



Solar on the Northern Cheyenne Reservation: A Sustainable, Affordable, and Autonomous Way of Living



Samantha R. Willits, Liberal Studies, Montana State University – Bozeman, MT;

Sierra Alexander, Muddy Creek, MT; Florence Dunkel, Plant Sciences and Plant Pathology, MSU – Bozeman.

Introduction:

The Northern Cheyenne people have experienced a history full of cultural genocide. This history has led them to their current impoverished state where a loss of culture, lack of sovereignty, and inability to create economic development are present and cyclical. In battling to redefine themselves in a modern world, they are realizing that the capitalist methods surrounding them do not fit in with who they are or how they treat the earth.

Solar Energy allows Northern Cheyenne to reconnect with their culture and with *Maheo*, the sacred creative essence sustaining all life, while providing aid in moving toward self-sufficiency from outside political, cultural, and economic influence. This renewed sovereignty will allow the tribe to redefine economic development under their own traditions and circumstances.

The sun is a holistic match aligning the tribe with who they are and how that can be translated into the quality of life that they want as Cheyenne today. It is affordable and provides opportunities for tribal members to undergo 'green job training' in order to create jobs and generate an economic base on the reservation where community members install solar for their tribe.

Why Solar?

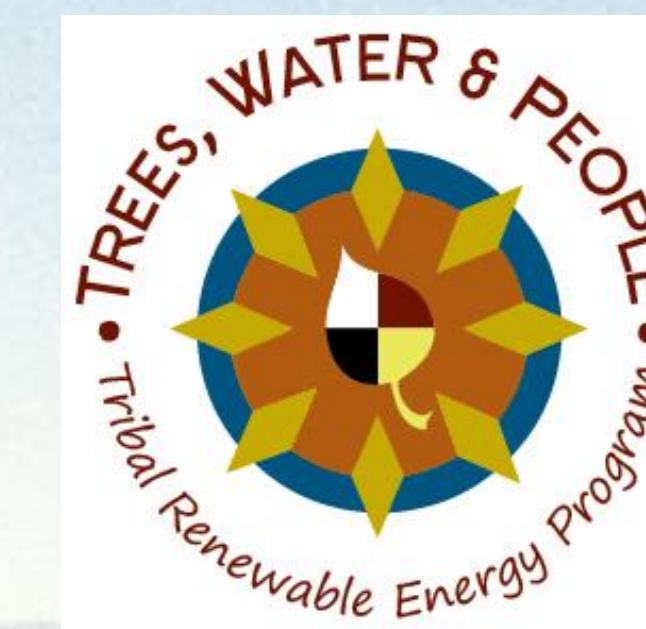
- The Northern Cheyenne Nation has a 78% unemployment rate, and 87% of the population is under the poverty line. Poor health, drug and alcohol addictions, and government dependency are all manifestations of deeper conflicts within the community.
- Energy costs on the reservation are extremely high, and in some cases, families use 50% or more of their income in order to heat their homes.
- Interviews and reservation visits suggested that the overarching values of the tribe are culture, cooperation, spirituality, tribal land, and family.
- The tribe's cultural respect for the land and tribal cooperation contradicts with the competition of Western employment methods and land exploitation.
- Solar energy on the reservation is a solution that blends the need for economic development and employment with cultural revival and environmental respect.
- Solar Energy preserves the land, is an alternative to coal and oil production on the reservation, provides freedom from the state's energy governance, aligns with traditional respect for the sun as part of a movement of cultural revival, it is affordable, and provides jobs that are based on community cooperation.
- Tribes can set an example for the rest of the nation in renewable and sustainable energy.
- The Northern Cheyenne reservation gets an abundant amount of sunlight.



<http://treeswaterpeople.wordpress.com/tag/lakota-solar-enterprises/>

How do the Solar Heaters Work?

- The heaters very simple and easy to take care of. The main component is a 4x8 foot solar collector panel that is backed by a heat absorbing metal film. Baffles direct air flow towards it and then it is covered by a sheet of solar glass with a metal frame.
- Solar panel is mounted and installed next to or on the south side of the house to absorb maximum heat from the sun.
- System is connected to house with two air ducts, one for supply, one for return. A thermostat tells system if air inside collector panel is warmer than temperature on heating system, at which time a blower turns on and warm air collected on the panels is pushed into house.
- Blower fan is system's only moving part.



Hypothesis:

Solar energy on the Northern Cheyenne reservation has the potential to provide affordable energy and heat to those below the poverty line, and to provide green jobs for those who are unemployed, while providing energy autonomy and economic development that aligns with the tribe's culture.

I, therefore, tested the hypothesis that it is possible for the Northern Cheyenne community to become an entirely "off the grid," solar community, and that in doing so, steps toward the restoration of their quality of life will occur, with huge benefits for those in the most significant state of poverty on the reservation.



http://www.treeswaterpeople.org/programs/tribal_renewable_energy/solar_heaters/solar_heaters.html



"Trainees from the Northern Cheyenne Tribe recently joined local Lakota trainees for three days of in-class instruction at the Solar Electric Training, followed by a hands-on installation, learning the ins and outs of solar electric design and installation." <http://treeswaterpeople.wordpress.com/tag/tribal-renewable-energy-center/>

Results:

During my visits to the reservation, I learned implementing solar energy for some of the impoverished families involved more complexities than I had initially expected.

Many homes had broken windows, doors, and walls, and poor insulation. For solar heating to be used effectively, families need to be educated on upkeep and heat transfer.

I also learned about two groups that are of key importance to the prospect of solar projects on native lands, *Lakota Solar Enterprise (LSE)*, and *Trees, Water, People (TWP)*:

Lakota Solar Enterprise is a Native run operation whose goal is "to provide sustainable, economically beneficial, environmentally sound, and culturally appropriate energy solutions to Native Americans on reservations." Not only does LSE help install these systems, but they also host 'green job trainings' so that tribal members can become employed to install these heaters in their own communities.

Trees, Water, People is a nonprofit organization from Fort Collins, CO who have been at the forefront of helping LSE to find grant and loan solutions to provide these sustainable solar systems at an affordable rate.

I quickly learned upon arrival that LSE had already installed a few solar heaters on the Northern Cheyenne reservation. The heaters were definitely effective as a supplement to other traditional heating systems, accounting for 20-30% of energy costs, which can have a huge impact on some of these families.

I got in touch with these two organizations and learned that a few Northern Cheyenne students had already undergone the green job training with LSE and are now employed by TWP, installing for reservation communities around the Rockies.

Both interviewees agreed that the holistic goals of these solar systems have been very successful, although the upfront investment for tribal members is the hardest part.

Materials & Methods:

Interviews with Northern Cheyenne Tribal members and trips to the reservation allowed for the development of a holistic goal, based on the specific needs of the Tribe. Conversations with Lakota Solar Enterprise and with Trees, Water, People took place as well to determine the need and proper implementation of solar on the reservation. Peer refereed journals were used to examine the potential for solar to heal other aspects of culture as well as its use on other native reservations. These understandings combined, led to the idea that Solar would be a positive and holistic solution for the Northern Cheyenne's unaffordable and unsustainable energy, and need for a revival in culture as well as in employment.

Discussion & Recommendations:

What is next in implementation of solar on the reservation in hopes of becoming self sufficient, off of the grid, and culturally resilient?

Through continued research and funding, the Northern Cheyenne Nation has the potential to become solar dependent; functioning completely off of the grid. I, therefore, accept my hypothesis. My research has set a base understanding for all that solar can do to help the community, as well as some complexities that need examination, e.g., need to educate families receiving solar energy and insulation.

A huge step already taken by Cheyenne students was 'green job training' from Lakota Solar Enterprise. Next step is raising awareness in both Northern Cheyenne community and outside of it. Community members need to get excited about the systems. Government and society outside reservation need to hear the voice of Native cultures; they want solar; they are going green. It needs to be known that this option is on the table and allows the tribe to be self sustaining and will save them money overall. Building awareness on the reservation is huge in order to give the trained tribal members jobs and to spread solar autonomy and its benefits!

The more funding groups like TWP can receive, the more solar systems can be installed for free. This kind of research needs to be made accessible to government officials. The government also needs to be informed that there is a calling for this kind of solution, for sustainable and autonomous energy, so that they can direct funding to renewable energy on reservations.

Installation needs cooperation of installer and homeowner to spark ownership and responsibility for the system in their home.

TWP and LSE have put in over 830 of these installations on reservations across the US and have supplied green job trainings on 10 different reservations! Now, we need to apply what they have learned, as well as this research, to help create a Northern Cheyenne Nation that is energy autonomous and economically based at home, to allow for economic development within its own terms! LSE and TWP websites <http://www.lakotasolarenterprises.com/index.htm>, <http://www.treeswaterpeople.org/>

Acknowledgements:

A special thank you to:

- Hymm, Deedee, and Sierra Alexander, for their hospitality in Muddy Creek and for truly introducing me to the NC reservation.
- Florence Dunkel for her guidance and patience with all of the students in our class, to allow real learning to take place.
- To those who took the time to interview for the purpose of this project, and for their enthusiasm towards this cause.
- To my fellow classmates, who made this class a joy!

CITATIONS:

- Arum and Northern Cheyenne Tribe. 2002. The Northern Cheyenne Tribe and Its Reservation: A report to the U.S. Bureau of Land Management and the Department of Natural Resources and Conservation. 2:1-34
- Winona, LaDuke. 2004. Solar Self-Reliance. Mother Earth News: Issue 206:90-95
- Smith, G.A. 2007. Power, Money, and the American Indian. American Indian Report
- Dreveskracht, R.D. 2011. Economic Development, Native Nations, and Solar Projects. The Journal of Energy and Development. Volume 34, Number 2:141-
- Savory, A. and R. Butterfield. 1999. Holistic Management: A new Framework for decision making. Island Press. Washington, D.C. (Chapters 9 and 10).