Feasibility Analysis
For Biomass Heat Utilization
Project Approach

- Supply Infrastructure
- Demand Analysis
- Technology
- Environmental/Cultural
- Economic Analysis
Issues Committee Members

- Jean Matt – Forestry Department
- Ron Swaney – Fire Control
- Randy Ashley – NRD (Air Quality Program Manager)
- Marlene McDanal – NRD (Solid Waste Manager)
- Robert Matt – Job Corps (Maintenance Manager)
- Virgil Dupuis – SKC (MSU Extension Agent)
- Tony Garcia – Two Eagle (Maintenance Manager)
Biomass Supply

- Local Mills
  - Plum Creek
  - Dupuis Lumber Company
  - Foothill Post and Pole
  - Hunts Timbers
  - Western Bee

- Forestry Operations
  - Logging Operations Slash
Demand Analysis

- Candidate Existing Buildings
  - St. Ignatius Tribal Health
  - Kicking Horse Job Corps
  - KwaTaqNuk Resort
  - Forestry Greenhouse
  - Two Eagle River School
Demand Analysis

- Potential New Construction
  - St. Ignatius Tribal Health Expansion
  - Future Polson/Ronan Tribal Health Building
  - Future Forestry Greenhouse Application
  - Proposed NRD/Forestry Building (Ronan Airport)
  - Proposed Per-release Center
  - Planned SKC Building Expansion
  - Clustered building complexes
Technology

- Candidate Technologies
  - Messersmith
  - Chiptec
  - PSE
Environmental and Cultural Considerations

- Emissions
- Solid Waste
- Traffic
- Cultural Committees Input
CHART 1

Pollutant Emission Rates for Wood Boilers and Fire Activities

- Particulate Matter
- Nitrogen Oxides
- Carbon Monoxide

Pound of pollutant emitted per ton of wood burned

- Darby Wood Boiler
- Thompson Falls Wood Boiler
- Wildfire
- Prescribed Burning
- Slash Pile Burning
Project Economic Viability Assessment

- Base Case Model
- Sensitivity Analysis
## Project Cost

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Combustion and Fuel Preparation Equipment</td>
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<tr>
<td>Buildings and Ancillary Equipment</td>
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<td>Financing Fees / Construction Interest</td>
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<td>Miscellaneous / Contingency</td>
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<tr>
<td>Construction</td>
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<tr>
<td>Mobilization / Operations / Startup</td>
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<tr>
<td>Owners CM / Insurance</td>
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<td>Working Capital</td>
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<td><strong>Total Investment</strong></td>
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<td>Subsidies/Grants</td>
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<tr>
<td><strong>Total Investment less Grants</strong></td>
<td><strong>$262,250</strong></td>
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Financing
Equity  25%
Equity  $65,560
Debt  75%
Debt  $196,690
Term  15 yrs.
Interest Rate  6%

Evaluation Starting Year  2010
Evaluation Period (yrs)  20
Annual Fuel Savings ($)  $14,000
Annual Electric Savings ($)  $25,000
Annual Slash Management Savings ($)  0
Fuel Usage (tons/yr)  400
Fuel Price ($/ton)  $25
Years to Payout  7
IRR  14.45%
NPV  $24,815
Subsidies/Grants  $85,000

12/7/2008