U.S. Department of Energy: Office of Indian Energy

Deploying Clean Energy on the Winnebago Reservation
Winnebago Tribe Of Nebraska

- Located in northeast Nebraska near the tri-state area of Nebraska, Iowa, and South Dakota.

- The Winnebago Tribe of Nebraska has approximately 5,000 enrolled members.

- The reservation is 116,000 acres.

- Allotted reservation - there are 30,000 acres that is controlled by the Tribe.
Winnebago Tribe Of Nebraska

- The Treaty of 1865 relocated from Wisconsin are to the current reservation.
- There are nine members of the Tribal Council that serve a staggered three terms.
- Officers serve a one year term.
- IHS Facility
- Tribal College
- Educare
- Ho-Chunk Community Development Corporation
- Ho Chunk, Inc
Ho-Chunk, Inc.

Established in 1994 in Winnebago, Nebraska with one employee, Ho-Chunk, Inc. has grown to over 1,000 employees with operations in 24 states and 10 foreign countries.

GLOBAL OPERATIONS
26 States and Around the Globe

= Ho-Chunk, Inc. Business Locations
Ho-Chunk, Inc.

• The board of directors consist of five members with two of them being council members.
• Ho-Chunk, Inc. has a focus on economic development.
• Early businesses were common tribal economic ventures such as tobacco and gas.
• Later was expanded to hotels and interest in modular home company.
• There has been major growth with 8a contracting.
Ho-Chunk, Inc.

- With growth, there was an increased need for community and social programs from Ho-Chunk, Inc.
- Housing initiatives, education initiatives, financial literacy.
- Leadership – Renewable Energy

“In Order to do one thing you have to do everything.”

– Lance Morgan, Ho-Chunk, Inc. President and CEO
Lessons Learned

Started with wind investments
- Didn’t qualify for tax credits.
- Grants helped offset the cost.
- Commercial scale sold for ~2.9 cents KW, brought back at ~10 cents KW.
- High maintenance costs

Shift to solar investments
- Started with small projects.
- Grants helped offset the cost.
- Focus on offsetting coast on retail power.
- Low maintenance costs.
- Nebraska has very good solar resources
Lessons Learned

Planning and Engagement

- More and better communication with all stakeholders is key
- Use technology and social media to inform members
- Don’t forget old school use of flyers and newsletters
- Always, always, always include the Tribal Council.

Mechanics and Construction

- Keep projects simple as possible
- Know interconnection policy and economics
- Keep a ‘low profile’
- Protect from traffic, if it’s possible, they’ll hit it.
- Managing contractors and budgets
- Further development of ‘rightsizing’ capability
Ho-Chunk, Inc. is helping create one of the largest renewable energy infrastructures in the state of Nebraska in the Winnebago community.

This project follows on the heels of a 1,000 panel retail offset project (Topic 2) in 2018, DOE 1.

HIGHLIGHTS

- 900 solar panels installed at 9 sites across the Winnebago Community.
- 280kw solar power generation, reducing energy bills by about $40-46,000 annually.
- These projects will offset 455 MWh at the sites annually and offset significant retail consumption.
In 2018, Ho-Chunk, Inc. and the Winnebago Tribe made an investment of over $700,000 in renewable energy with the support of U.S. Department of Energy, Office of Indian Energy.

**$728,600**

**BREAKDOWN**

- **$364,300** in grants from the Office of Indian Energy at the Department of Energy
- **$364,300** in matching funds from Tribal sources, including Ho-Chunk, Inc.
Renewable energy project sites include:

- Solar panels
  - 50kW Pony Express Fuel Station at Winnavegas Casino
  - 23kW Pony Express Fuel Station in Rosalie, NE
  - 8kW HCI Accounting in Winnebago
  - 50kW Blackhawk Community Center in Winnebago
  - 50kW at Winnavegas Casino
  - 50kW at Winnavegas Hotel
  - 8kW at Winnavegas North Amphitheater
  - 15kW at the Winnavegas RV Park
  - 25kW at the Winnavegas Training Center

- Total 280kW
Winnavegas Pony Express

- Significant offset
- Cost effective
- Looks great!
- Out of traffic
- $2.30/watt installed cost
- Long electrical run
Pony Express Rosalie

- First use of MPM mounting system
- Utilized property edge with a north/south spine
- Traffic bollards became necessary because of traffic
- Excellent production
- $3.25/watt installed cost
• Already had a skystream on this meter to make a hybrid system
• All electric building
• Pole mounts well adapted to sloped ground
• $3.65/watt installed cost
Blackhawk Community Center

- Difficult design burden
- Open area, excellent solar access
- Load analysis completed
- Attached system using power grip anchors
- $2.40/watt installed cost
100kW Winnavegas Casino + Hotel

- Standing seam metal roof, quickly deployed
- Open solar access
- $1.85/watt installed cost
- Performed roof loading study
7.6kW Amphitheater North

- Located with RV Park in small available area
- 17’ long pipe with ten foot in the ground with concrete
- Very high power cost
- $3.65/watt installed cost
15 kW RV Park

• Pole Mounts selected because of limited space available
• Will provide sustainable energy for camping visitors
• Replaces expensive power
• $3.31/watt installed cost
25kW Winnavegas Training Center

- Utilize unused space for energy offset
- Designed to expand
- 25kW inverter capacity
- $2.20/watt installed cost
Winnavegas Site Planning
# DOE-2 Overview

<table>
<thead>
<tr>
<th>Location</th>
<th>AC kW</th>
<th>DC kW</th>
<th>MWh</th>
<th>$/MWh</th>
<th>Value</th>
<th>Installed $</th>
<th>$/watt</th>
<th>Usage/yr</th>
<th>Match</th>
<th>IRR %</th>
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<td>80</td>
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<td>Ground</td>
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<td>Pony Rosalie</td>
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</table>

**Totals/Average**  
278 320 455 $120.00 $46,909.00 $728,622.00 $2.69 8,236 MWh 7.20% 12.6yrs @ 3%

**Summary Figures**  
15.5 simple
## Project Status

<table>
<thead>
<tr>
<th>Location</th>
<th>AC kW</th>
<th>Status</th>
<th>Electrical status</th>
<th>Savings to date</th>
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* As of Nov 19, not all system on line Jan 1, 2018
Resource Verification is clearly shown with modern solar camera devices. Solar access must be verified to ensure year round access to the solar resource.
Future Plans

- Continue clean energy projects in Ho-Chunk Village.
- Develop clean energy strategies in the development of Ho-Chunk Village 2.0
- Explore outside partnership efforts (investors, tax credit leveraging, etc.)
Contact Information

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