Project Notebook

Makah Indian Nation

“Next Steps to Implement Pilot Power Project for Pacific Northwest Region”
Project Overview

- Wind Power and Other Generation
  - Wind Resource marginal
  - Other self-generation sources being considered
- Tribal Utility Development
  - Makah Tribal Utility charter in place
  - Tribal Utility business options being evaluated
Self Generation Options

- Summarize Wind Resource Assessment
- Potential sources of self-generation
  - Wave energy
  - Bio-gasification
  - Small wind energy
- Environmental Impact issues
Tribal Utility Charter

- Makah Tribal Utility charter
- Relationship of Makah Tribal Utility to the Makah Tribe
- Business structure for operations
Steps for Utility Formation

- Develop load and cost data
- Determine financial feasibility
- Negotiate distribution purchase
- Negotiate power portfolio
- Execute on minimal necessity
## Load Summary

<table>
<thead>
<tr>
<th>Meters</th>
<th>% of Total</th>
<th>Annual usage kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Res 1 phase (579)</td>
<td>45.1</td>
<td>7,543,331</td>
</tr>
<tr>
<td>Res 3 phase (1)</td>
<td>0.2</td>
<td>28,801</td>
</tr>
<tr>
<td>Comm 1 phase (86)</td>
<td>10.0</td>
<td>1,679,420</td>
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<tr>
<td>Comm 3 phase (26)</td>
<td>5.8</td>
<td>964,217</td>
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<tr>
<td>Comm Large (13)</td>
<td>31.6</td>
<td>5,281,020</td>
</tr>
<tr>
<td>Edu 1 phase (5)</td>
<td>0.6</td>
<td>99,471</td>
</tr>
<tr>
<td>Edu 3 phase (5)</td>
<td>6.7</td>
<td>1,126,616</td>
</tr>
<tr>
<td>715 meters</td>
<td>100%</td>
<td>16,722,876</td>
</tr>
</tbody>
</table>
Distribution Assets

- Field survey (transformer and pole count)
- PUD GIS drawing
- Reconciliation
- Age of plant from PUD

<table>
<thead>
<tr>
<th>Equipment</th>
<th># of Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.5 MVA transformer 67000/13200/7620</td>
<td>1</td>
</tr>
<tr>
<td>333 kVA Regulator</td>
<td>3</td>
</tr>
<tr>
<td>Circuit A poles</td>
<td>180</td>
</tr>
<tr>
<td>Circuit B poles</td>
<td>33</td>
</tr>
<tr>
<td>Circuit C poles</td>
<td>85</td>
</tr>
<tr>
<td>Pole mount transformers</td>
<td>178</td>
</tr>
<tr>
<td>Pad mount transformers</td>
<td>6</td>
</tr>
<tr>
<td>Meters</td>
<td>715</td>
</tr>
</tbody>
</table>
Electric Distribution System
Makah Substation
Makah - Electric Utility
Cost of Service Analysis (in nominal dollars)
Annual and Five Year Savings Analysis (in nominal dollars)

Capital Cost
Replacement cost less depreciation

Load
PUD Supplied
Purchased Power
Self Generation

Retail Energy Rate
Clallam County PUD (variable energy)
Clallam County PUD (fixed plant)

Wholesale Energy Rates BPA PBL
Demand Charge
HLH energy rate
LLH energy rate
Load variance rate
Total Wholesale Cost

MUC Delivery Costs
Depreciation @ 2.75%
debt @ 5% for 30 years
O&M at 150,000 per year
Administration at $250,000 per year
Losses are nominal
Cost of Delivery

Total Delivered Cost/kWh to End Use
Weighted wholesale plus cost of delivery

Total Delivered Cost to End Use - Annual
Current Average Rate
MTU Rate

First Year Savings by TMTU Compared to Staying with Current Supplier

Five Year Savings by TMTU Compared to Staying with Current Supplier

Current load with no load growth

$ 402,625

16,722,876 kWh

$ 0.0652 per kWh
$ 0.0056 per kWh
$ 0.07086

$ 0.00640 per kWh
$ 0.00929 per kWh
$ 0.01354 per kWh
$ 0.00117 per kWh
$ 0.03040

$ 0.00066 per kWh
$ 0.00195 per kWh
$ 0.00897 per kWh
$ 0.01495 per kWh
$ 0.02613 per kWh

$ 0.05654 per kWh

$ 1,183,275
$ 945,442

Difference of 1.4¢
1st year savings $237,832
5 year savings $1,189,161
Power Marketing

- Meet with Clallam County PUD
- BPA non-wires solutions pilot project proposal
Thank You