

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
- CDFI

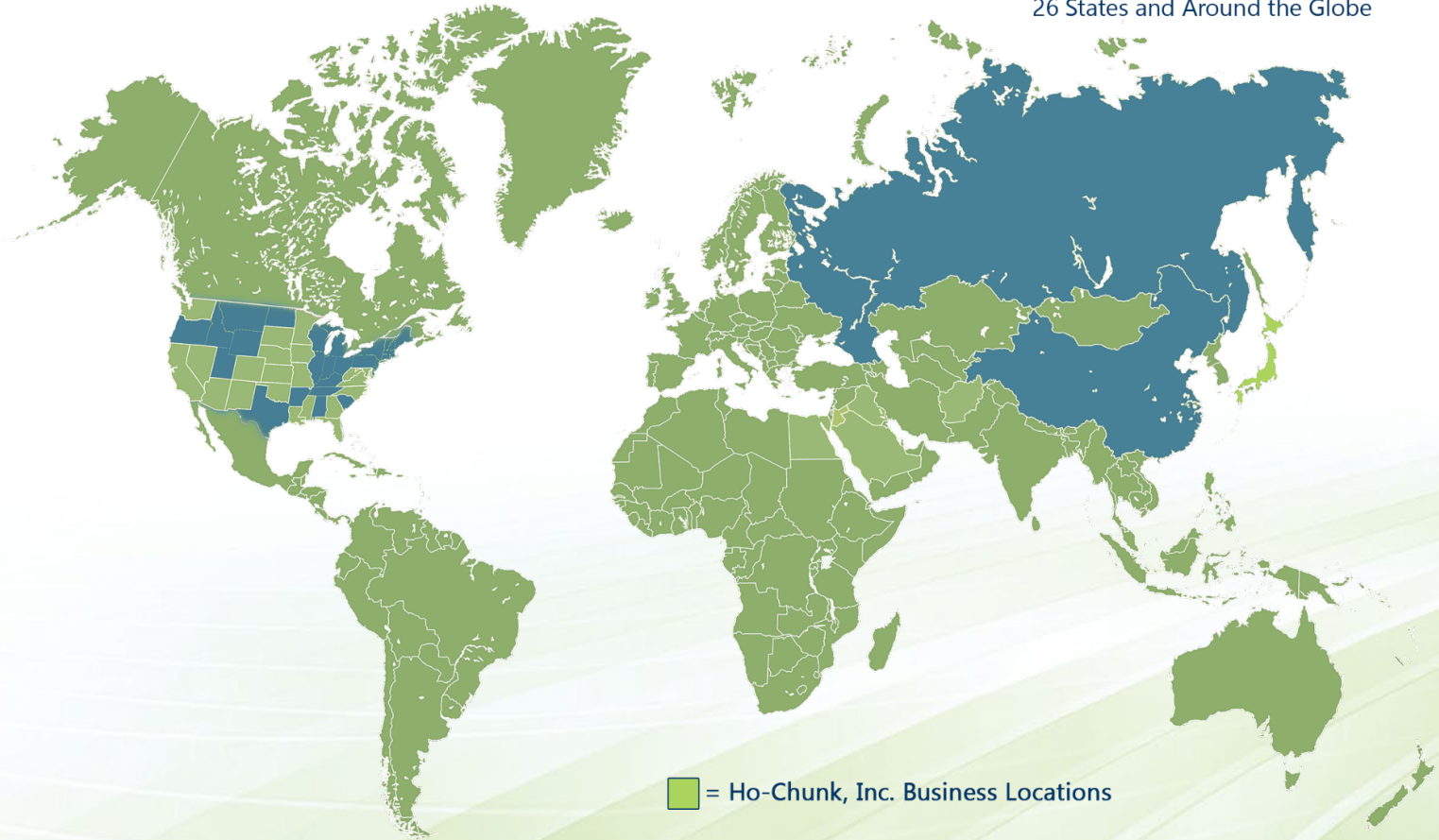
Ho-Chunk, Inc.



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.



- 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 cost on retail power.
- Low maintenance costs.

Lessons Learned



Planning and Engagement

- Bad News: Tribal communities are not always the best planners
- Good News: We are getting better!
- Key is more and better communication with all stakeholders
- Use technology and social media
- Don't forget old school use of flyers and newsletters
- Always, always, always include the Tribal Council.

Ho-Chunk Village



<http://hochunkinc.com/village-tour.php>



Project Highlights DOE -1



Ho-Chunk, Inc. is helping create one of the largest renewable energy infrastructures in the state of Nebraska in the Winnebago community.

HIGHLIGHTS

- 1,000 solar panels installed at 14 sites across the Winnebago Community.
- 300kw solar power generation, reducing energy bills by about \$30-40,000 annually.
- These projects will offset 25% to 75% of total energy usage at these sites.

Funding DOE -1



In 2017, 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 grants. We received two of only 13 national awards from DOE.

\$790,000

BREAKDOWN

\$395,000 in grants from the Office of Indian Energy at the Department of Energy

\$395,000 in matching funds from Tribal sources, including Ho-Chunk, Inc.

Project Initiatives



The project is comprised of two initiatives

1. Install Community Scale solar on the reservation: 282 kW of solar installations and one 5 kW of wind installations that will reduce the associated retail electrical consumption of those site by approximately 27% (annual saving of \$30-40,000!)
2. To install solar 25 kW renewables and passive solar thermal measures at the Ho-Chunk Village Live Work Building, a commercial mixed-use building.

Project Sites



Renewable energy project sites include:

- Solar panels
 - Tribal Pow Wow Grounds
 - Ho-Chunk Renaissance building
 - Tribal Planning building
 - Winnebago Senior Housing
 - Live Work building
 - Woodland Trails building
 - Rock River Manufacturing
 - Rock River Distribution
 - Heritage Foods
 - Walthill Foods
 - Pony Express
 - Titan Motors and Storage
- Little Priest Tribal Collage wind turbine replacement.

Live Work Building



- 25 kW limit
- Specially designed roof structure
- Fair access
- Includes small thermal solar
- \$75,000 total cost



Woodland Trails



- Use low angle trays similar to the Ho-Chunk, Inc. corporate office
- Ballasted roof with stone/block exchange
- High cost power
- \$64,537 system
- 25 kW

Rock River Manufacturing



- Similar system to Live/Work
- 25 kW
- Will save about \$4,000 per year
- Difficult roof access
- \$67,382 total cost

Walthill Foods



- 25 kW system
- High cost of power
- Easy standing seam roof
- System cost of \$63,796
- Load analysis completed

Pony Express & Titan



- Our first large ground mount system
- 50kW x 2
- Easily Expandable, excellent cost point
- \$218,156 for 100 kW is \$2.18 watt
- Visibility from highway entering town

Ground Mount Project



Ground Mount Project



HCI Warehouse



- Expansion to max capacity of available space
- Originally designed to expand
- 25 kW stays net metering, NPPD will by 45 kW as buy/sell arrangement
- \$46,455 to add 20 kW to fill space

Tribal Planning Offices



- 6kW solar panels
- All the roof would hold
- Nearly 100% offset
- Tree trimming required

Pow-Wow Grounds



- Veteran's Building will receive roof mounted solar panels
- 6 kW was sized to provide electrical offset for Pow Wow and 6MWH produced in 2018, enough to offset Pow Wow ceremony electrical use.

Renaissance Building



- Winnebago Language building received ballasted roof mounted solar panels
- 20 kW

Project Overview



Senior Center
14 KW Roof mounted
solar panels



Senior
Housing
8.5 KW Roof mounted
solar panels



Little Priest Tribal College
Replace two wind turbines, 5kW

Project Status



| Location | AC kW | Status | Electrical Status | Savings to date |
|-----------------|-------|---------------------|-------------------|-----------------|
| Live Work | 25 | Installed | Completed | \$1565 |
| HoChunk REN | 20 | Installed | Completed | \$1496 |
| Woodland Trail | 25 | Installed | Completed | \$2791 |
| Rock River | 25 | Installed | Completed | \$3060 |
| Walthill Foods | 25 | Installed | Completed | \$2192 |
| Pony/Titan | 100 | Installed | Completed | \$8772 |
| Distribution | 18 | Installed | Completed | \$1161 |
| Elder Housing | 8.5 | Installed, expanded | Completed | \$1354 |
| LPTC | 5 | Installed | Completed | \$150 |
| Senior Center | 12 | Installed | Completed | \$1753 |
| Pow Wow | 6 | Installed | Completed | \$674 |
| Tribal Planning | 6 | Installed | Completed | \$852 |
| | 285 | | | \$25,970* |

* As of Nov 18, not all system on line Jan 1, 2018

Project Highlights DOE-2



Ho-Chunk, Inc. is helping create one of the largest renewable energy infrastructures in the state of Nebraska in the Winnebago community using tribal capability.

HIGHLIGHTS:

- Over 1,000 solar panels installed at 9 sites across the Winnebago Community.
- 300kw solar power generation, reducing energy bills by about \$30-40,000 annually.
- These projects will offset 5 to 75% of total energy usage at these sites.
- Installations using a variety of mounting solutions
- Targeting the highest cost power consumption

Funding DOE -2



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 grants. Our grant was one of only 15 national awards from DOE.

\$720,851

BREAKDOWN

\$356,539

in grants from the Office of Indian Energy at the Department of Energy

\$364,312

in matching funds from Tribal sources, including Ho-Chunk, Inc.

DOE-2 Overview



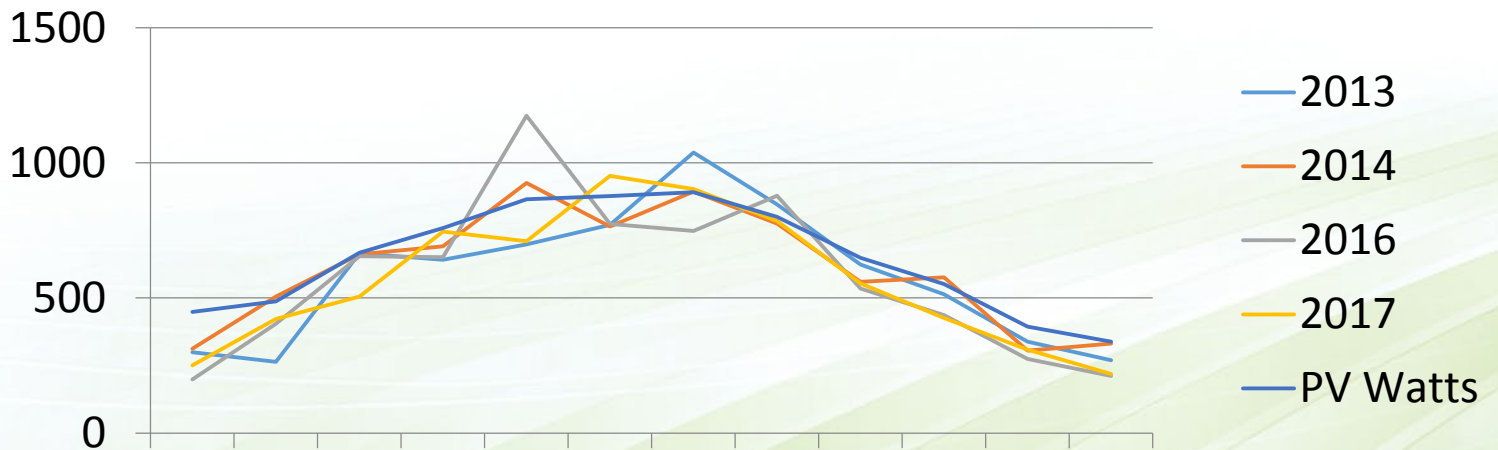
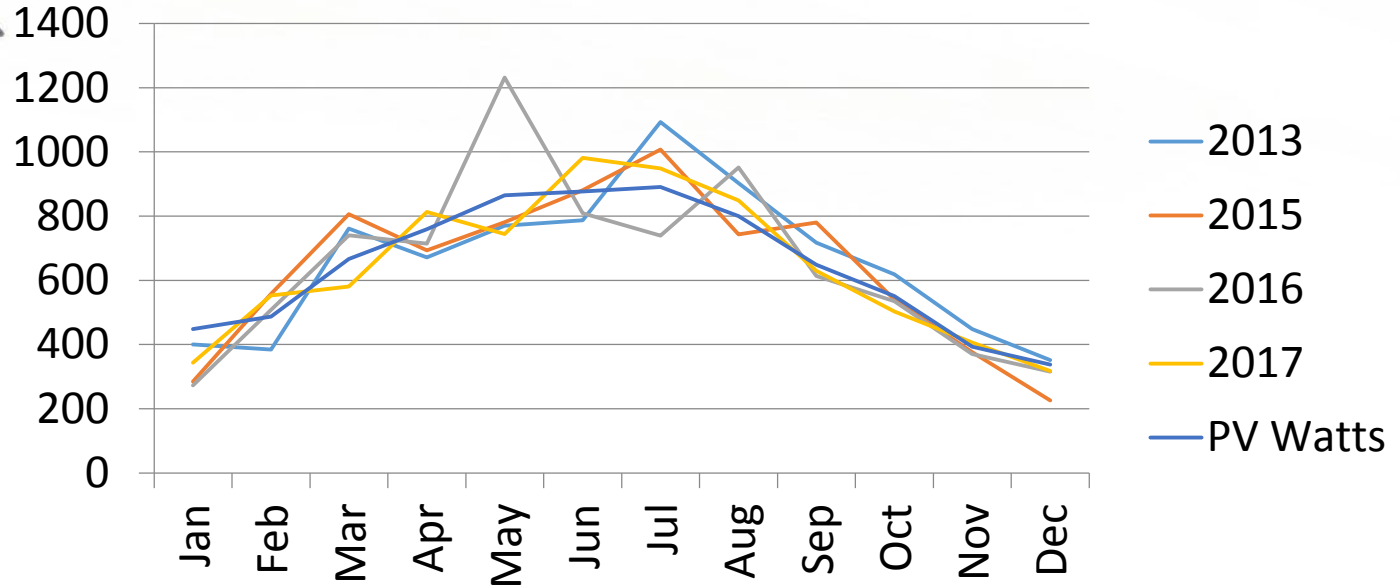
28-Aug-18

| Annual Analysis | | | | | | | | | | | |
|-----------------------|------------|------------|------------------|---------------------|----------------------|---------------|------------------|-------------|------------|----------|--|
| | Suggested | | Produced | | value | | | | | | |
| Location | AC kW | MWh | \$/MWh | Value | Installed \$ | \$/watt | Usage/yr | IRR % | Payback | Type | |
| Pony Sloan | 50 | 80 | \$ 116.00 | \$ 9,280.00 | \$ 120,538.20 | \$2.07 | 102 Mwh | 18.4 | 6.5 | Ground | |
| Pony Rosalie | 23 | 38 | \$ 110.00 | \$ 4,180.00 | \$ 78,924.27 | \$3.16 | 128 MWh | 12.1 | 9.9 | Pole | |
| HCI Accounting | 7.6 | 12 | \$ 100.00 | \$ 1,200.00 | \$ 30,721.80 | \$3.65 | 80 MWh | 9.9 | 12.2 | Pole | |
| BHCC | 50 | 80 | \$ 81.00 | \$ 6,561.00 | \$ 118,071.00 | \$2.04 | 1,086 MWh | 13.5 | 8.9 | Roof | |
| Casino | 50 | 80 | \$ 88.00 | \$ 7,040.00 | \$ 99,623.02 | \$1.72 | 5,131 MWh | 16.1 | 7.5 | S-5 Roof | |
| Hotel | 50 | 80 | \$ 94.00 | \$ 7,520.00 | \$ 97,623.02 | \$1.68 | 1,528 MWh | 17.4 | 6.9 | S-5 Roof | |
| Amphitheater N | 7.6 | 12 | \$ 260.00 | \$ 3,120.00 | \$ 30,732.70 | \$3.65 | 14 MWh | 23.4 | 5 | Pole | |
| Sign/RV park | 15 | 24 | \$ 115.00 | \$ 2,760.00 | \$ 52,892.88 | \$3.15 | 61 Mwh | 11.7 | 10.3 | Pole | |
| Training Center | 25 | 40 | \$ 115.00 | \$ 4,600.00 | \$ 64,161.77 | \$2.17 | 106 Mwh | 16.9 | 7.1 | Ground | |
| Totals/Average | 278 | 455 | \$ 121.00 | \$ 46,261.00 | \$ 693,288.66 | \$2.59 | 8,236 MWh | 15.6 | 7.7 | | |

Limited Progress this year



Power Estimation

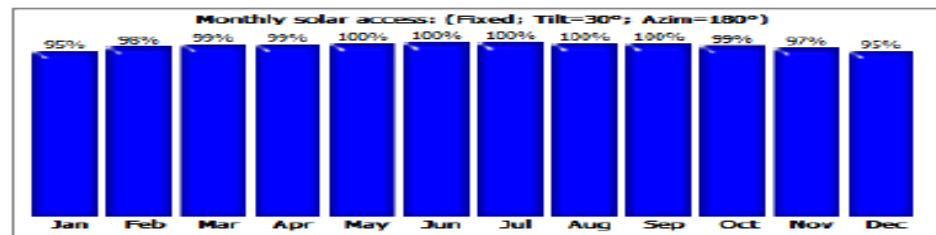
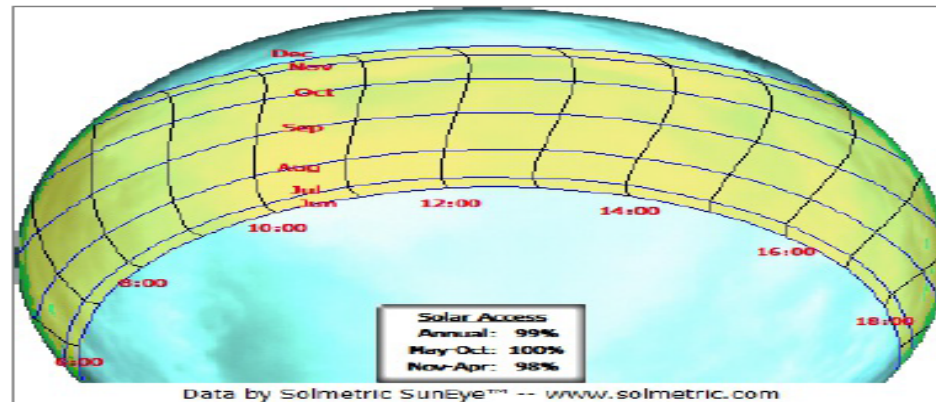


Resource Verification



Sky01 -- 3/23/2018 3:09 -- pony express site

Panel Orientation: Tilt=30° -- Azimuth=180° -- Skyline Heading=181°
Solar Access: Annual: 99% -- Summer (May-Oct): 100% -- Winter (Nov-Apr): 98% -- TOF: 99%



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



Ann Marie Bledsoe-Downes

Vice President of Community

Impact and Engagement

abledsoe-downes@hochunkinc.com

712-305-5094

Robert Byrnes

Solar Development Technician

waterdog@nerenew.com

402-307-0280