PROJECT:
1.8 MW WIND TURBINE ON TRIBAL COMMON LANDS NEAR LAKE ERIE

Elizabeth Drag
Seneca Nation of Indians
Community Planning and Development Department and
Jim Yockey
URS Inc.
March 27, 2014
<table>
<thead>
<tr>
<th>Membership and Territories</th>
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<tbody>
<tr>
<td><strong>Total Enrolled Membership:</strong></td>
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<tr>
<td>8,057 members</td>
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<tr>
<td><strong>Members Residing On Territory:</strong></td>
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<tr>
<td>4,006 members</td>
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<tr>
<td>Clans:</td>
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<tr>
<td>Deer</td>
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<tr>
<td>Hawk</td>
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<td>Heron</td>
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<td>Snipe</td>
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</table>
Elected Form of Government

- President
- 2 Year Term
- Rotated Between Territories

Elected Form of Government

- Treasurer
- 2 Year Term
- Rotated Between Territories
BACKGROUND

Elected Government

Elected Form of Government
- Nation Council

Elected Form of Government
- 4 Year Term, Staggered
BACKGROUND

Elected Government

Elected Form of Government
- Nation Council

Elected Form of Government
- 4 Year Term, Staggered
BACKGROUND
Economic Development

- Class III Casinos: Seneca Niagara Casino, Seneca Allegany Casino, Buffalo Creek Casino

- Class II Gaming and Entertainment Facilities: Cattaraugus Territory, Allegany Territory
BACKGROUND
Diversification
PAST ACTIVITIES & PROJECTS

1.8 MW Wind Turbine on Common Lands

- Department of Energy First Steps Grant for Strategic Energy Planning
- Department of Energy NREL Anemometer Loan Program
- Department of Energy First Steps Grant for Energy Organization Planning
- Department of Energy Energy Efficiency and Conservation Block Grant
- Department of the Interior Natural Gas Assessment
- Department of the Interior Strategic Energy Planning Assistance
PAST ACTIVITIES & PROJECTS
Long-Term Energy Plan

- **Phase I: Visioning Process**
  - Community Meetings
  - Review Historical and Current Energy Resources
  - Assess Community Priorities, Energy Potential, & Environmental and Economic Issues
  - SWOT Assessment
  - Final Report

- **Phase II: Research and Assessment**
  - Tribal Resource Assessment (Renewable and Non-Renewable)
  - Rates & Usage Analysis (Current and Projected)
  - Infrastructure Inventory
  - Industry Relationship Assessment
  - Identification of Technical Assistance Needs
  - Review of Regulation and Jurisdiction Issues
  - Assessment of Environmental & Cultural Components
  - Identification of Future Project Funding Opportunities

- **Phase III: Implementation**
Identified Goals of Long-Term Energy Plan

• Self-Sufficiency through Resource Development (Renewable and Fossil)
  ○ Repair and maintain NG distribution system and clean up imbalance issues.
  ○ Plug and complete existing wells (141 wells dug with 8 active and 10 potential high producers).
  ○ Look for renewable opportunities (wind and solar).
  ○ Continue energy efficiency improvements in new and existing facilities.

• Create Rate Parity between the SNI territories
  ○ Address electric rate inequalities by getting control of some portion of distribution function.

• Create an Energy Organization to Centralize Energy Decision Making for both Generation and Distribution Functions of Electricity and NG
  ○ Create peer relationship with incumbent providers.
  ○ Coordinate O&M of NG pipe and wells. Develop COS methods to recover costs.
  ○ Create billing database to distribute costs and benefits of electricity and NG.
PROJECT OBJECTIVES

1.8 MW Wind Turbine on Common Lands

- Design procure and install one wind turbine on common lands adjacent to Lake Erie. Turbine will be interconnected with the National Grid distribution service.

- Aggregate tribal load at tribal facilities in the Cattaraugus Territory, an area served by National Grid.

- Take advantage of aggregated net metering in New York State and provide approximately 1.8 MW of wind power credit against the tribal load currently served by National Grid.

- Generate a credit through aggregated net metering that will provide rate parity and savings to the tribal members on the Cattaraugus Territory approximately equal to the tribal members on the Allegany Territory.

- Administer this credit through the newly formed tribal utility organization, Seneca Energy, LLC, a Seneca Nation subsidiary.
The selected project team includes:

- Seneca Nation of Indians
- Seneca Energy, LLC
- Utility Reduction Specialists, Inc
- New West Technologies, LLC
- Sustainable Energy Developments, Inc.
PROJECT OBJECTIVES
1.8 MW Wind Turbine on Common Lands

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PROJECT BUDGET
1.8 MW Wind Turbine on Common Lands

- DOE FEDERAL $1.5 M
- NYSERDA PRODUCTION INCENTIVE $1M
- NATION CONTRIBUTION $3.5M
- TOTAL PROJECT COST = $6 M
Project Site
Wind resource assessments, using industry standard wind resource assessment tools from AWS TruePower, New York State Energy Research and Development Authority (NYSERDA), and SNI-installed anemometry at the site, have determined an available wind resource of 7.13 meters per second at a hub height of 60 meters.
Wind Power Equation

\[ \text{Power} = \frac{1}{2} C_p \rho A V^3 \]

- \( \rho \) = Air density
- \( C_p \) = Coefficient of performance
- \( A \) = Frontal area
- \( V \) = Velocity of the wind
V-100 Power Curve

- Hub Height Average Wind Speed (m/s): 7.55
- Air Density Factor: 0.98
- Average Annual Power Output (kWh): 5,282,067
- Implied Capacity Factor: 33%

Power Curve V100-1.8 MW
Aggregated Net Metering: Key to Community Energy

- Optimize location of the renewable resource as most facilities are not located in the best place to take advantage.

- Be able to aggregate load served in the same distribution territory.

- Get a full net meter credit for displacement of all kWh.
Aggregated Net Metering: Key to Community Energy

- V-100 generates 5 million kWh.

- Net meter credit in National Grid Territory is 8¢.

- Credit is $0.08 \times 5,000,000 = $400,000.

- 48 tribal facilities use 10.5M kWh spending about $1M for a weighted average cost of 10¢ per kWh.

- Expect to generate at least 40% savings.
What to do with the Savings?

Seneca Energy, LLC was formed as the energy organization to perform distribution function for NG and electricity.

- Cattaraugus members pay about 15¢ per kWh whereas Allegany members pay 5¢ per kWh.

- Credit shows up on Nation’s bill from National Grid. Seneca Energy will distribute credit to members by allocating and designating credit on National Grid bill for members.

- Database of members and capacity building is the result.
Next Steps:

Project Timeline: SNI Wind Project

- [List of tasks and their timelines]
Contacts

1.8 MW Wind Turbine on Common Lands

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