



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Native American Renewable Energy Program Development

Sandra Begay-Campbell

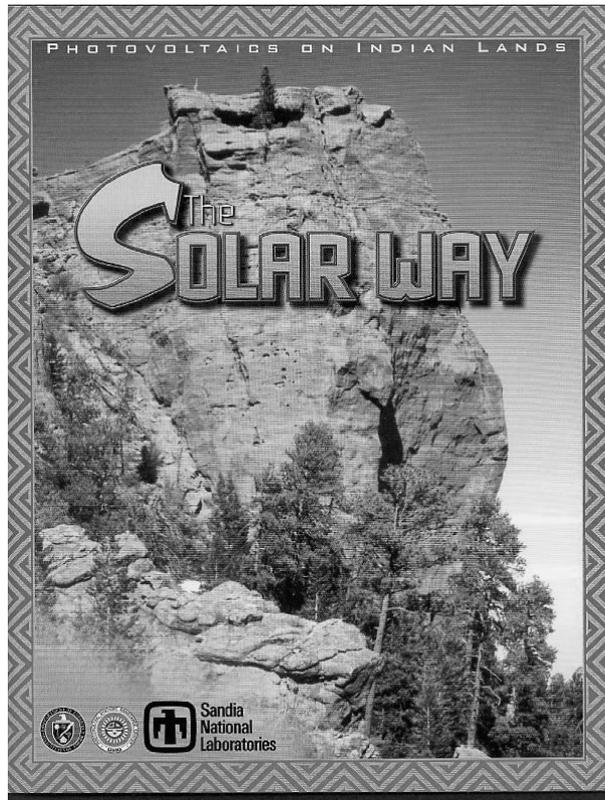
Sandia National Laboratories
Principal Member of the Technical Staff

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy under contract DE-AC04-94AL85000.





The Solar Way: Photovoltaics On Indian Lands Published At Sandia



- **The full-color, 60-page document illustrates the myriad uses of PV on tribal lands throughout the United States.**
- **The book uses the Seven Generations philosophy to come to organize the material.**
 - Caring for the earth and things on it, and living as sovereign people for Seven Generations
- **The book is intended to help tribes make informed decisions about photovoltaics.**
 - With extensive contacts listed, tribes can network and also conveniently seek technical assistance as they move forward with solar electricity projects.

Check out the web version at <http://www.sandia.gov/pv/lib/solarwaytoc.htm>



Sandia provides technical assistance to the DOE EERE Tribal Energy Program



Southwestern Indian Polytechnic Institute (SIPI) was previously awarded a RE curriculum & hardware grant

- Sandia provides technical assistance for the DOE Tribal Energy Program awardees. Specific assignments are made to support the tribal grantees. Examples are:
 - FY03 Jemez Pueblo feasibility technical support
 - FY04 will include continued support of an ecotourism development (CA-Ramona Band).
 - Various tribal grantees supported as requested.
- The Tribal Energy Program team also participates in many tribal conferences throughout the year.

DOE's Office of Weatherization & Intergovernmental Affairs Program

http://www.eere.energy.gov/power/tech_access/tribalenergy/



Sandia's work is also leveraged from the DOE EERE Solar Energy Program in support of the Navajo Nation



New NTUA Off-Grid Photovoltaic (PV)
Hybrid Unit

Navajo Nation received DOE funding for their Solar Electrification Demonstration Project which consists of PV hybrid units. Sandia support includes:

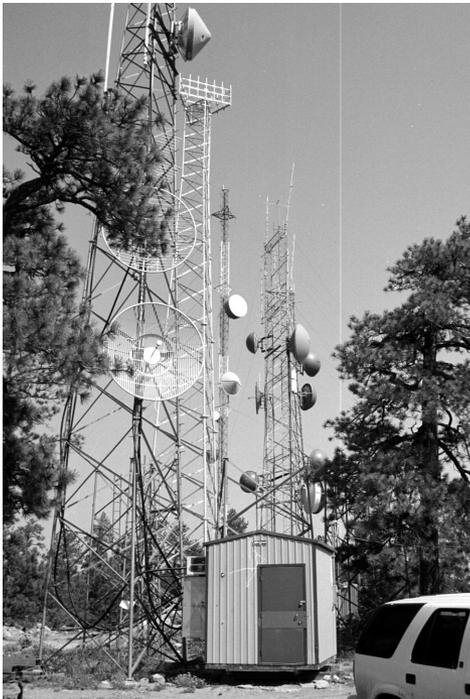
- Assistance with technical specifications and technical review of proposals
- Development of customer video assistance (storyboarding and technical producer interface)
- Testing and evaluation of older solar panel malfunctions
- Offer to assist with acceptance testing & performance testing
- Offer to support maintenance process refinement and data acquisition

The Navajo Nation Electrification Demonstration Program (Public Law 106-511, Section 602) establishes assistance from DOE.



Loaned wind anemometer from DOE Native American Wind Powering America Program installed on Navajo Nation

- Navajo Nation, through the Navajo Tribal Utility Authority, installs anemometer on existing communication's tower.
- Sandia's technical staff supported the Navajo's request for a NREL anemometer equipment loan.



Wind speed to be measured for regional wind energy potential.



2003 DOE Tribal Energy Program summer interns teamed with Sandia student intern, Debby Tewa

- **Deborah Tewa**
 - Hopi
 - Northern Arizona University
 - Indigenous Studies
- **Shaun Tsabetsaye**
 - Zuni
 - University of New Mexico
 - Electrical Engineering
- **Velissa Sandoval**
 - Navajo/Zuni
 - University of Denver
 - Electrical Engineering
- **Keith Candelaria**
 - Jemez/San Felipe
 - Dartmouth College
 - Environmental/Earth Science



DOE summer interns: Shaun Tsabetsaye, Velissa Sandoval & Keith Candelaria



Interns used several research methods to understand the Navajo Tribal Utility Authority's O&M processes

The methods for understanding the processes:

- Reviewed NTUA's DOE Solar Electrification Demonstration Project reports
- Interacted with several solar program personnel
 - Solar Program Manager
 - Electricians
 - Customer Service Representative
- Visited installations where the process was observed
- Clarified information on drafted flowcharts



Field Visit to NTUA customer. Debby Tewa showing summer intern PV hybrid unit.

One-on-one interactions with NTUA's personnel & field visits were extremely valuable in documenting these existing processes



Field Visit to NTUA customer: Bertha Simpson's Residence Narrow Canyon - Kayenta District, Arizona



Pictured: Keith Candelaria, Debbie Tewa, Velissa Sandoval, Shaun Tsabetsaye, Marlene Brown, Melissa Parrish, Vircyntia Charley, Larry Ahasteen

Not pictured: Sandra Begay-Campbell (photographer)