Fort Yukon: Biomass Project

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Integrated Biomass Program

Community Biomass Utilization Program

- Rural Economic Development
- Energy Cost Reduction
- Environmental Improvement
- Habitat Enhancement
- Wildfire Mitigation
Overview of Project:

- First off grid, off road system biomass CHP in the world
  - 8 miles north of the Arctic Circle
- New Power House
- Wood Chip Boiler
- District Heating loop providing heat to commercial buildings
  - I.e. School, AC, Radio Station, Water Plant, Clinic, etc.
Organizational Overview:

- Council of Athabascan Tribal Governments (CATG)
- Gwitchyaa Zhee Corporation (GZ Corp)
- Alaska Village Initiatives (AVI)
- Alaska Energy Authority (AEA)
- State of Alaska Division of Forestry (DOF)
## How much money will be spent?

<table>
<thead>
<tr>
<th>Funder/Grantee</th>
<th>Amount</th>
<th>Source</th>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denali Commission (DC) / Alaska</td>
<td>$808,805</td>
<td>Round “zero” Renewable Energy Fund</td>
<td>Grant Secured - Match in place - Harvest Equipment</td>
</tr>
<tr>
<td>Energy Authority (AEA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC / Alaska Village Initiatives (AVI)</td>
<td>$258,300</td>
<td>Economic Development Program</td>
<td>Training and Tech Support and Harvest Plan</td>
</tr>
<tr>
<td>DC / AEA</td>
<td>$60,000</td>
<td>Energy Program Planning/Design</td>
<td>Comprehensive Energy Business Plan including Rural Power System Upgrade (RPSU), heat utility/wood harvest, biomass diesel hybrid power and integrated district heat system. 1st draft completed</td>
</tr>
<tr>
<td>AEA</td>
<td>$210,000</td>
<td>Final Design Funds AEA</td>
<td>In conjunction with DOE and is match</td>
</tr>
<tr>
<td>DOE</td>
<td>$210,000</td>
<td>Phase 1 80% design DOE</td>
<td>In conjunction with AEA and is match</td>
</tr>
<tr>
<td>DOE / CATG</td>
<td>$990,000</td>
<td>Renewable Energy DOE</td>
<td>Construction or other support functions needs 1:1 Match</td>
</tr>
<tr>
<td>AEA / GZ</td>
<td>$2,300,000</td>
<td>REF Round (3) AEA</td>
<td>Construction Funds</td>
</tr>
<tr>
<td>GZ Cash</td>
<td>$300,000</td>
<td>Cash GZ</td>
<td>Company start up fundfs</td>
</tr>
<tr>
<td>DC / AEA</td>
<td>$280,000</td>
<td>RPSU Program</td>
<td>Diesel powerhouse design &amp; CHP BOP</td>
</tr>
<tr>
<td>AEA / Power House funding</td>
<td>$3,500,000</td>
<td>Awarded from USDA - NEPA needs to be done</td>
<td>Diesel powerhouse construction</td>
</tr>
<tr>
<td>GZ Match Land and Building</td>
<td>$400,000</td>
<td>GZ Corp</td>
<td></td>
</tr>
<tr>
<td>$9,317,105</td>
<td></td>
<td>Total Funding Secured</td>
<td></td>
</tr>
</tbody>
</table>
Responsibilities

- Who is responsible for what?
  - Harvest process development
  - CATG
  - Harvest Execution
  - GZ Corporation
  - Construction
  - AEA
Current Status:
Harvest Process Development

- Train people
- Start harvest
- Data collection
- Document the process
Forestry Technician Training:

- Forestry Technician Training
  - September 23-27\textsuperscript{th}, 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
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 Daniel Carroll during operator training.
Application

- Two Phase training
- FRPA compliance
  - Doug Hanson and Mike Reggear, Division of Forestry
  - James Durst, Alaska Department of Fish and Game
  - Devany Plentovich, Alaska Energy Authority
  - William Wall, Alaska Village Initiatives

Equipment capabilities
- Stuart Marquardt, Equipment Specialist
- Shawn Champagne, Biomass Equipment Operator
  Tok, Alaska
- Don Ryan, Ryans Equipment, Inc.
Biomass Harvesting

- Activities
  - Harvesting, piling, drying, transporting, and chipping
  - Weather Conditions
  - Harvest Sites
  - Transportation
  - Safety
Harvesting to date:

• Learning the harvest process: adaptive management
  • Harvest Area 1: Ylotta Slough ~10 acres (so far)
  • Training and Storage Site @ Quonset Huts ~3 acres down
• Harvest Time & Capability
• Basic Data
  • Harvest per acre/day
  • Fuel consumption
  • Man hours per day
  • Tons per acre
  • Tons per day
Next Steps:

- Universal process?
- How do you collect data?
  - Data collection
    - Scientific ideals vs. practical realities
Conclusion

“Indianize It”
learn by doing—continuous improvement
Acknowledgements

• Alaska Energy Authority (AEA)
• Alaska Village Initiatives (AVI)
• Council of Athabascan Tribal Governments (CATG)
• Jeff Graham Stewardship Coordinator State of Alaska Division of Forestry (DOF)
• Gwitchya Zhee Corporation (GZ Corp)

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