Biomass Energy Feasibility Study
for the Red Lake Band of Chippewa Indians

Presentation to U.S. Department of Energy, Tribal Energy Program
Kick-off Meeting

November 19, 2003
Location
## The Resource

**SUMMARY OF THE RED LAKE RESOURCE BASE**

<table>
<thead>
<tr>
<th>Forested Area by Species Group</th>
<th>Annual Allowable Cut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspen/Birch</td>
<td>98,710 acres</td>
</tr>
<tr>
<td></td>
<td>36,625 cords</td>
</tr>
<tr>
<td>Red/White Pine</td>
<td>10,364 acres</td>
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<td></td>
<td>3,253</td>
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<tr>
<td>Swamp Conifer</td>
<td>66,630 acres</td>
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<tr>
<td></td>
<td>11,274</td>
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<tr>
<td>Swamp Hardwood</td>
<td>50,836 acres</td>
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<tr>
<td></td>
<td>9,875</td>
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<tr>
<td>Upland Hardwood</td>
<td>33,561 acres</td>
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<td></td>
<td>1,698</td>
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<tr>
<td><strong>Total Forest</strong></td>
<td>260,101 acres</td>
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<tr>
<td></td>
<td>62,725</td>
</tr>
<tr>
<td>Non-productive</td>
<td>158,925 acres</td>
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<tr>
<td><strong>Water Acres</strong></td>
<td>230,000 acres</td>
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<tr>
<td><strong>TOTAL (Diminished)</strong></td>
<td>649,026 acres</td>
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<tr>
<td></td>
<td>62,725</td>
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<tr>
<td>Ceded Lands &amp; NWA</td>
<td>156,067 acres</td>
</tr>
<tr>
<td></td>
<td>17,727</td>
</tr>
<tr>
<td><strong>TOTAL TRIBAL LANDS</strong></td>
<td>805,093 acres</td>
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<td></td>
<td>80,452</td>
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</tbody>
</table>
The Potential

- Red Lake loggers annually harvest about 35-40,000 cords (78,000-90,000 green tons).
- Currently about 20 Red Lake members who own logging operations. Each employs 3-4 workers.
- Currently, about 10% of total merchantable volume on Red Lake timber sales is left in the woods. Much of this is due to poor species/product markets.
- Current harvest levels are significantly less than the annual allowable harvest volumes for most species.
Site Conversion and Reforestation

- In addition to timber harvesting, Red Lake’s Forestry Program is actively involved in reforesting and converting up to 1000 acres each year to Red and White Pine.

- A significant amount of biomass is generated in the conversion process to pine. This volume will contribute to the biomass needs as well.
Red Lake currently has a custom homes facility which manufactures pre-fabricated homes. This business generates wood waste that could be utilized.

Red Lake Builders is a construction business on the Reservation which also generates biomass, in the forms of construction debris and wood removed for home sites and road construction.

Red Lake Forest Products (Tribal sawmill) is currently shut down, however, if that were to re-open, slab wood, edgings, and planer shavings all could be utilized as biomass.
Biomass Energy Feasibility Study

US DOE

Red Lake Band of Chippewa Indians Tribal Council

Energy CENTS Coalition
- Project Management and Reporting
- Utility information
- Tribal energy use data

Red Lake Band of Chippewa Indians Energy Task Force
- Biomass Project Technical Advisory Committee

Red Lake Department of Natural Resources (DNR)
- Forestry Program

McNeil Technologies
- Biomass Energy - Technical Support
Project Goal and Objectives

Goals

- Develop tribal biomass energy enterprises

Objectives

- Conduct detailed biomass resource assessment
- Evaluate local and regional utility issues
- Evaluate biomass energy technologies and markets
- Preliminary siting study, focus on power and heating
- Assess social, environmental and economic impacts
- Prepare pro-forma financial analyses
- Develop business plan for biomass enterprise
Task 1 – Kick-off Meeting

- “Biomass Energy 101” presentation to TAC
- Logistics, schedule, timeline
- Tribal strategic planning issues relayed from Tribe to team
- Initial data gathering by team
Task 2 - Biomass Resource Assessment

- Quantify biomass resource supply
- Location
- Current uses
- Costs
- Availability
- Sustainability
- Biomass supply curves
Task 3 - Biomass Energy Technology Characterization

- Focus on commercially available technologies for power generation and/or facility heating
- Fuel requirements, capital costs, O&M costs, labor requirements, land, storage, output, financial incentives
Task 4 - Utility Interconnection

- Interconnection requirements and costs
- Available transmission capacity
- Power purchase agreements, standby charges
- Potential green power sales to regional utilities
Task 5 - Siting Analysis

- Identify potential sites for biomass plant development
- Assess proximity to grid, load centers, thermal hosts
- Analyze land use restrictions, facility footprint, zoning, emissions, water needs
- Include access to biomass supply and road networks
Task 6 – Facility Heating Study

- In general, economics of facility heating are very good.
- Several tribal commercial buildings are heated with electricity (casinos, schools, offices).
- Conduct a detailed technical and economic analysis of heating one facility with wood.
Court House
Middlebury, VT
Task 7 – Biobased Products Overview

- Provide background information on liquid fuels, other biobased products (wood/plastic composites, charcoal, pellets, chemicals)
- Not major focus of the project
Task 8 – Social, Economic and Environmental Impacts and Benefits

- Jobs, economic development
- Emission impacts
- Impacts on forests, resource utilization
- Forest fire threat reduction
- Greater energy independence
- Energy security
Task 9 – Financial Analysis

- Pro-forma analysis of wood-fired power plant
- Evaluate levelized cost of energy, NPV, ROI
- Financing methods and costs
- Compare different sized biomass plants and different locations
Task 10 – Business Plan

- Summarize results of first nine tasks
- Training, and tribal professional development planning
- Long term operations and maintenance training
- Business planning for implementing a renewable energy development project
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