






Rosebud Indian Reservation

-  1910 reservation boundary
-  Rosebud reservation and trust lands
-  Other reservations

WIND DEVELOPMENT ON THE ROSEBUD

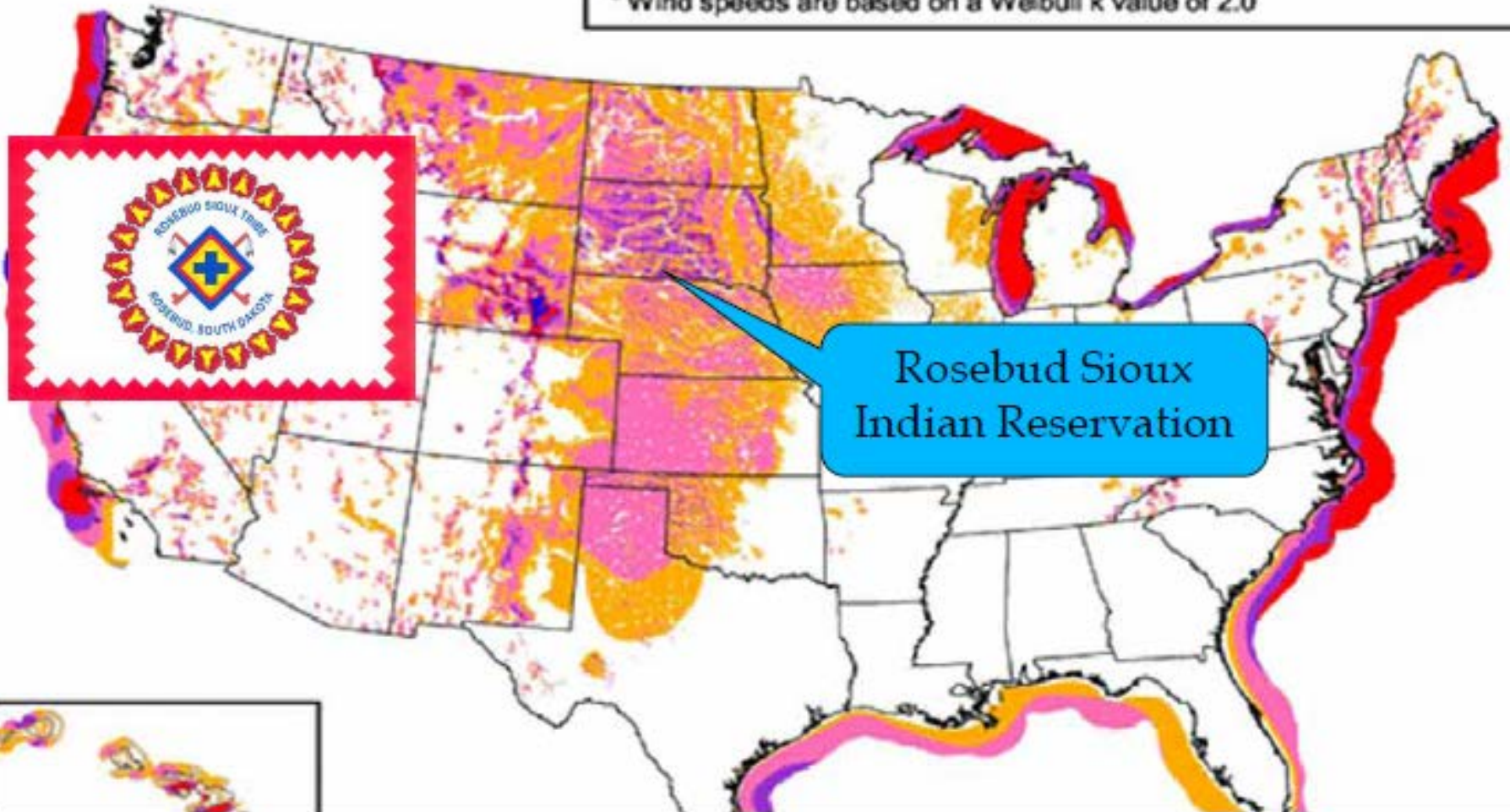
DOE, Tribal Energy Program
March 26th, 2014,
Denver, Colorado



Wind Power Classification

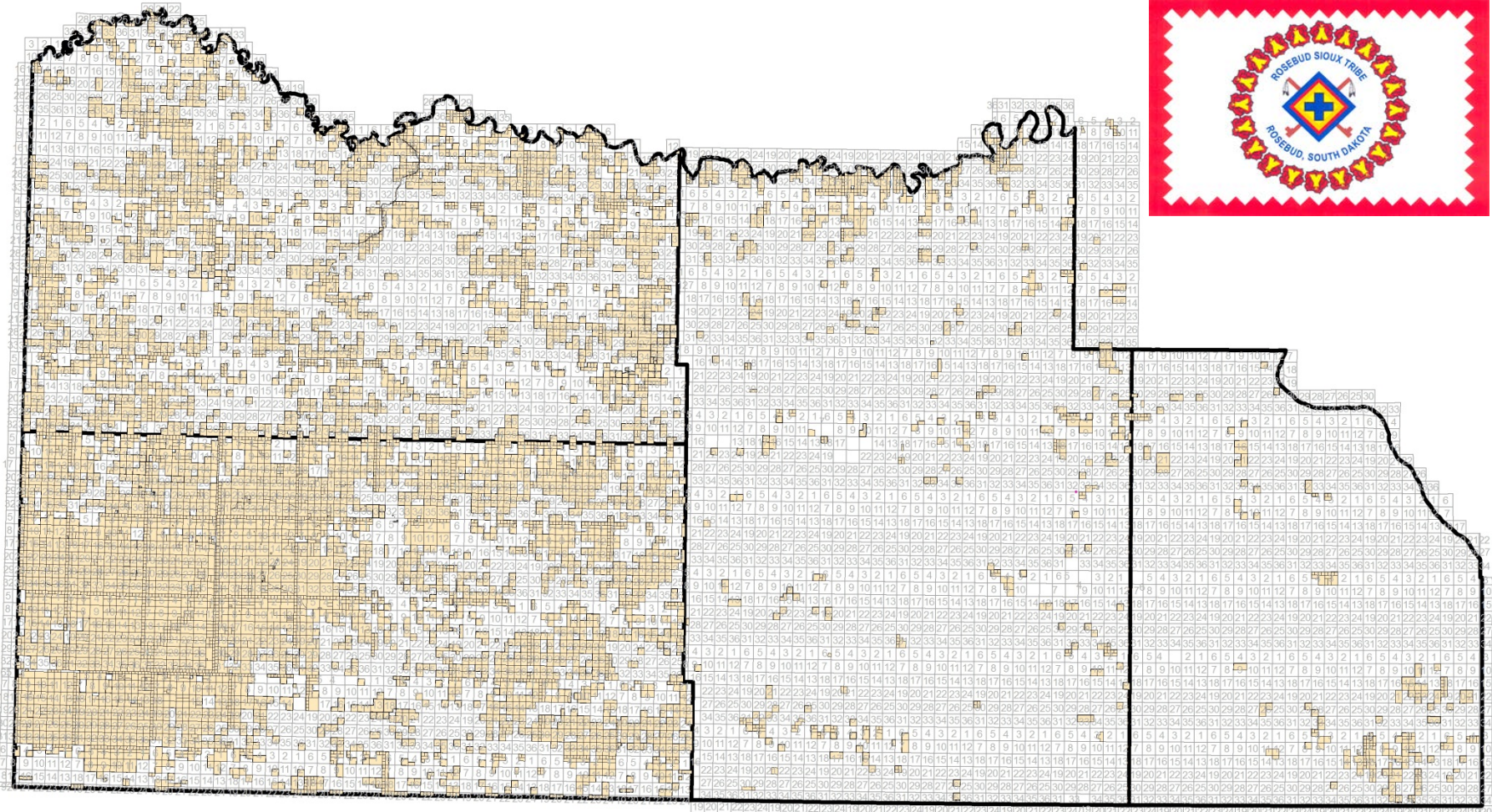
Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m^2	Wind Speed ^a at 50 m m/s	Wind Speed ^a at 50 m mph
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

^aWind speeds are based on a Weibull k value of 2.0



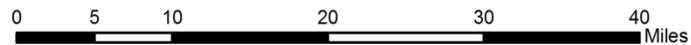
Rosebud Sioux
Indian Reservation





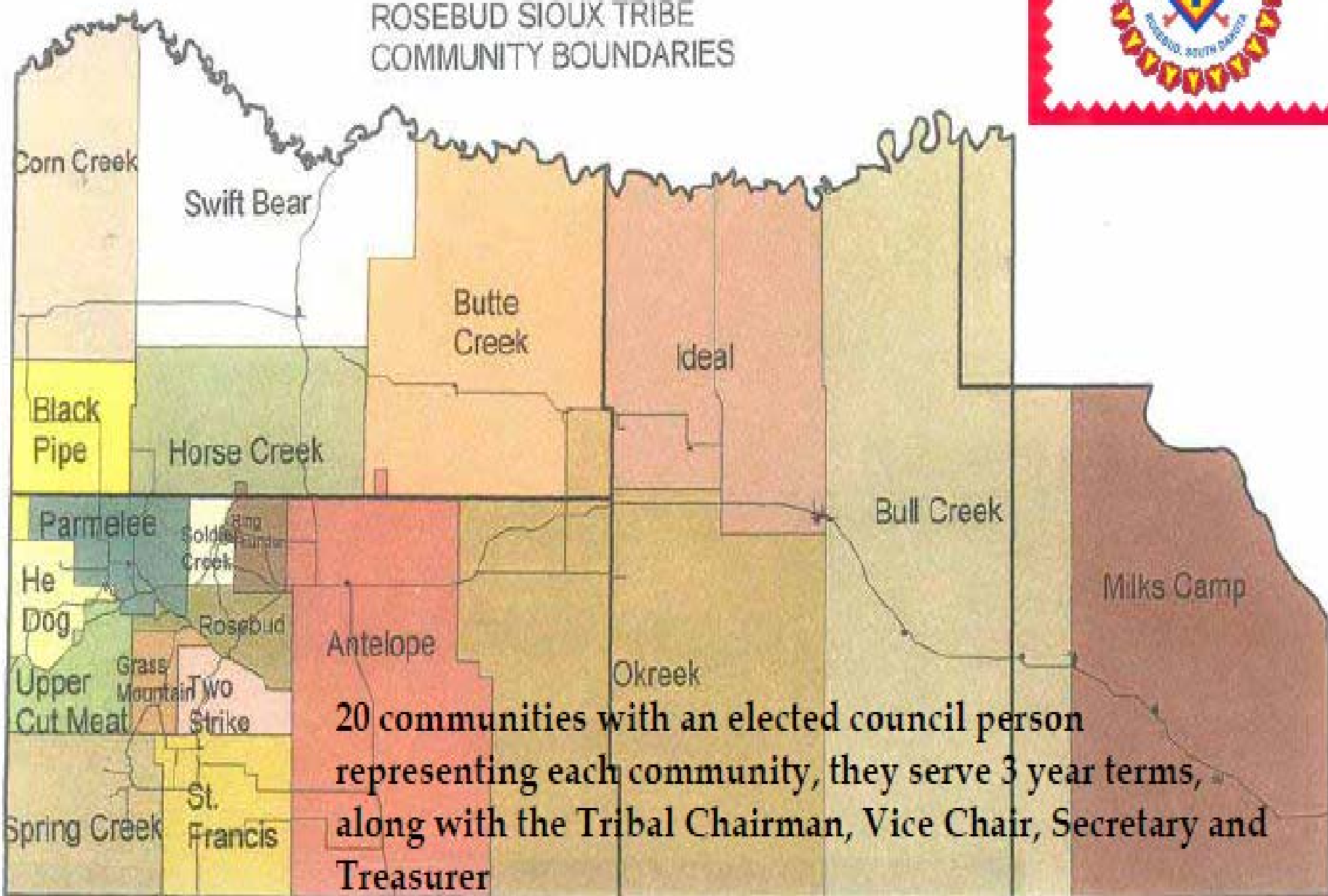
Tribal and/or Trust Acreage Within the Five County Rosebud Sioux Reservation

Todd County = 530,242 tribal trust acres of a total 889,725 acres
Mellette County = 296,536 tribal trust acres of a total 838,402 acres
Tripp County = 67,632 tribal trust acres of a total 1,034,503 acres
Gregory County = 23,570 tribal trust acres of a total 522,454 acres
Lyman County = 2,224 tribal trust acres of a total 143,921 acres



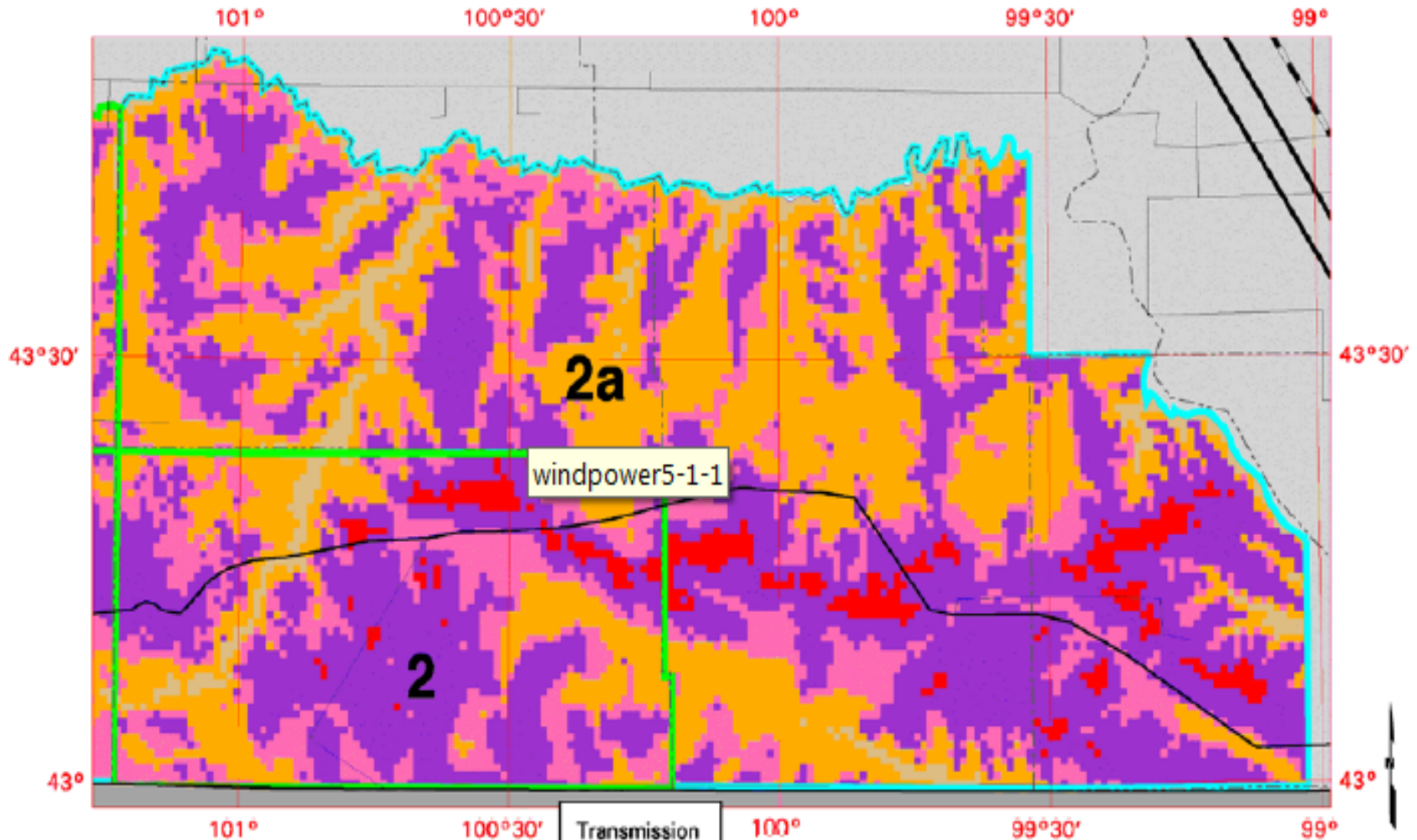


ROSEBUD SIOUX TRIBE COMMUNITY BOUNDARIES



20 communities with an elected council person representing each community, they serve 3 year terms, along with the Tribal Chairman, Vice Chair, Secretary and Treasurer

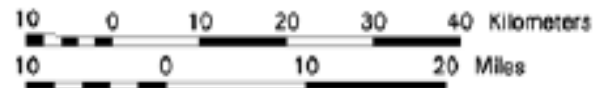
South Dakota - Rosebud Reservation Wind Resource Map and Capacity

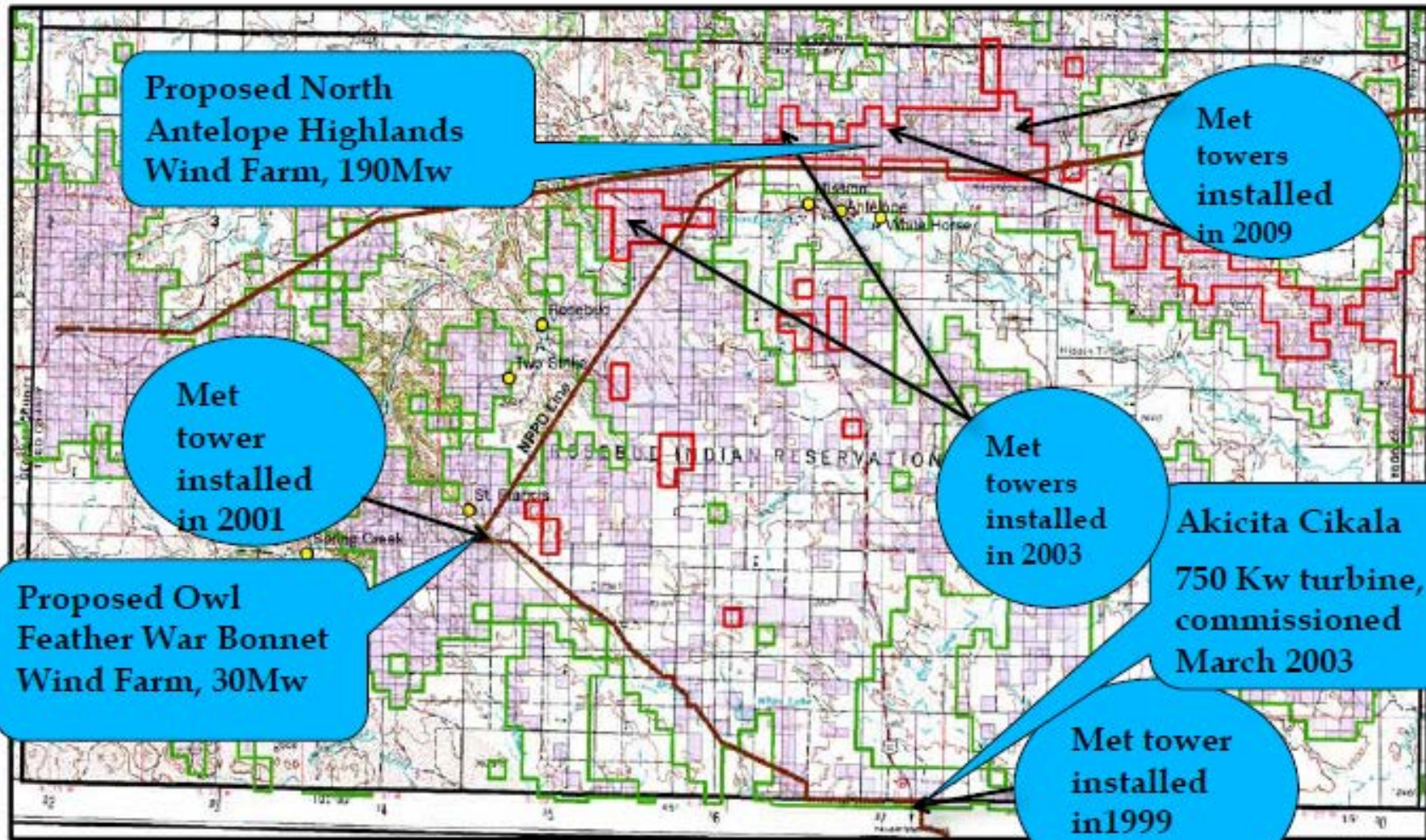


Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m ²	Wind Speed ^d at 50 m m/s	Wind Speed ^d at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3

Transmission Line Voltage
69 Kilovolts
115 Kilovolts
230 Kilovolts
345 Kilovolts

- ★ Federal Facility
- City or Town





Proposed North Antelope Highlands Wind Farm, 190Mw

Met towers installed in 2009

Met tower installed in 2001

Met towers installed in 2003

Proposed Owl Feather War Bonnet Wind Farm, 30Mw

Akicita Cikala 750 Kw turbine, commissioned March 2003

Met tower installed in 1999



Tribal Trust Lands within Wind Class 5 and 6 in Todd County (Includes Tribal land, Allotment Land, and Trust Deed Land)

Total Trust Land within Wind Class 5 in Todd County = 232,094 Acres

Total Trust Acres within Wind Class 6 in Todd County = 35,116

- Wind Potential Class 6
- Wind Potential Class 5
- Tribal Trust Lands within Wind Class 5 and 6
- County Line
- WAPA and NPPD Poles

Martin, SD Topographic Map
Scale 1:250,000

Contour Interval 100 feet with Supplementary Contours at 50 foot Intervals

Akicita Cikala (Little Soldier)



750 Kilowatt generator
Neg Micon
Commissioned in
March of 2003
Cost was \$1.1 million
\$508,750.00 DOE Grant
\$566,000.00 RUS Loan
Earns \$2,500 to
\$4,000.00 monthly





Owl Feather War Bonnet Wind Farm

2003 Dept. of Energy Grant

DOE Funding \$448,551.00

DISGEN Cost share/in-kind \$78,750.00

RST/TUC Cost share/in-kind \$27,272.00

<http://apps1.eere.energy.gov/tribalenergy/pdfs/rosebud03final.pdf>



30 Mw Owl Feather War Bonnet Wind Farm

Developer is Distributed Generation Inc. LLC
Dale Osborn, Pres. Project is shovel ready.

Issues are:

**RFP's Power Purchase Agreements are far and few between
due to poor economy and competition from natural gas
Major load areas are far from wind farm site imposing
Wheeling and Tariff fees impeding project economics.**

North Antelope Wind Farm

RFP was issued in Fall of 2007

Rosebud Sioux Tribe and Citizens Wind entered into an MOA December of 2008 for a 5 year period of development.

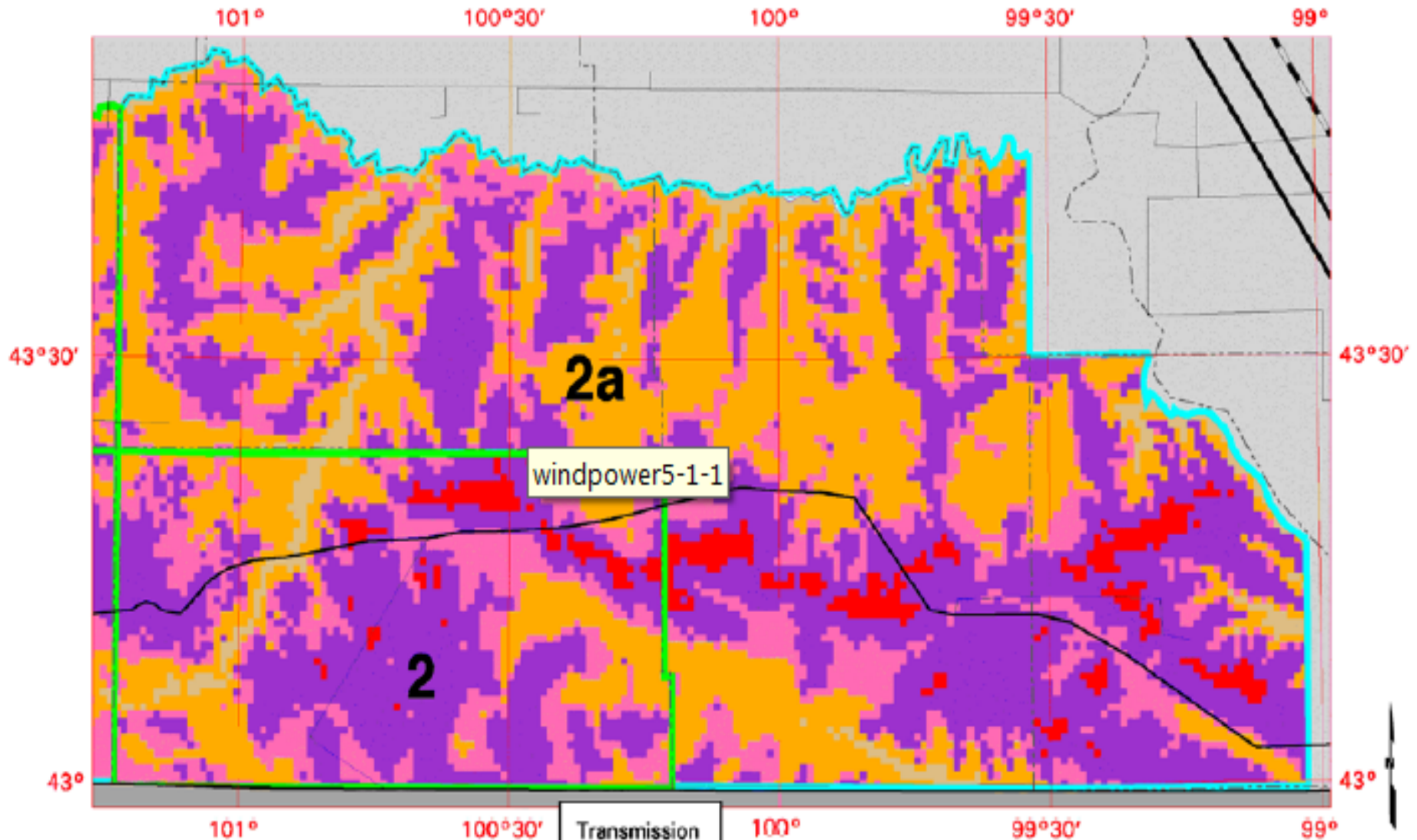
Citizens has exclusive wind rights over all Tribal lands for a period of 2.5 years, in the remaining 2.5 years they must have in the ground at least one operating wind farm. All data gathered will be shared.

The RST and Citizens Wind are considered partners in the development phase, initially the RST had a 20% interest with Citizens having a 80% interest as they bring the development knowledge and money to the table, and we bring our land and wind to the projects.

DOE award of 1.5 Million in 2010 to assist in the development costs garnered the tribe a 33/67 split in development fees.

We intend to charge \$100,000.00 per Mw in development fees to the future owner of the wind farm/s. For every Mw developed RST will receive \$33,000 per Mw immediately after financial closing

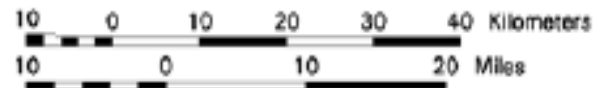
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Transmission Line Voltage
69 Kilovolts
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Rosebud Sioux Tribe and Citizens Wind

**North Antelope Highlands
Wind Farm 190 Mw**

Basic Agreement:

Partnership in development with 33% share in the development fees, worth \$33,000.00 per Mw.

Passive land owner royalty fee, 3.5% of Gross Revenue Stream

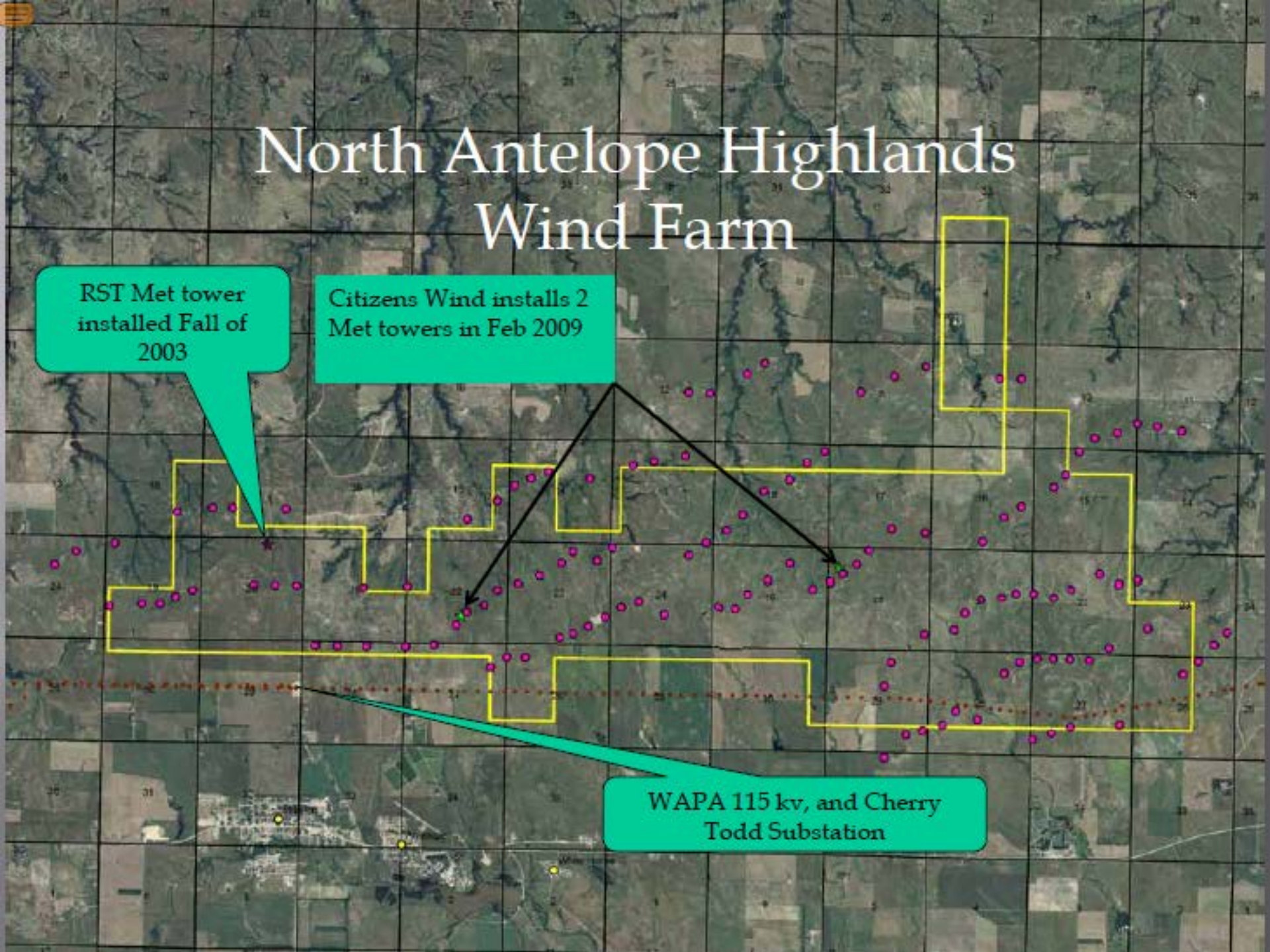
If we build to the 190Mw, RST could receive up to \$25 million in first 5 years due to sale and use taxes, development fees and revenue stream. Over the length of 20 years that amount could hit \$50 million total.

North Antelope Highlands Wind Farm

RST Met tower
installed Fall of
2003

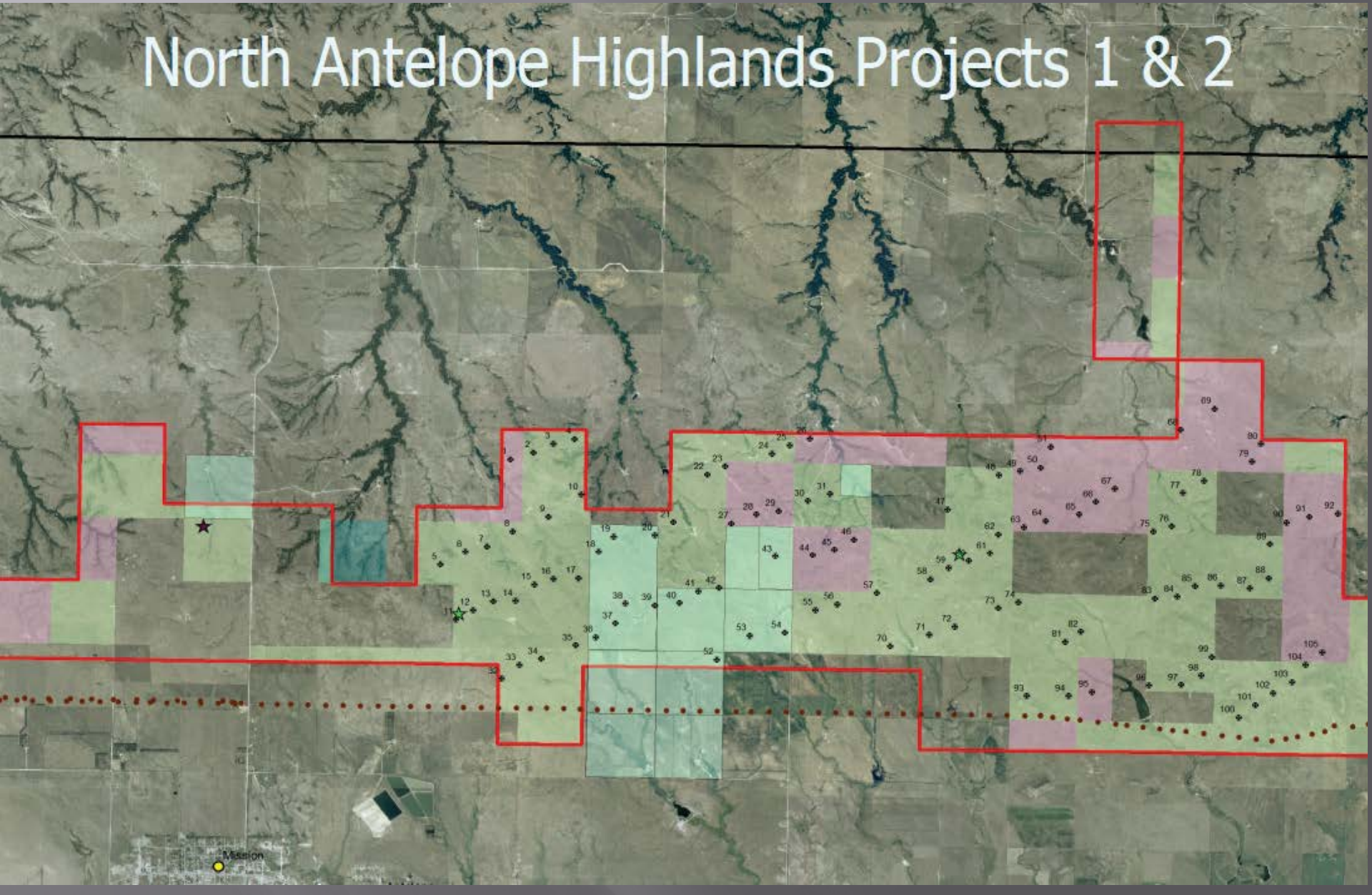
Citizens Wind installs 2
Met towers in Feb 2009

WAPA 115 kv, and Cherry
Todd Substation



Turbine Placement

North Antelope Highlands Projects 1 & 2



North Antelope Highlands Wind Farm

Issues:

Preliminary Systems Impact Study indicates high degree of constraints on the Grid, and to build over 135 Mw on the existing WAPA 115 kv will cost over \$10 million to upgrade.

Any project in the state of SD over 99 Mw is subject to State PUC permitting.

BIA has had the lease agreement under review for this project since Nov. 2010.

North Antelope Highlands Wind Farm timelines

- Throughout the spring, summer and fall of 2009, Avian field studies were conducted on the site and are complete.
- Citizens developed a site layout on turbine locates with 127 turbine locates to date. At this time we plan on using GE 1.5 Mw
- Fauna and Flora field studies are complete
- Bat surveys are complete
- Cultural studies, Class I and III are to be conducted spring of 2012 (pending)
- Submit Environmental Assessment to Lead Agency BIA, June 2012
- Complete System Impact Study by WAPA, by Dec. 2011
- FONSI awarded fall of 2012
- Capacity to respond to any RFP available in summer 2012
- Consultation with US Fish and Wildlife to begin this winter, Eagle nest on site.

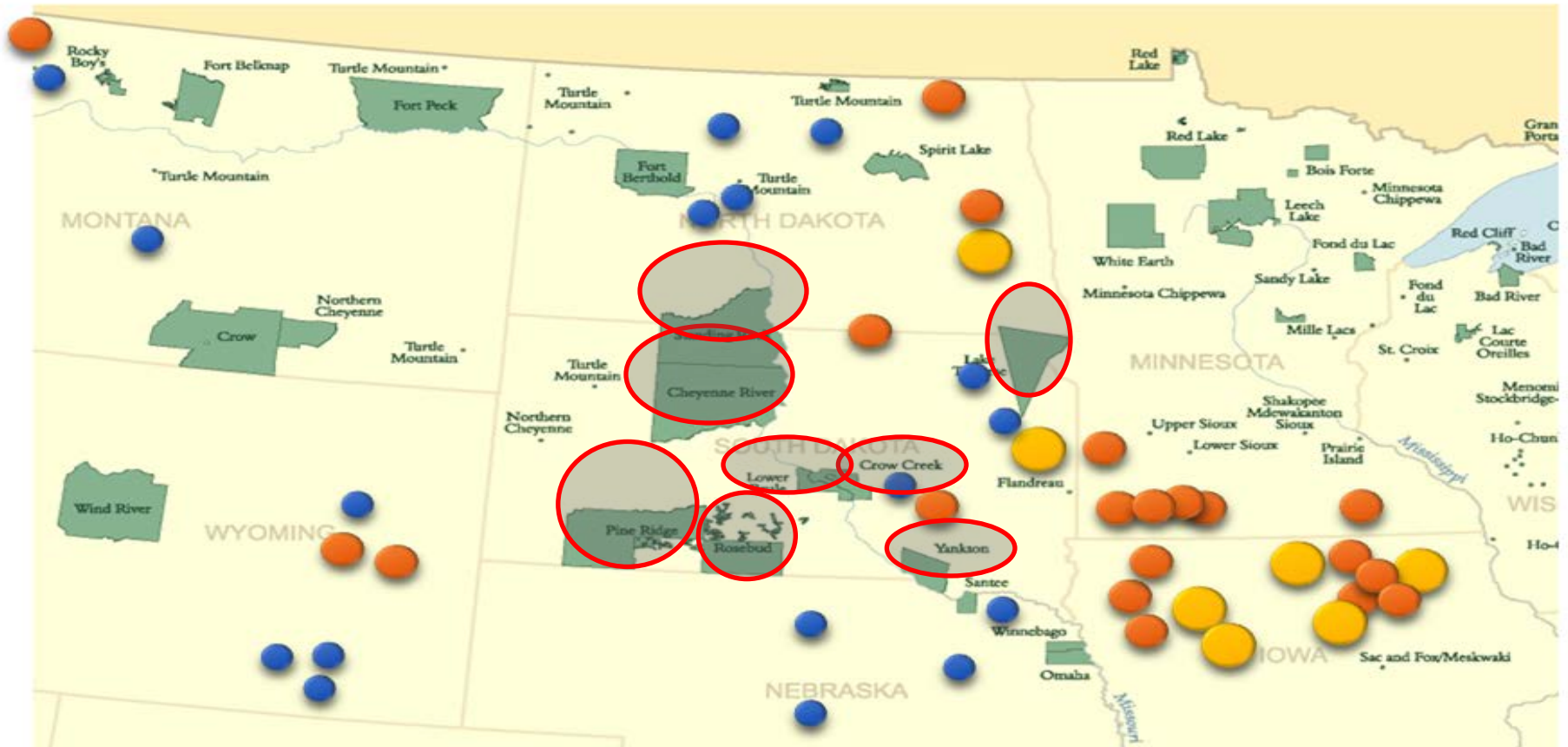
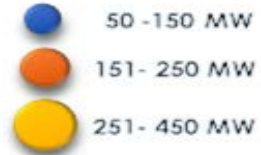
RST use of revenue stream

- Develop a reservation wide distributed generation system, to lessen our dependence on the larger grid to become self sustainable.
- Tribe to start our own tribal utility company, purchasing the existing distribution system from the local cooperative.
- Support our people by upgrading the efficiency of their houses, retrofitting their heating and cooling systems with renewable energy devices such as small wind turbines and photovoltaic panels through grant/loans.
- Support start up funding for small private/tribally owned companies developing residential and community scale renewable energy devices, with the intent to expand outward beyond the reservation boundaries to much larger markets creating jobs and industries.

The proposed Sioux Wind project, announced last year at a Clinton Global Initiative summit, brings eight South Dakota tribes together with the hope of producing between 1 and 2-gigawatts of power collectively on several South Dakota reservations.

Installed Wind Projects

“MISSING THE MARK”



The Tribes are being left behind in wind energy development in the Upper Great Plains region.

Six SD Sioux Tribes Announce Wind Power Initiative

Levi Rickert, editor-in-chief in Native Currents. *Posted June 17, 2013*

CHICAGO – Six tribal leaders of the South Dakota Sioux Nation were on hand at the Clinton Global Initiative to announce with former President Bill Clinton a new power initiative that will harness South Dakota's greatest natural resource: Wind. (1 to 2 GW of Wind Power)



Former President Bill Clinton (c) with Tribal Leaders

WIND FARMS

Multi-Tribal Power Authority (MTPA)

1. Crow Creek Sioux	(325 MW)
2. Rosebud Sioux	(220 MW)
3. Oglala Sioux	(100 MW)
4. Cheyenne River Sioux	(113 MW)
5. Sisseton- Wahpeton Sioux	(100 MW)
6. Yankton Sioux	(100 MW)
Estimated MW Capacity	958 MW

MTPA Development Cost \$1,772,300,000

Estimated Development Cost @ \$1,858,000 per MW (Name Plate Capacity)

Proposed Funding via bundled Tribal Bonding Authority

Assumptions

MTPA Estimated Power Output = 3,353,000 MWh

Potential power sales to Grid @ \$45 MWh = \$150.8 million

Roadblocks to developing the Multi-Tribal Power Project (MTPA)

- 1. Current Grid Capacity is Max'd Out**
- 2. Local Sub-station Capacity and Connectivity problems**
- 3. Excessive and Time consuming Federal Oversight**
- 4. Federal PTC expired 12/31/2013**
- 5. Tribes do not currently qualify for Federal PTC**
- 6. Curtailment Problems and Restrictions**
- 7. Inability to secure a Power Purchase Agreement**
- 8. Difficulty in attracting an outside investor**



Contact Information

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End of Presentation

1st AMERICAN AMMONIA NETWORK

Anhydrous Ammonia (NH₃) Production
(Via Electrolysis)

Multi-Tribal Power Authority (MTPA)

Assumptions

- 1. 958 MW Estimated Capacity = 3,353,000 MWh**
- 2. Purchase of all Tribal wind power @ \$30 MWh = \$100,590,000**
- 3. 3,353,000 MWh converts to 411,411 tons of NH₃**
- 4. 411,411 tons of NH₃ @ \$568 per ton = \$233,681,472**
- 5. Cap-X cost for 411,411 ton conversion facility = \$740,539,877**

WIND FARMS

Multi-Tribal Power Authority (MTPA)

1.	Crow Creek Sioux	(325 MW)
2.	Rosebud Sioux	(220 MW)
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4.	Cheyenne River Sioux	(113 MW)
5.	Sisseton- Wahpeton Sioux	(100 MW)
6.	Yankton Sioux	(100 MW)
	Estimated MW Capacity	<hr/> 958 MW

MTPA Development Cost \$1,772,300,000

Estimated Development Cost @ \$1,850,000 per MW (Name Plate Capacity)

Proposed Funding via bundled Tribal Bonding Authority

Assumptions

MTPA Estimated Power Output = 3,353,000 MWh

Potential power sales to Grid @ \$45 MWh = \$150.8 million