ASSINIBOINE & SIOUX TRIBES

at FORT PECK

WIND ENERGY

DEVELOPMENT PROJECT
The wind resource estimates presented on this map were developed by TrueWind Solutions using MesosMap, a mesoscale atmospheric simulation system, at a spatial grid resolution of 400 meters (one-quarter mile). The estimates have been validated by the National Renewable Energy Laboratory (NREL) and independent meteorologist but should be confirmed by direct measurement according to wind energy industry standards.

Project Sponsors
For more information see www.windpowermaps.org
PROJECT OVERVIEW

Buy and Install a Vestas V47-660kw Wind Turbine

Direct Connect / Net Meter the Project to 3 Tribal Buildings

Use the Resulting Electricity Savings to Develop and Implement Tribal Socio-economic Programs

Use the Retail Green Tag Sales to Maintain the Turbine and Create a Tribal Energy Efficiency Program
PROJECT PARTICIPANTS

- Department of Energy / NREL
- Fort Peck Community College
- Foundation of the American Indian
- Vestas American Wind Turbines
- Florida Power and Light Energy
- Patrick and Henderson
- Barnhart Crane and Rigging Company
- Montana-Dakota Utilities

Foundation for the American Indian
OBJECTIVES

• Decrease Tribal Energy Dependency
• Increase Tribal & College Cash Flow
• Increase Tribal Employment
• Use “Pilot” Wind Development Project to Develop Large-Scale Wind Farm
• Improve Knowledge Base of Renewable Energy at the Tribe

Foundation for the American Indian
APPROACHES

• Reallocating Project Electrical Savings
• Establish a Renewable Energy Curriculum at FPCC
• Market Real-Time Green Tags at Retail
• Continue to Develop Our Working Relationship with MDU
• Develop Technical Workforce

Foundation for the American Indian
Wind Turbine Power Calculator

Do not operate the form until this page and its programme have loaded completely.

**CALCULATOR**

**Site Data**
- Select Site Data

**Air Density Data**

- 15°C temp [ ]
- 0 m altitude [ ] kPa pressure [ ] kg/m³ density

**Wind Distribution Data for Site**

- 2 Weibull shape parameter
- 7.4 m/s mean [ ] Weibull scale parameter
- 65 m height, Roughness length [ ] m = class 1

**Wind Turbine Data**

- m/s cut in wind speed [ ] m/s cut out wind speed
- m rotor diameter [ ] m hub height [ ]

**Power Coefficient**

- [ ]

**Site Power Input Results**

- Power input* [ ] W/m² rotor area
- Max. power input at [ ] m/s
- Mean hub ht wind speed* [ ] m/s

**Turbine Power output Results**

- Power output* [ ] W/m² rotor area
- Energy output* [ ] kWh/m² per year
- Energy output* [ ] kWh/m³
- Capacity factor* [ ] percent

**Power Curve**

<table>
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<th>m/s</th>
<th>kW</th>
<th>m/s</th>
<th>kW</th>
<th>m/s</th>
<th>kW</th>
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SO WHAT DOES THIS MEAN for the FORT PECK TRIBES?

<table>
<thead>
<tr>
<th>Turbine Power output Results</th>
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<tbody>
<tr>
<td>Power output*</td>
<td>137 W/m² rotor area</td>
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<tr>
<td>Energy output*</td>
<td>1201 kWh/m²/year</td>
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<tr>
<td>Energy output</td>
<td>2083568 kWh/year</td>
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<tr>
<td>Capacity factor*</td>
<td>36 per cent</td>
</tr>
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</table>

Foundation for the American Indian...
Fort Peck Project

Energy output* 2083568 kWh/year

x 6.5 Cents per Kwh

= $135,431.92 - Savings

Foundation for the American Indian
Fort Peck Project

Energy output* 2083568 kWh/year

GREENTAGS...

x 2.0 Cents per Kwh

= $41671.72 - Income

Foundation for the American Indian
RESULTS

The Assiniboine & Sioux Tribes Will Save More than $130,000 Annually on their Electricity...

And will generate More than $40,000 Annual Income from Retail Green Tag Sales.

Let's Take a Look at How This Will Impact the Tribe...
SOCIO-ECONOMIC IMPACT

Develop an Educational, Training and Certification Program Which Will Provide Qualified Employees to Their Tribal Industries.

Generate Renewable Energy Knowledge for the Tribe.

Provide an Energy Efficiency Program for the Tribal Elders.

Foundation for the American Indian
Technical and Management Issues

• NEPA Compliance
• Soil Samples
• Foundation Design
• Weather Cooperation
• Turbine Delivery and
• Crane Schedule (Lifting/Rigging)
• Interconnect
• Socio-economic Programs
• Web Site Development

Foundation for the American Indian
Current and Future Activities

- Permitting
- Interconnect Agreement
- "Green-e" Certification
- Retail Sales of Green Tags
- Renewable Energy Curriculum
- Contract Negotiations
- Web Site Development

Foundation for the American Indian
Current and Current Activities

- NEPA Compliance
- NEPA Compliance
- NPEA Compliance
- NEPA Compliance
- NEPA Compliance
- NEPA Compliance
- NEPA Compliance
- NEPA Compliance
- NEPA Compliance

Foundation for the American Indian
Future Plans

- Project Expansion
- Wolf Point Turbine
- Native American *Real-Time* Green Tags Marketing Company
- Replicating the FPCC and TMCC Projects at other Tribal Colleges
- Provide Assistance to the State of Montana for Renewable Energy
Joseph Brignolo

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Project Manager/Technical Director, Fort Peck Wind Development Project
Turtle Mountain Community College

Wind Turbine Foundation Installation
Belcourt, North Dakota
Foundation for the American Indian
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