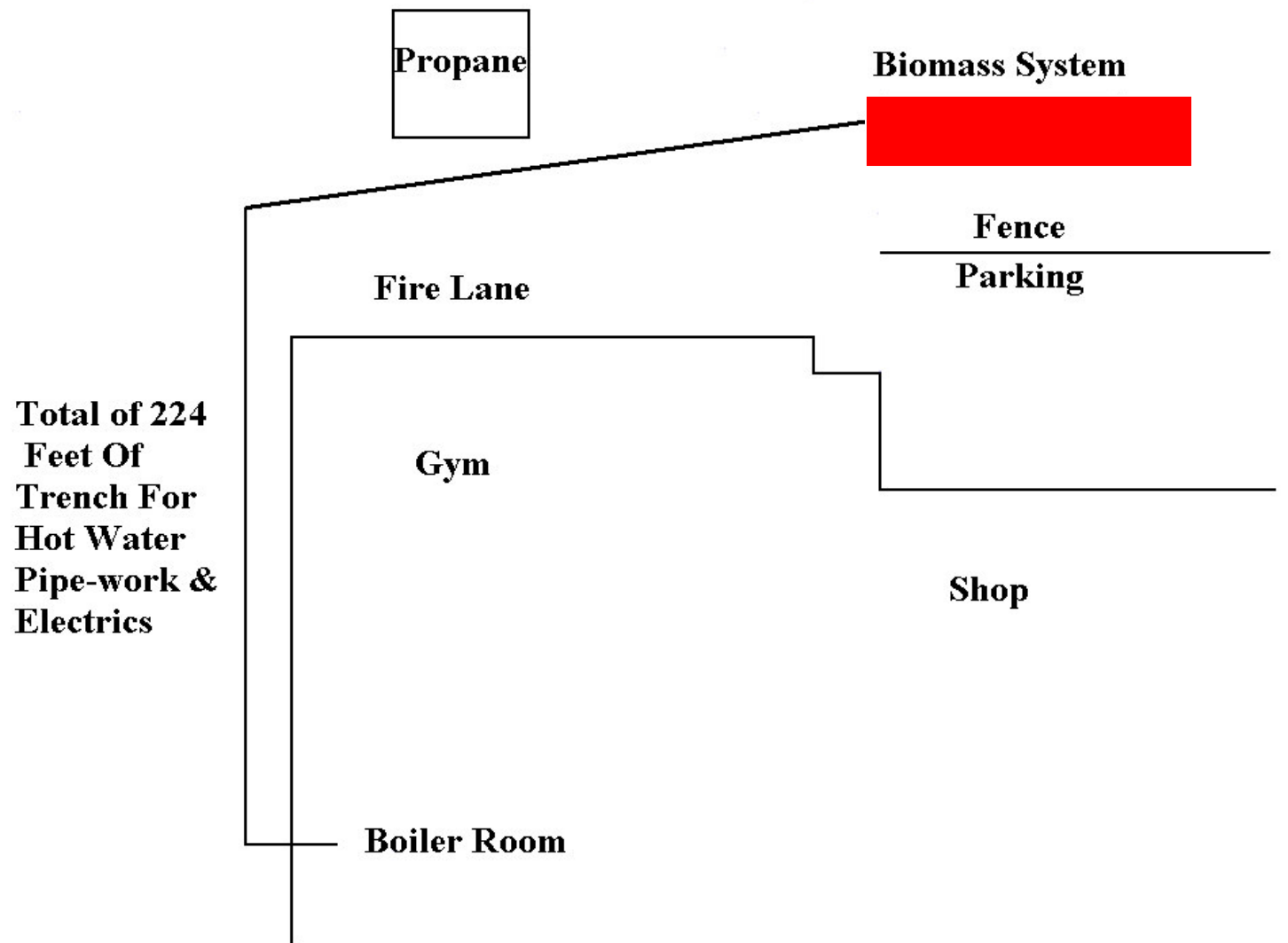
EXAMPLE OF AVAILABLE LOCAL RESIDUAL WOOD



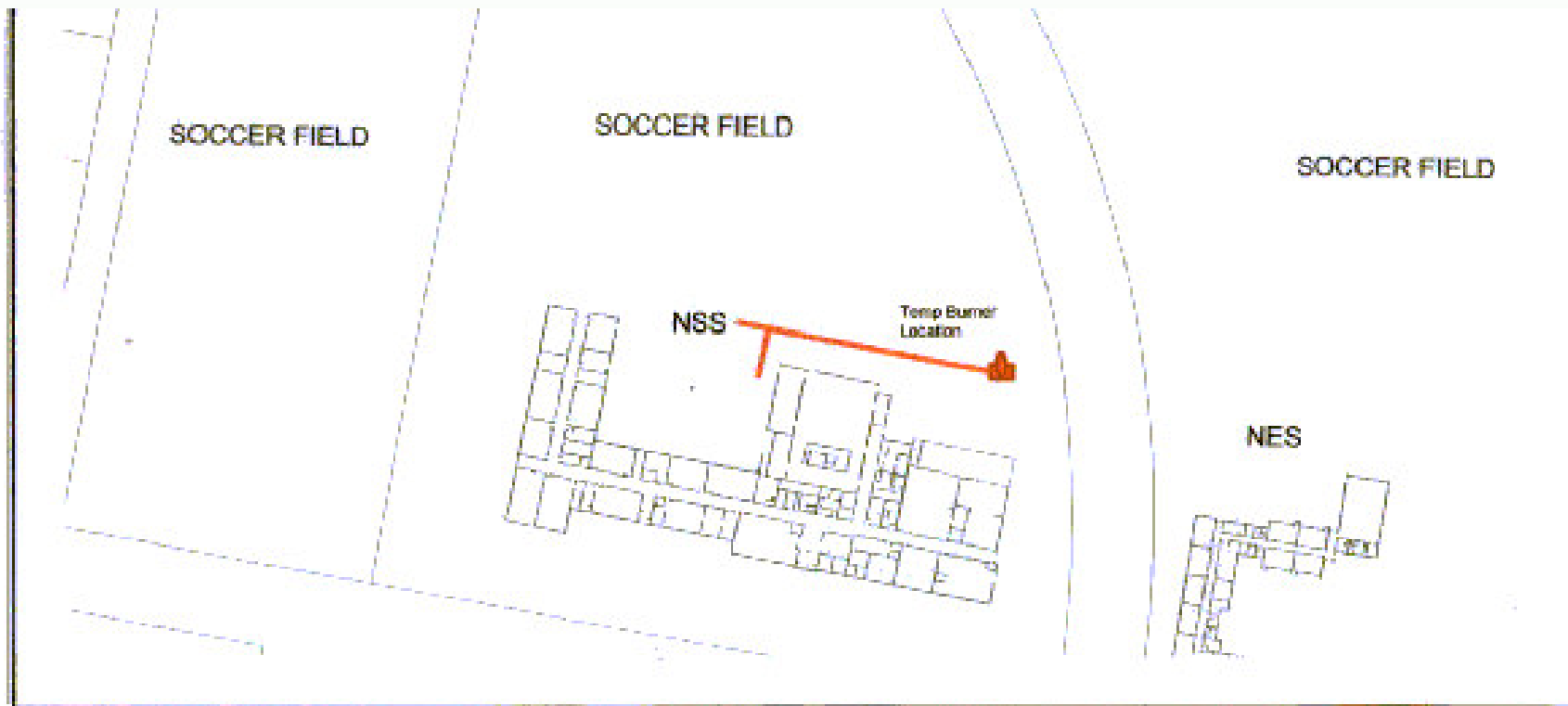
NAKUSP HIGH SCHOOL



NAKUSP HIGH SCHOOL SYSTEM



NAKUSP HIGH SCHOOL SYSTEM



Nakusp Energy Systems

Phase I : Temporary Burner Location on Secondary School. Construct pipeline to NSS. (noted in red on the map.)

SELECTING A VENDOR

- Pre-feasibility Analysis
- Request for Proposals



NAKUSP'S CHOICE: ENERGY CABIN

This Energy Cabin installation heats a 1200 m² nursing home via underground pipes



Energy Cabin Close-up Outside

- Solar panels to capture extra heat
- Low visual profile
- Surpasses existing and proposed BC Air Regulations



Energy Cabin Close-up Inside

Wood fired boiler



Fuel storage room beside boiler



- 1,500 liter water storage tank acts as a heat reservoir
- Compressing ash box to be emptied every 2-6 weeks

Installation at Nakusp High School



Example of Available Combined Heat & Power (CHP) System



EXISTING INCENTIVES

- Carbon Credits
- Potential federal and provincial government support and/or subsidies
- Federation of Canadian Municipalities support programs
- Present 90% capital cost benefit for school installations in Vermont

QUESTIONS?

THANK YOU!

Contact: 250-265-9950