SENECA NATION of INDIANS

Keeper of the Western Door

SENECA NATION OF INDIANS

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

BACKGROUND
Membership and Territories

Total Enrolled Membership:

8,057 members

Members Residing On Territory:

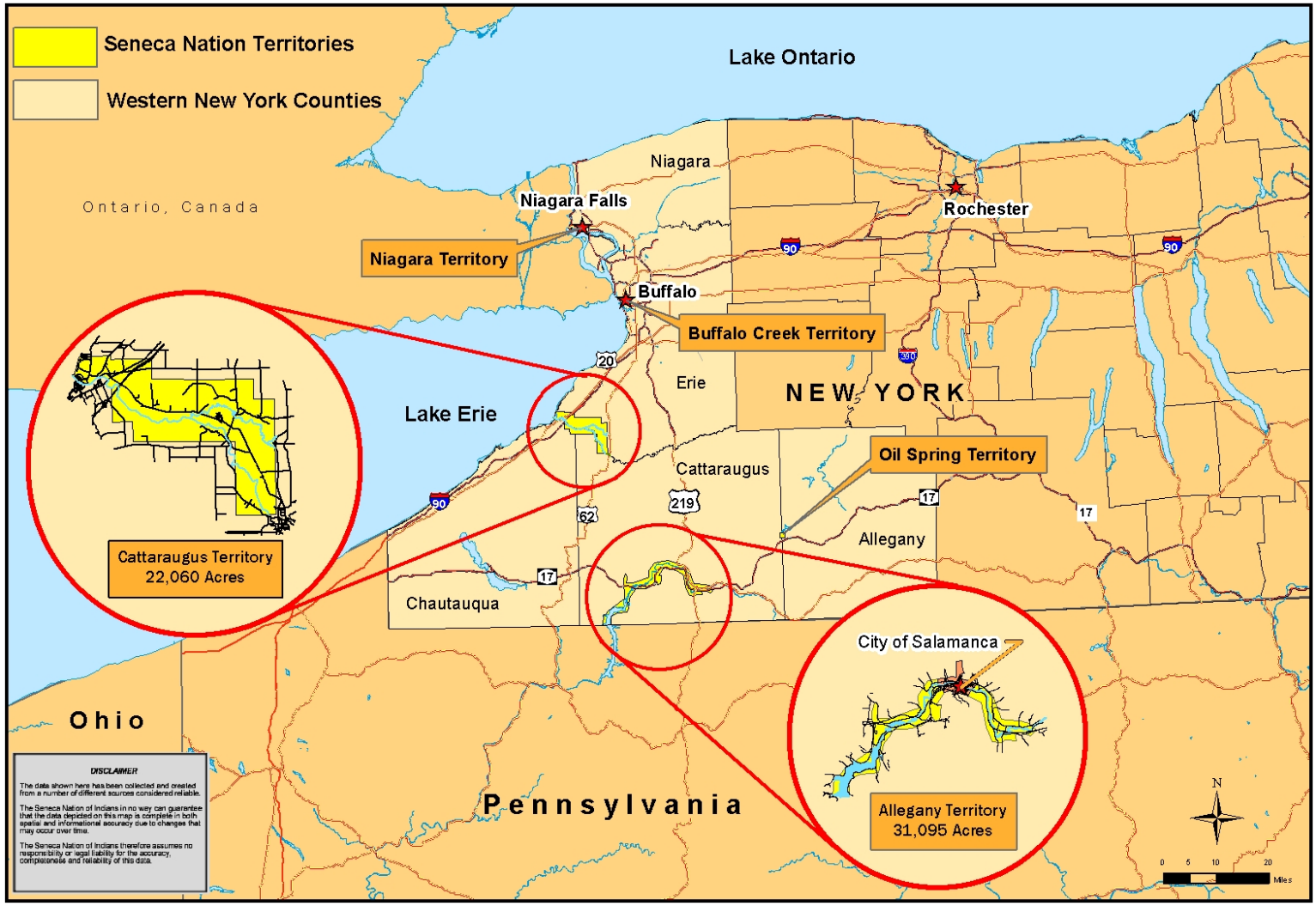
4,006 members

Territories:

- Allegany Territory
- Cattaraugus Territory
- Oil Spring Territory
- Niagara Falls Territory
- Buffalo Creek Territory

Seneca Nation of Indians

Locational Map of the Territories



BACKGROUND
Clans

Clans:

- Deer

- Hawk

- Heron

- Snipe

Clans:

- Turtle

- Beaver

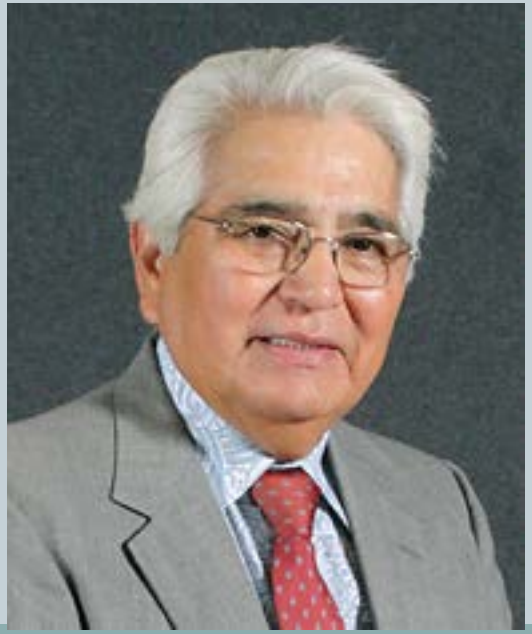
- Wolf

- Bear

BACKGROUND
Elected Government

Elected Form of Government

- President
- 2 Year Term
- Rotated Between Territories



Elected Form of Government

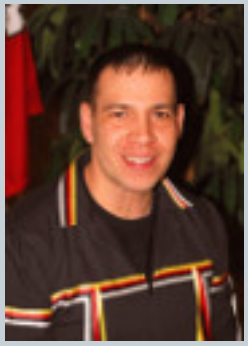
- Treasurer
- 2 Year Term
- Rotated Between Territories

BACKGROUND
Elected Government

Elected Form of Government

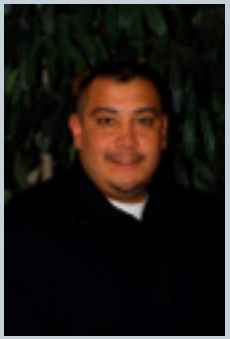
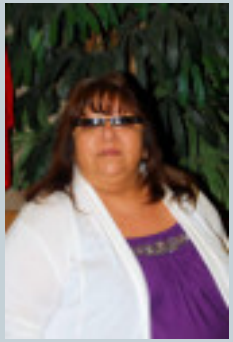
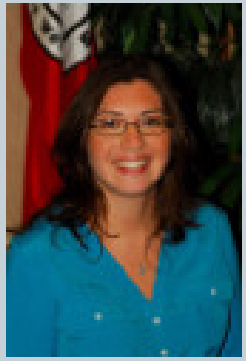
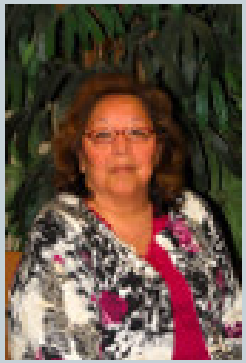
- Nation Council



Elected Form of Government

- 4 Year Term, Staggered

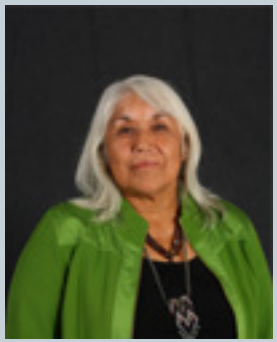





BACKGROUND
Elected Government

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

SENECA BUFFALO CREEK CASINO

SENECA NIAGARA CASINO & HOTEL

SENECA GAMING CORPORATION

SENECA Gaming and Entertainment

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.

PROJECT TEAM
1.8 MW Wind Turbine on Common Lands

- The selected project team includes:
  - Seneca Nation of Indians
  - Seneca Energy, LLC
  - Utility Reduction Specialists, Inc
  - New West Technologies, LLC
  - Sustainable Energy Developments, Inc.

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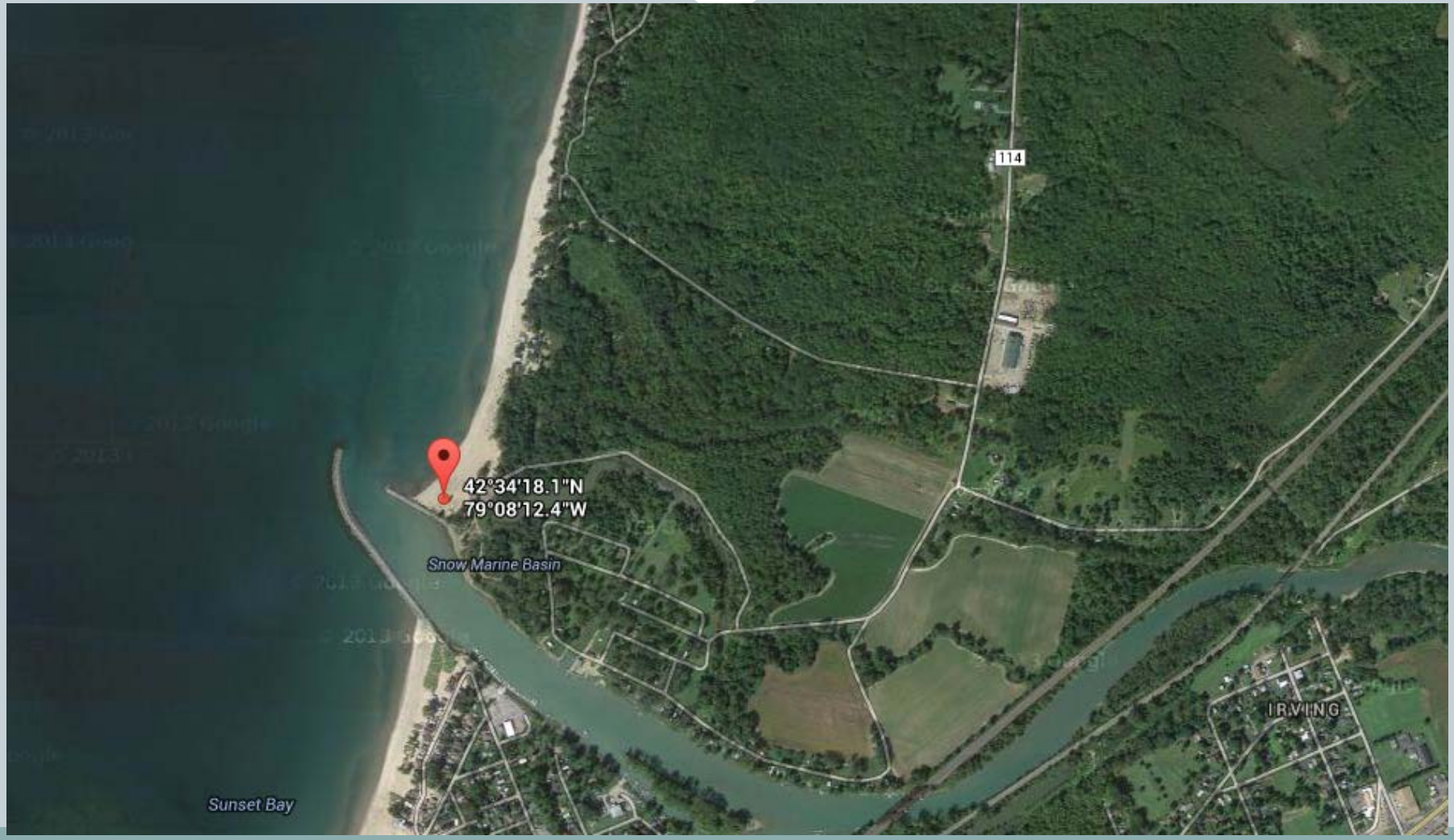
PROJECT BUDGET
1.8 MW Wind Turbine on Common Lands

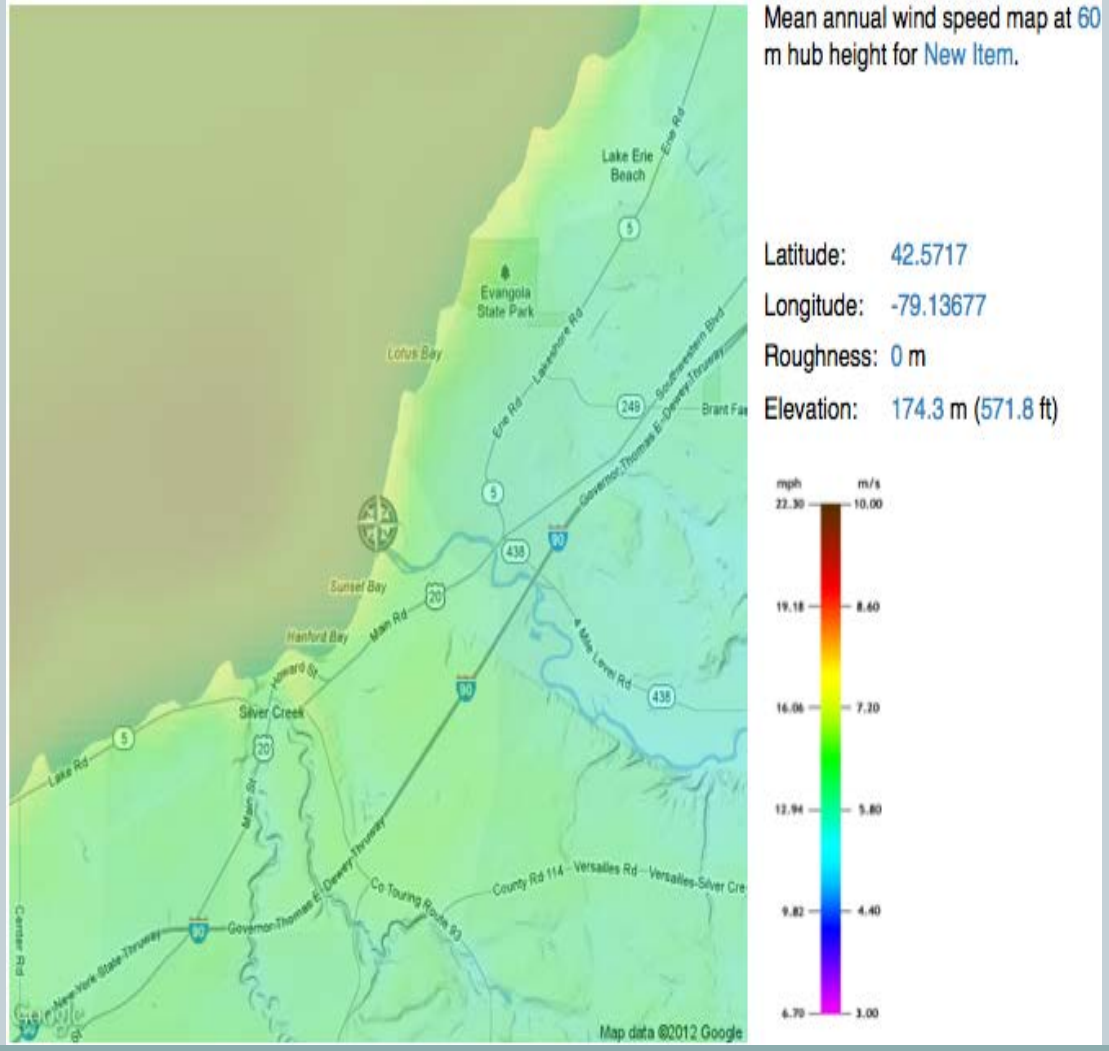
- DOE FEDERAL $1.5 M
- NYSERDA PRODUCTION INCENTIVE $1M
- NATION CONTRIBUTION $3.5M
- TOTAL PROJECT COST = $6 M

Project Site



Project Site

Wind Resource



- 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

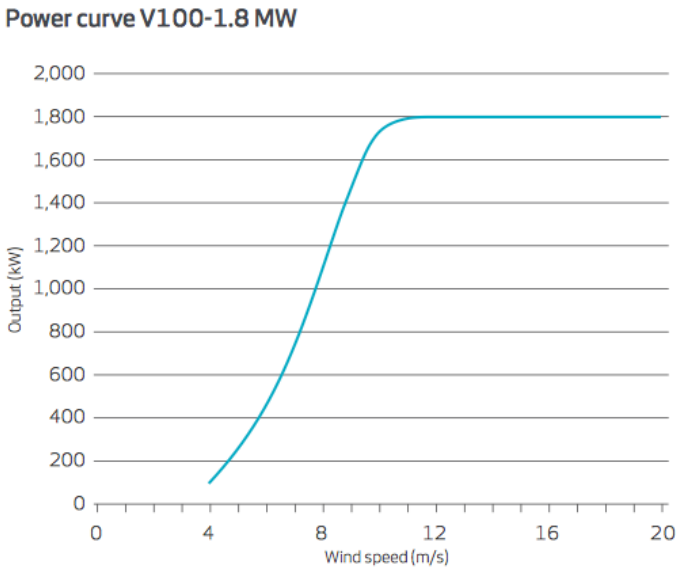
$$\text{Power} = 1/2\ C\rho AV^3$$

ρ = Air density
C = Coefficient of performance
A = Frontal area
V = Velocity of the wind

$$\text{POWER IN THE WIND} = (\text{DENSITY OF AIR}) \times (\text{TURBINE BLADE DIAMETER})^2 \times (\text{VELOCITY OF WIND})^3 \times (\text{A CONSTANT})$$

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%



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

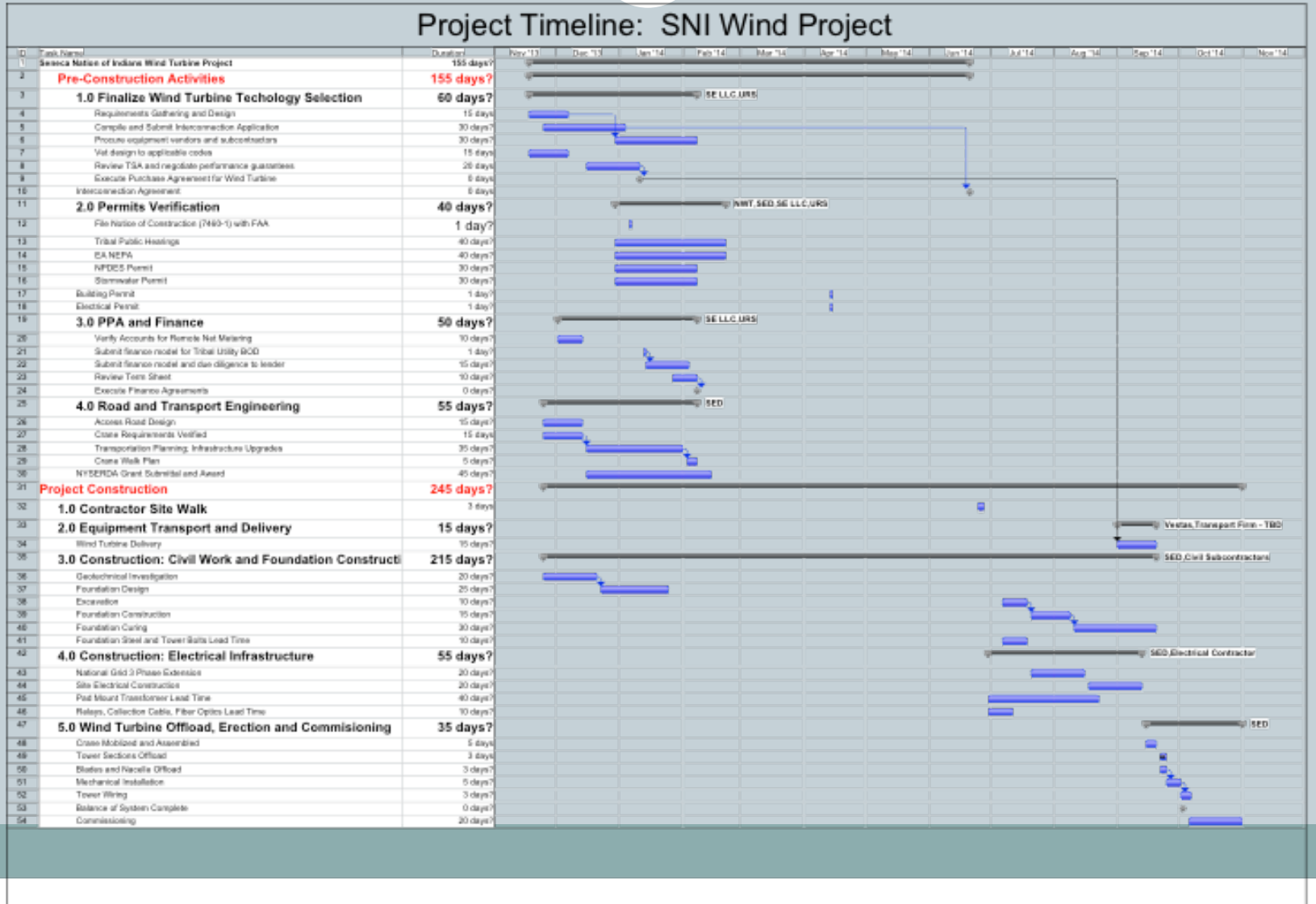
- V-100 generates 5 million kWh.
- Net meter credit in National Grid Territory is 8¢.
- Credit is $.08 X 5,000,000 = $400,000.
- 48 tribal facilities use 10.5M kWh spending about $1M for a weighted average cost of 10¢ per kWh.
- Expect to generate at least 40% savings.

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
Seneca Nation of Indians Wind Turbine Project 155 days?
Pre-Construction Activities 155 days?
1.0 Finalize Wind Turbine Techology Selection 60 days?
Requirements Gathering and Design 15 days
Compile and Submit Interconnection Application 30 days?
Procure equipment vendors and subcontractors 30 days?
Vet design to applicable codes 15 days
Review TSA and negotiate performance guarantees 20 days
Execute Purchase Agreement for Wind Turbine 0 days
Interconnection Agreement 0 days
2.0 Permits Verification 40 days?
File Notice of Construction (7460-1) with FAA 1 day?
Tribal Public Hearings 40 days?
EA NEPA 40 days?
NPDES Permit 30 days?
Stormwater Permit 30 days?
Building Permit 1 day?
Electrical Permit 1 day?
3.0 PPA and Finance 50 days?
Verify Accounts for Remote Net Metering 10 days?
Submit finance model for Tribal Utility BOD 1 day?
Submit finance model and due diligence to lender 15 days?
Review Term Sheet 10 days?
Execute Finance Agreements 0 days?
4.0 Road and Transport Engineering 55 days?
Access Road Design 15 days?
Crane Requirements Verified 15 days
Transportation Planning, Infrastructure Upgrades 35 days?
Crane Walk Plan 5 days?
NYSERDA Grant Submitted and Award 45 days?
Project Construction 245 days?
1.0 Contractor Site Walk 3 days
2.0 Equipment Transport and Delivery 15 days?
Wind Turbine Delivery 15 days?
3.0 Construction: Civil Work and Foundation Constructi 215 days?
Geotechnical Investigation 20 days?
Foundation Design 25 days?
Excavation 10 days?
Foundation Construction 15 days?
Foundation Curing 30 days?
Foundation Steel and Tower Bolts Lead Time 10 days?
4.0 Construction: Electrical Infrastructure 55 days?
National Grid 3 Phase Extension 20 days?
Site Electrical Construction 20 days?
Pad Mount Transformer Lead Time 40 days?
Relays, Collection Cable, Fiber Optics Lead Time 10 days?
5.0 Wind Turbine Offload, Erection and Commisioning 35 days?
Crane Mobilized and Assembled 5 days
Tower Sections Offload 3 days
Blades and Nacelle Offload 3 days?
Mechanical Installation 5 days?
Tower Wiring 3 days?
Balance of System Complete 0 days?
Commissioning 20 days?
SE LLC,URS
NWT,SED,SE LLC,URS
SE LLC,URS
SED
Vestas,Transport Firm - TBD
SED,Civil Subcontractors
SED,Electrical Contractor
SED

Contacts
1.8 MW Wind Turbine on Common Lands

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