Purpose
This Project is designed to provide the Oneida Tribe of Indians of WI with a comprehensive energy investment strategy for renewable energy and conventional energy sources. It is called the Energy Optimization Model. It is a component of the larger energy management plan that aims to capitalize on Tribal energy sovereignty. Establishing a renewable portfolio standard (RPS) is a clear commitment to future generations.

Definitions
1 Megawatt = 1,000 kilowatts = 1,000 kw.
1 Megawatt-hour = 1,000 kilowatt-hours = 1,000 kWh.
The average home in Wisconsin uses 9,000 kWh/year.
RE = renewable energy, e.g. solar, wind, bioenergy, ground-source

Objectives
⇒ Assess local, RE resources;
⇒ Assess Tribal property to determine RE potential;
⇒ Provide a feasibility study for RE development;
⇒ Research funding strategies;
⇒ Develop a model that creates different RPS scenarios: 5%, 10%, 20%;
⇒ Create a plan that will maximize the Tribe’s RE development potential.

Preliminary Results - Electricity
- Total electrical use of Tribal facilities: 31 million kWh;
- 15 buildings consume 81%; 50+ buildings consume 19%;
- Utility policies for interconnecting solar or wind to their transmission lines are economically challenging;
- Large wind power: least expensive/kWh, but lowest value
  ◊ Requires considerable negotiation over wholesale pricing,
  ◊ Permitting is very extensive (up to 3 years),
  ◊ Wind resource is best at west and south boundaries,
  ◊ Interconnection is limited to sub-stations,
  ◊ Controversial reputation,
  ◊ Utility RPS already fulfilled.

Solar is preferred technology
◊ Easy to install, flexible, scalable,
◊ Array on benign part of building (the roof),
◊ Rest of equipment has small footprint,
◊ Building is direct recipient of energy produced,
◊ More funding opportunities.

<table>
<thead>
<tr>
<th>Solar</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project size</td>
<td>1.0 Megawatt</td>
</tr>
<tr>
<td>Production (kWh)</td>
<td>1.3 million</td>
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<tr>
<td>Location</td>
<td>13 buildings</td>
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<tr>
<td>Cost</td>
<td>$3 million</td>
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<tr>
<td>IRR</td>
<td>&lt;2%</td>
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<tr>
<td>Revenue</td>
<td>$0.10/kWh</td>
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<tr>
<td>Limitations</td>
<td>cost</td>
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</table>
Renewable Portfolio Standard
- Utilities serving the Tribe: Wisconsin Public Service and WE Energies
- Current utility energy generation by fuel: Coal 70%; Natural Gas 23%; Hydropower 3%; Wind 3%.
- 1.3 million kWh from solar will give Oneida a 4% RPS;
- Future investment in other technologies will increase the Tribe’s RPS and commitment to RE over time.

Funding Strategies
- Tax benefits are important for RE development: 30% Investment Tax Credit, depreciation;
- Oneida Tribe is a non-taxable entity;
- A taxable investor, as a partner, can get value from tax benefits;
- Recommended financing flip model:
  ⇒ LLC partnership: front-end ownership by taxable investor with payments from the Tribe to the LLC.
- Other models: Sale-Leaseback approach, Allocation-by-Lease approach.

Other Funding Used for Cost-share
- Department of Energy Deployment Grants
- 3rd party energy provider - not fully defined by Public Service Commission
- Crowdfunding - Techniques to raise money from small investors
- Solar utility cooperative -

Supplemental Results
- Tribal student involvement;
- Heating the Midwest conference, April 2014;
- Conservation Department Energy Reduction Project
- Collaboration with Wisconsin State Energy Office;
- Formation of Midwest Tribal Renewable Energy Association (MTERA);
- Policy monitoring at the state and federal levels;
- Oneida Tribe & Brown County energy work featured by UW-Extension;
- Oneida Energy Crop Study with UWGB (refer to Native Grasses Project Update);
- Investigating natural gas commodity markets for competitive, reliable pricing;
- Investigating the Tribal Utility Authority concept;
- Investigating hemp as a supplemental source for local production.

Partners
- U.S. Department of Energy,
- University of Wisconsin Green Bay,
- H&H Energy Management Services,
- Godfrey & Kahn,
- UW-Extension

Oneida Energy Team:
- Environmental Resources Board,
- Department of Public Works,
- Oneida Farm,
- Land Management,
- Engineering,
- Planning,
- Housing Authority,
- Land Commission,
- Oneida Sustainable Resource Advisory Council,
- Energy Development Program.

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