

DOE 2017 Tribal  
Energy Review

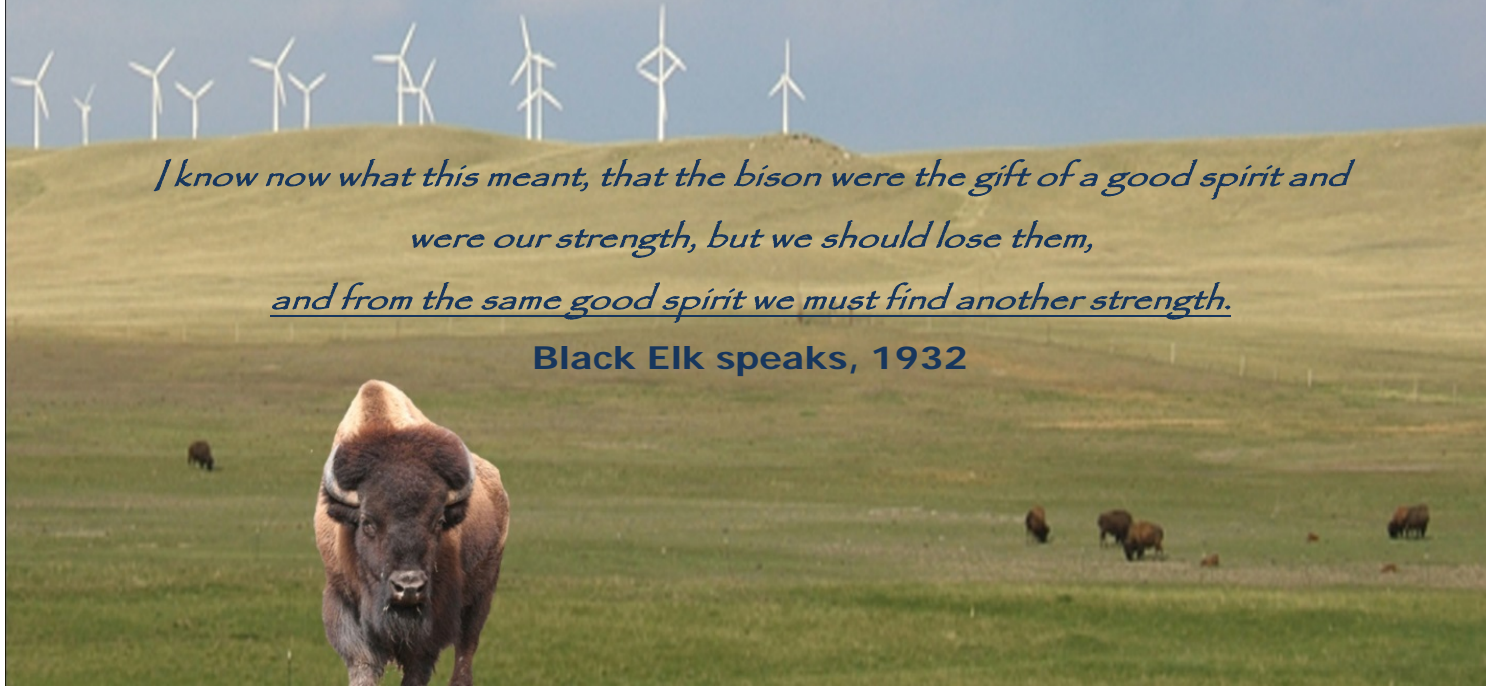


Office of Indian  
Energy and  
Economic  
Development.

*And as I looked and wept, I saw that there stood on the north side of the starving camp a sacred man who was painted red all over his body, and he held a spear as he walked into the center of the people, and there he lay down and rolled. And when he got up, it was a fat bison standing there, and where the bison stood, a sacred herb sprang up right where the tree had been in the center of the nation's hoop. The herb grew and bore four blossoms on a single stem while I was looking – a blue, a white, a scarlet, and a yellow, and the bright rays of these flashed to the heavens*

*I know now what this meant, that the bison were the gift of a good spirit and were our strength, but we should lose them, and from the same good spirit we must find another strength.*

**Black Elk speaks, 1932**

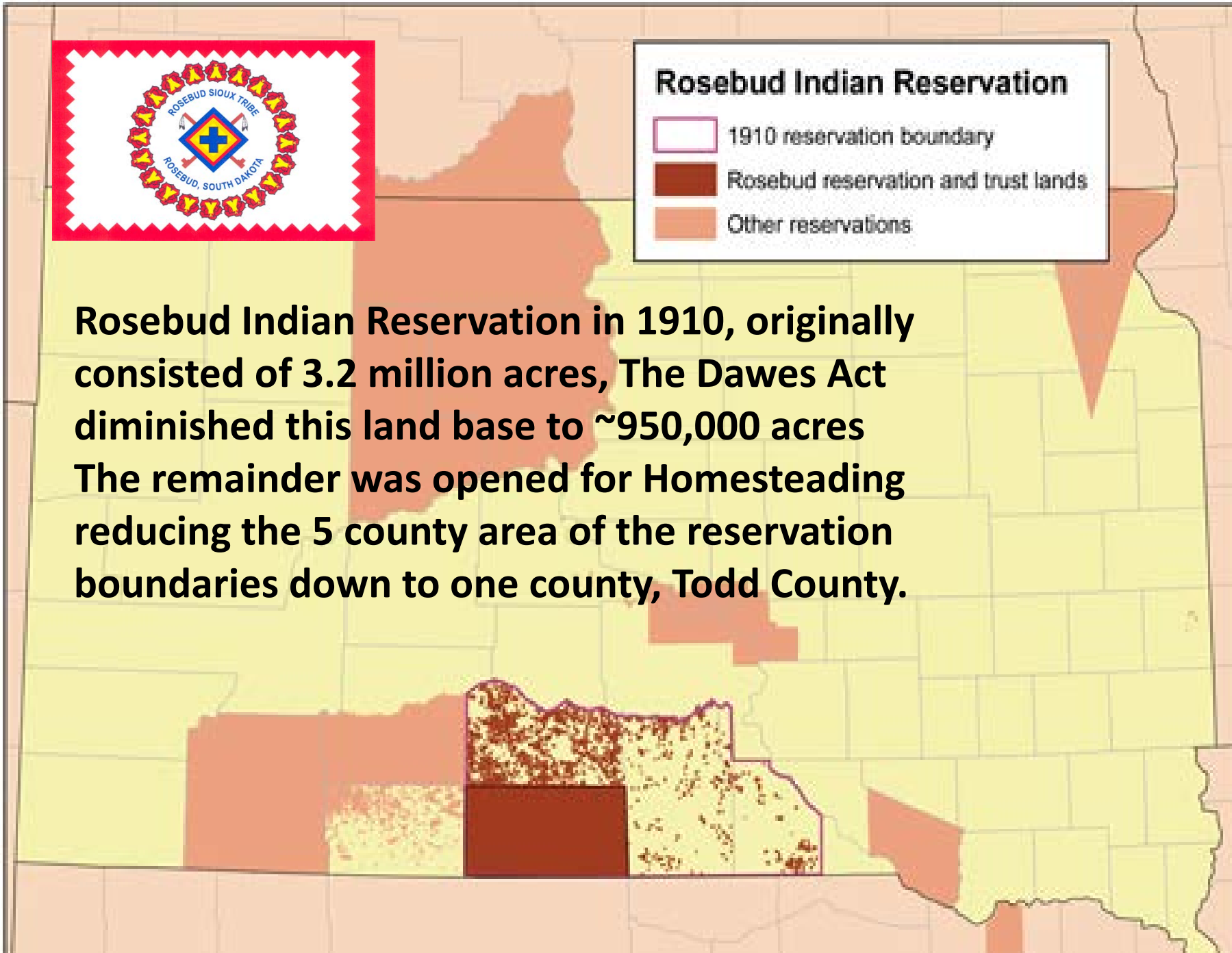




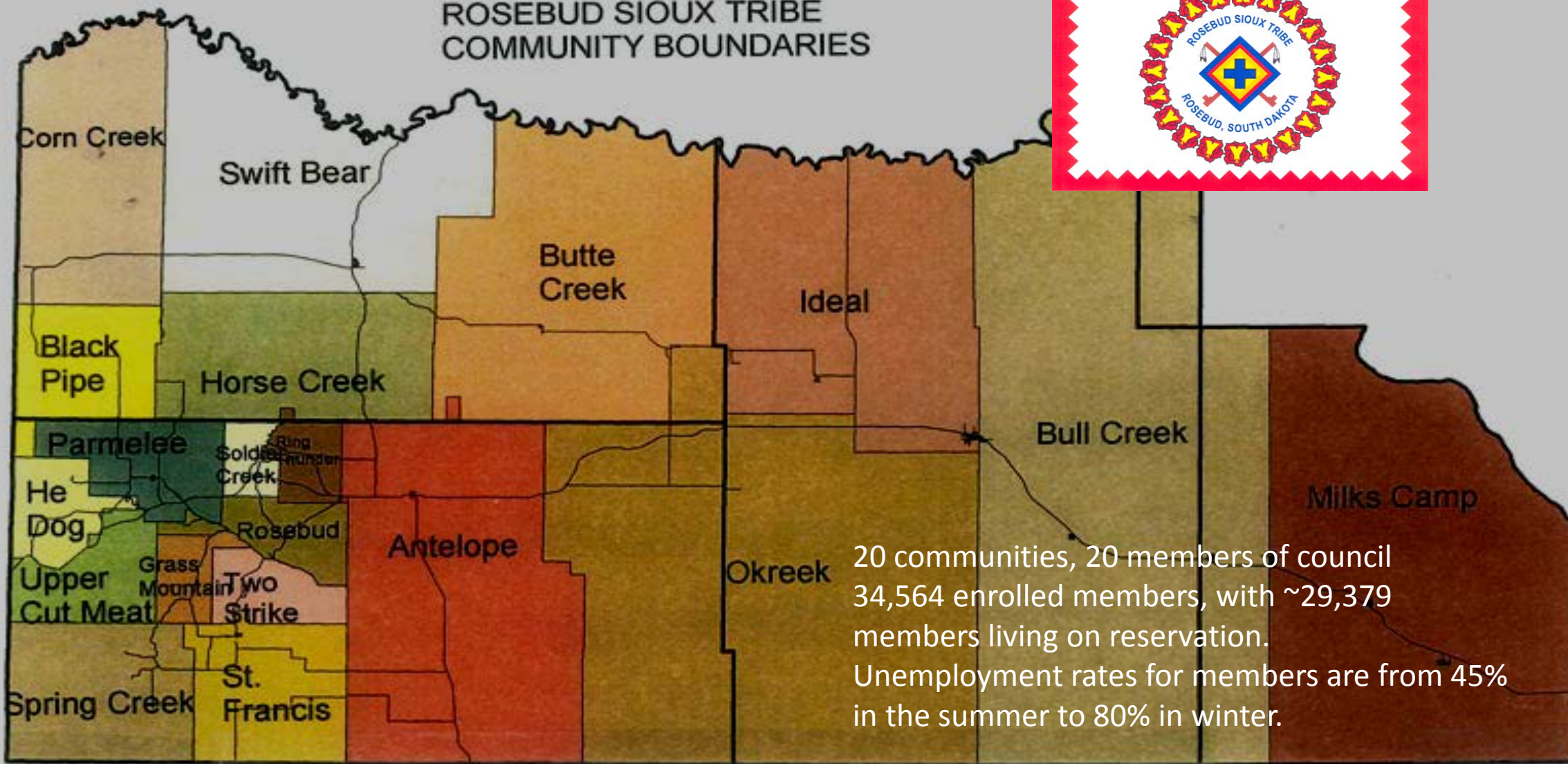
**Rosebud Indian Reservation**

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

**Rosebud Indian Reservation in 1910, originally consisted of 3.2 million acres, The Dawes Act diminished this land base to ~950,000 acres The remainder was opened for Homesteading reducing the 5 county area of the reservation boundaries down to one county, Todd County.**



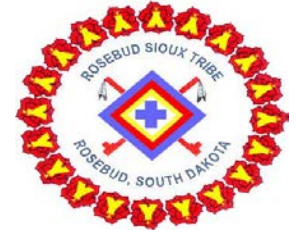
# ROSEBUD SIOUX TRIBE COMMUNITY BOUNDARIES



20 communities, 20 members of council  
34,564 enrolled members, with ~29,379  
members living on reservation.  
Unemployment rates for members are from 45%  
in the summer to 80% in winter.

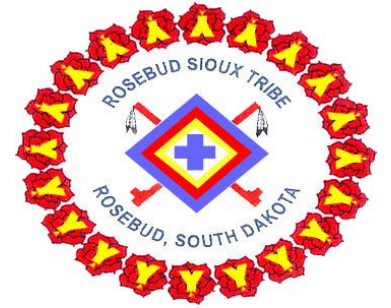


# Changes in rates of Cherry-Todd Electric over the following years, 2003-2017



## Wholesale Rates Increases    Consumer Rate Increases

Year	Power Costs to CTE	% increase	Consumer Rate Increases
2003	\$3,100,487.00		
2004	\$3,301,285.00	6.48%	
2005	\$3,375,773.00	2.26%	
2006	\$3,767,277.00	11.60%	
2007	\$3,907,134.00	3.71%	
2008	\$4,489,925.00	14.92%	
2009	\$4,969,624.00	10.68%	22.0%
2010	\$5,929,792.88	19.32%	8.4%
2011	\$6,678,890.00	12.63%	8.1%
2012	\$7,813,674.54	16.99%	9.0%
2013	\$8,157,205.51	4.40%	
2014	\$7,820,287.00	<4.13%>	
2015	\$7,094,184.00	<9.28%>	2.7%
2016	\$7,717,184.00	8.08%	2.0%
2017	\$8,488,902.40	10.00%	4.4%
Percent change		107.66%	56.6%



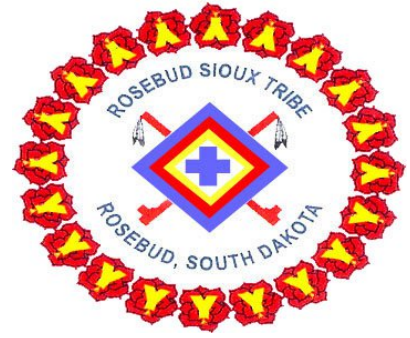
# LIHEAP Program Costs

- 2003.....\$ 665,525.00
- 2006.....\$ 954,997.00
- 2013.....\$2,713,645.50
- 2014.....\$2,578,311.68
- 2015.....\$2,999,426.48
- 2016.....\$2,300,000.00
- Federal LIHEAP assistance, annually is ~\$963,000.00 and may not be funded at this level in the future.
- Remaining monies supplied internally





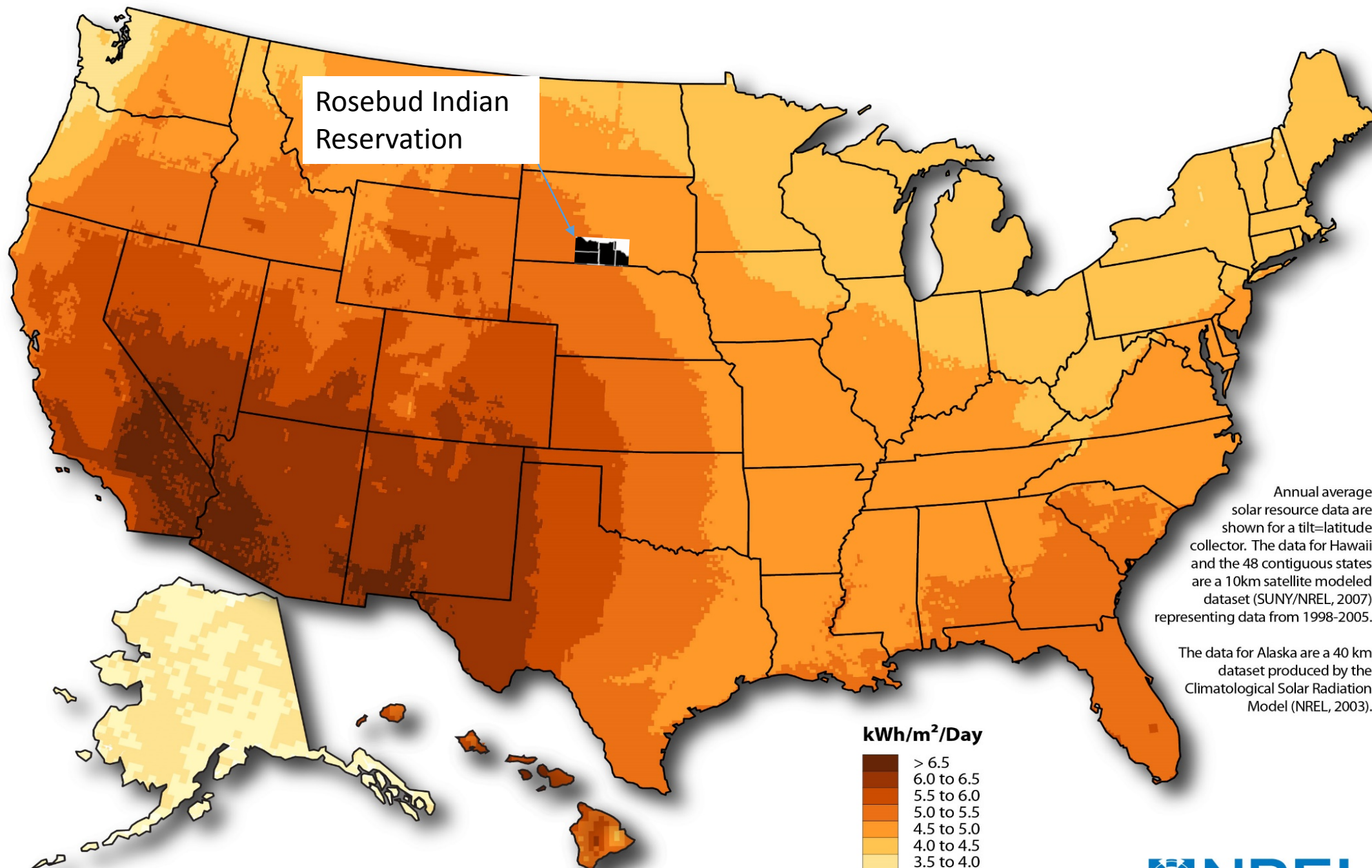
# The Rosebud Sioux Tribe Strategic Energy Plan



**An over-arching living document that will:**

- **Align and focus the tribal energy effort**
- **Provide the foundation for planning and executing key tribal energy initiatives that will lead to development and implementation of reservation wide energy efficiency, cost effectiveness and self-sustainment for the long term.**
- **To document and understand our tribal energy footprint, from the residential, government and business level to the agricultural level.**

# Photovoltaic Solar Resource of the United States





**SWA Corporation, Sinte Gleska University,  
GRID Alternatives  
Rosebud Sioux Tribal Utilities Partnership  
Project**



**10 SWA RENTAL UNITS  
WICOZANI SUBDIVISION  
RING THUNDER  
SOLAR ENERGY PARTNERSHIP INITIATIVE (SEPI)**

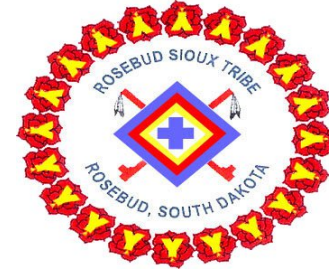
*Department of Energy, Office of Energy Efficiency & Renewable Energy*



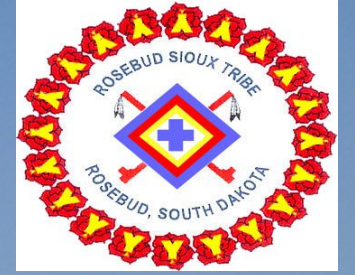




# Solar Energy Partnership Initiative



- **Targeted 10 SWA Rental Units** at Wicozani Subdivision, Ring Thunder, units are all electric heating and cooling, ground source closed loop systems.
- **\$183,223.00= 10 units@\$18,223.00 Solar Equipment, Installation & Initial Training.**
  - **SWA and GRID Alternatives share match requirements**
  - **SGU Building trades gaining training and building capacity**
- **Provides Solar Power Systems** for residential needs - light/heat/cooling.
  - Individual 5.83 kW roof mounted photovoltaic panel systems
  - Grid Interactive – primary power solar; grid secondary.
  - Reimbursed for excess produced power at \$.05 kwh



# DOE 2016 Grant \$261,739.00

Federal Share: \$129,766.00 Cost Share \$131,973.00

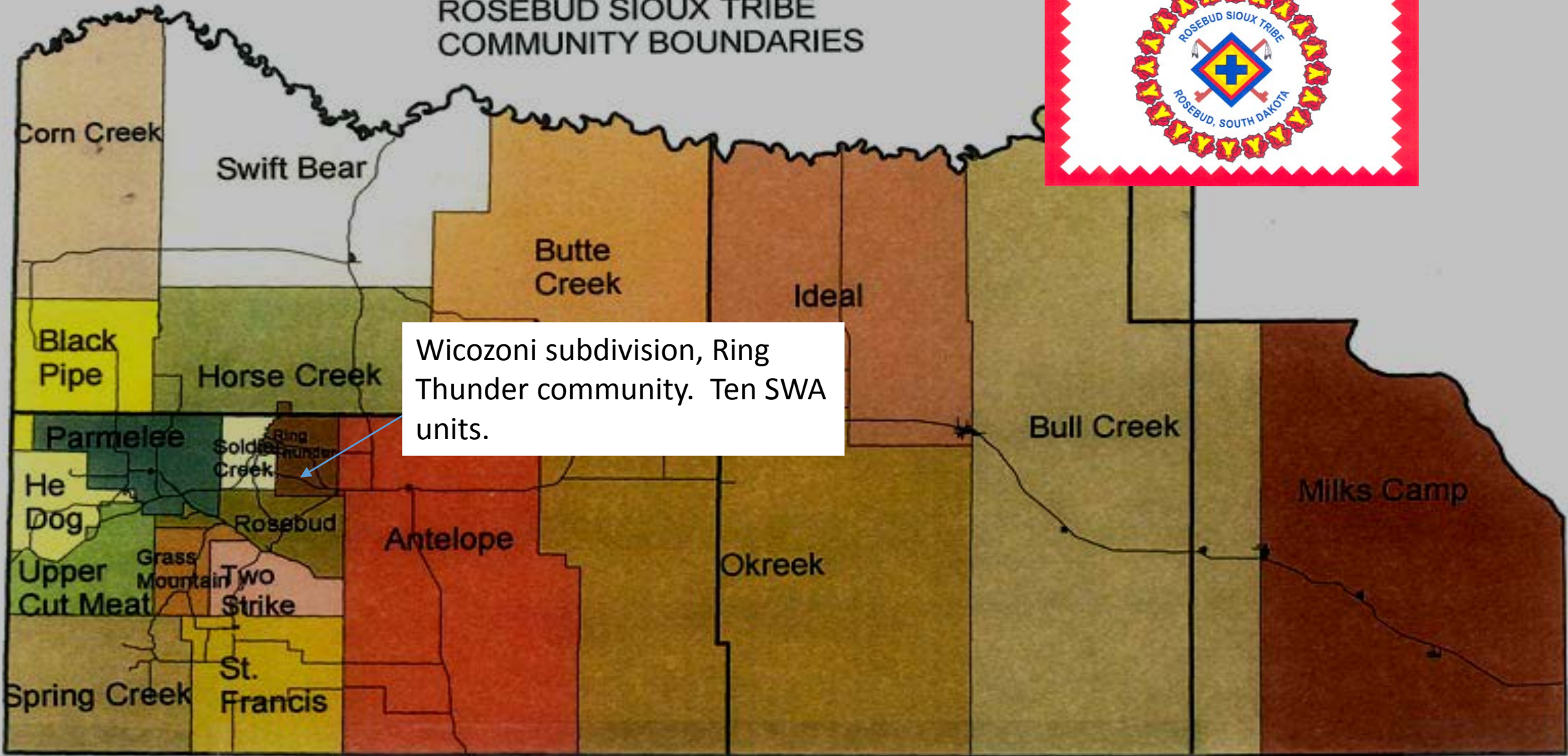


Grid Alternative share is \$80,623.00

SWA Corporation share is \$51,350.00

SWA will get a \$20,000 Photovoltaic System for \$5,135.00 each.

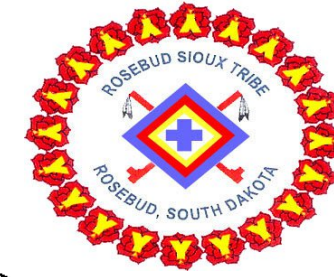
ROSEBUD SIOUX TRIBE  
COMMUNITY BOUNDARIES



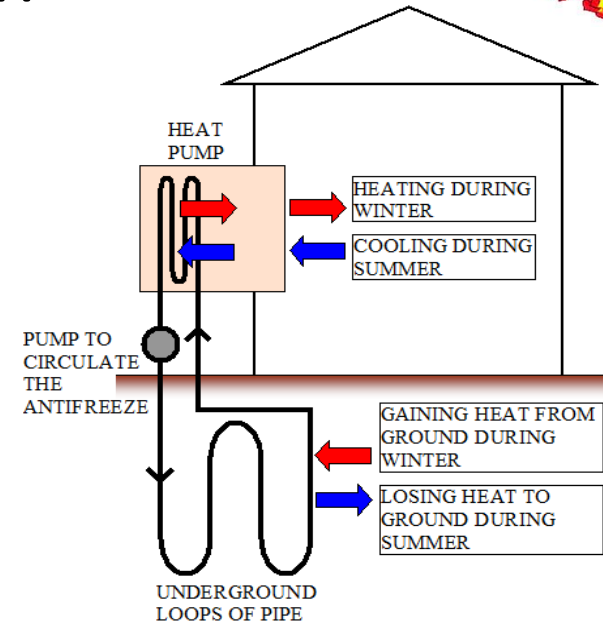
Wicozoni subdivision, Ring  
Thunder community. Ten SWA  
units.



# Residential Photovoltaic 10 SWA Units @ Wicozani Subdivision



Wicozani Subdivision Ring Thunder Housing			GSHP closed loop		
Srv Loc #	Account	Yr KW Usege	Ave KW Mth Use		
10350	203879	19,403	1,617		
10351	203880	29,580	2,465		
10352	203881	17,113	1,426		
10349	203878	25,806	2,150		
10343	203872	30,741	2,562		
10344	203873	14,005	1,250		
10345	203874	19,885	1,657		
10346	203875	20,051	1,671		
10347	203876	19,222	1,602		
10348	203877	23,235	1,936		
	Total	<b>219,041</b>	<b>18,336</b>		
	Hs Ave/yr	<b>21,904</b>	1,833.6 Hs Ave/month		

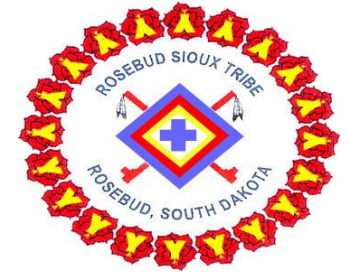


Ground Source Heat Pump, closed loop system, designed to extract heat in winter from the earth via the glycol water solution that circulates through the loop continuously and in the summer it extracts heat from the interior of the building and spills the heat in the earth, consistently producing domestic hot water, through excess heat during the whole process.



# RST Solar Energy Partnership Initiative

## Solar Power Payback Period

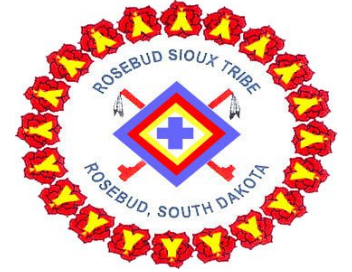


### COMPUTATION BASIS

- According to pv watts, 5.0 Peak sun hours per day
- 5.0 hours X 5.83 kW = 29.15 kWhr per day per house
- 29.15 kWhr X 365 days X 80% Real Solar Conditions=  
8511.8 kWhr per year/per house
- 8,511.8 kWhr X 10 houses =85,118 kWhr Amount produced by 10 Houses
- 85,118 kWhr X \$ .101 = \$8,597 Cost for 10 Houses in fall 2016

<u>Year</u>	<u>Savings/year</u>	<u>Cum/savings</u>
1	\$ 8,597	\$ 8,597
2	\$ 8,597	\$ 17,194
3	\$ 8,597	\$ 25,791
4	\$ 8,597	\$ 34,388
5	\$ 8,597	\$ 42,985
6	\$ 8,597	\$ 51,582
7	\$ 8,597	\$ 60,179
8	\$ 8,597	\$ 68,766
9	\$ 8,597	\$ 77,373
10	\$ 8,597	\$ 85,970

Pay back of SWA  
contribution is approx. 6  
years.



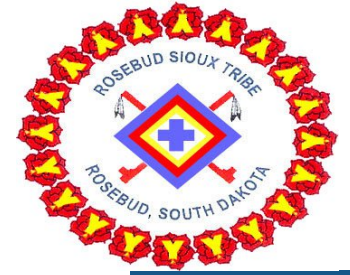
When we first started price of electricity through Cherry-Todd for residential units was \$27.00 basic charge to be hooked up to the grid.

1<sup>st</sup> 900 kWhs was @10.182 cents per kWh, over 900, rate was 8.123 cents per kWhs.

Jan. 2017 rate goes up, now is \$30.00 basic charge, 1<sup>st</sup> 900kWhs @10.604 cents per kWh, over 900kWhs price is at 9.020 cents per kWh.



# Savings Realized



kwh	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	Totals
W/O Solar	19403	29580	17113	25806	30741	14005	19885	20051	19222	23235	219041
Solar Year	10118	29680	16729	20380	25465	13277	19137	13961	10981	15659	175387
Savings	9285	-100	384	5426	5276	728	748	6090	8241	7576	43654

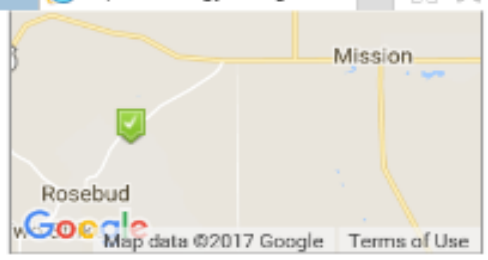
Billing	2509	2510	2511	2512	2513	2514	2515	2516	2517	2518	Totals
W/O Solar	\$ 1,946.63	\$ 2,672.59	\$ 1,739.34	\$ 2,471.02	\$ 2,711.36	\$ 1,544.96	\$ 2,024.97	\$ 1,973.72	\$ 1,921.19	\$ 2,318.92	\$ 21,324.70
Solar Year	\$ 748.01	\$ 2,261.46	\$ 1,244.16	\$ 1,634.22	\$ 2,003.10	\$ 964.28	\$ 1,526.41	\$ 950.79	\$ 702.82	\$ 1,167.33	\$ 13,202.58
Savings	\$ 1,198.62	\$ 411.13	\$ 495.18	\$ 836.80	\$ 708.26	\$ 580.68	\$ 498.56	\$ 1,022.93	\$ 1,218.37	\$ 1,151.59	\$ 8,122.12

# Overall production of these 10 systems since Sept of 2016 to Nov 2017 is 94,600 kwhs

Showing 1 to 10 of 10 systems (filtered from 3,784 total systems) [Show all systems](#)

Status	Name	Groups	City	State/Prov	Today	Lifetime	Connection
Normal	2509 Wicozani Drive, Rosebud Sd	Tribal	Rosebud	SD	118 Wh	9.06 MWh	Cellular
Normal	2511 Wicozani Drive Rosebud, SD	Tribal	Rosebud	SD	116 Wh	9.78 MWh	Cellular
Normal	2512 Wicozani Drive Rosebud, SD	Tribal	Rosebud	SD	428 Wh	10.7 MWh	Cellular
Normal	2514 Wicozani Drive Rosebud, SD	Tribal	Rosebud	SD	116 Wh	9.82 MWh	Cellular
Normal	2515 Wicozani Drive Rosebud, SD	Tribal	Rosebud	SD	346 Wh	9.81 MWh	Cellular
Normal	2516 Wicozani Drive	Tribal	Rosebud	SD	6 Wh	8.79 MWh	Cellular
Normal	2517 Wicozani Drive	Tribal	Rosebud	SD	7 Wh	8.79 MWh	Cellular
Normal	2518 Wicozani Drive	Tribal	Rosebud	SD	7 Wh	8.54 MWh	Cellular
Normal	Rosebud Housing Authority - 2510 Wicozani Drive	Tribal	Rosebud	SD	354 Wh	9.96 MWh	Cellular
Normal	Rosebud Housing Authority - 2513 Wicozani Drive	Tribal	Rosebud	SD	6 Wh	9.30 MWh	Cellular

Show 50 systems



Filtered Systems

Energy

Today  
**1.50 kWh**

Past 7 Days  
**504 kWh**

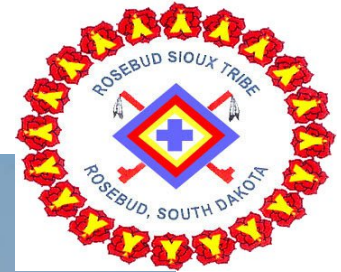
Month To Date  
**804 kWh**

Lifetime  
**94.6 MWh**









# Project Contacts

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