Makah Renewable Energy Feasibility Study in Neah Bay Washington

Makah Project Manager: Bud Denney
Technical Contact: Bob Lynette
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Background

- Enrollment for the Makah Tribe is 2,389
- Approximately 1,213 tribal members live on the Reservation; an additional non-Indian residential population of about 295
- Reservation is 47 square miles with elevations typically between 500 and 1,000 feet
- Four major watersheds; over 100” rainfall/year
- Closest town is 60 miles away.
- 30 MW line to reservation; frequent loss of power
Makah Reservation
## Participants

<table>
<thead>
<tr>
<th>Project Participant</th>
<th>Contact</th>
<th>Role</th>
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<tbody>
<tr>
<td>Makah Indian Reservation</td>
<td>Bud Denney</td>
<td>Tribal planner, Project manager / liaison</td>
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<tr>
<td>Springtyme Company, L. L. C.</td>
<td>Robert Lynette</td>
<td>Technical contact, wind consultant</td>
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<td>AP&amp;T Solutions, LLC*</td>
<td>Bob Grimm</td>
<td>Financial analyst</td>
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<td>Larry Coupe</td>
<td>Engineer, hydropower</td>
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<td>John Wade Wind Consultant LLC</td>
<td>John Wade</td>
<td>Meteorologist, wind power analyst</td>
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<tr>
<td>Northwest Wildlife Consultants</td>
<td>Karen Kronner</td>
<td>Biologist</td>
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<tr>
<td>Met Tower Services</td>
<td>Mike Sailor</td>
<td>Wind tower installation</td>
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*A subsidiary of Alaska Power & Telephone
Project Overview

Objectives

- Determine feasibility of one or more wind power and/or small hydro installations that could provide one or more of the following functions:
  - Produce electricity for the Tribe
  - Produce power to sell to Clallam County PUD
  - Provide back-up power
  - Provide employment during construction and O&M
Project Overview

• Avian study to identify areas where wind turbines should be prohibited.

• Wind Resource Assessment
  – 2 sites for wind resource assessments
  – 50-meter towers
  – Monitor sites for one year
Micro/Small-Hydroelectric Power

- Identify potential sites
  - Adequate stream flow
  - Adequate head
  - Proximity to existing transmission lines
  - Downstream barriers to fish migration
- Conduct on-site field analyses
- Develop/calculate critical parameters
Final Site Feasibility Report

- Site layout
- Interconnect and transmission diagrams
- Equipment, infrastructure
- Annual energy output
- Financial analyses
  - COE
  - Financing options and potential financing sources
Project Status - Wind

• Sites for met towers selected in conjunction with wildlife study.
• Sites prepared for met tower installations.
• Two 50-meter NRG suites of equipment installed in July 2003 and collecting data.
• Preliminary utility analysis conducted to determine potential for handling output.
Project Status – Micro-hydro

- Field trip conducted – 2 potential projects identified.
  - 500 kW, producing approximately 1,300,000 kWh per year
  - 900 kW, producing approximately 3,100,000 kWh per year
  - Both projects would also provide water supply.
- Preliminary report prepared and being reviewed.
Project Status – Future Activities

• Wind Energy
  – Collect and analyze data through 6/04.
  – If early data looks good, commence project definition.
  – Prepare final project plans and business plan.

• Micro-hydro
  – Tribe’s review of preliminary report.
  – If favorable, identify funding sources.
Future Plans

• Phase 2 funding application approved by DOE and will be discussed tomorrow.