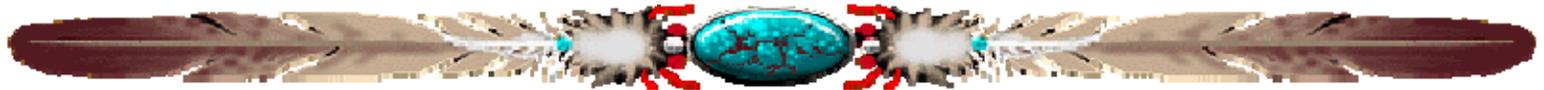
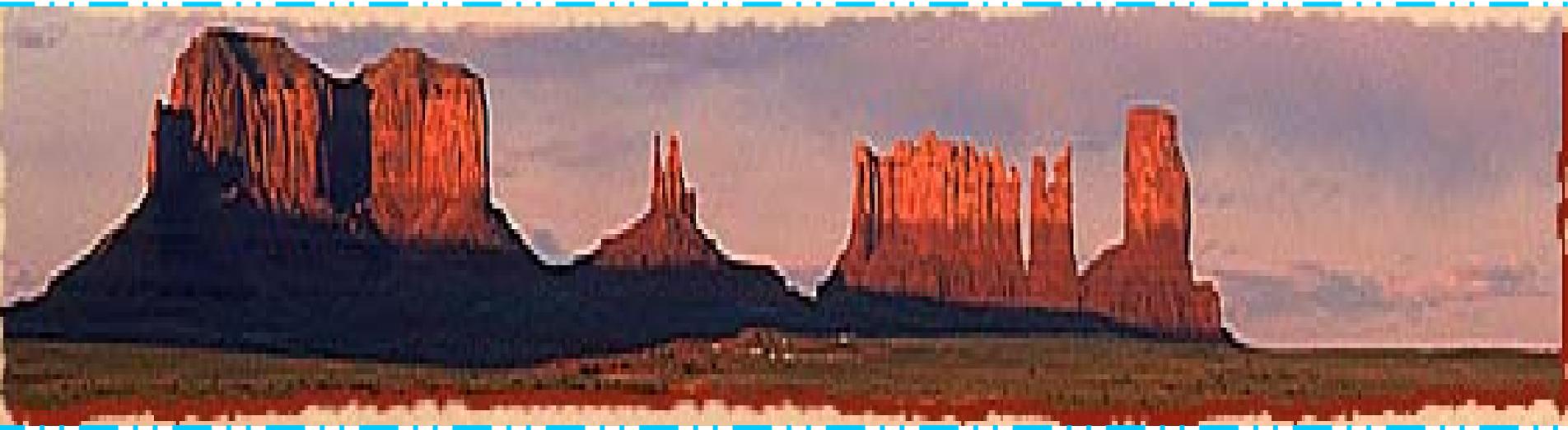
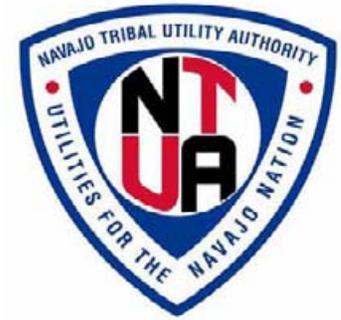


Navajo Nation SOLAR ENERGY PROGRAM

Navajo Tribal Utility Authority



Presented by: Larry Ahasteen, Renewable Energy Specialist
Navajo Tribal Utility Authority

Navajo Tribal Utility Authority



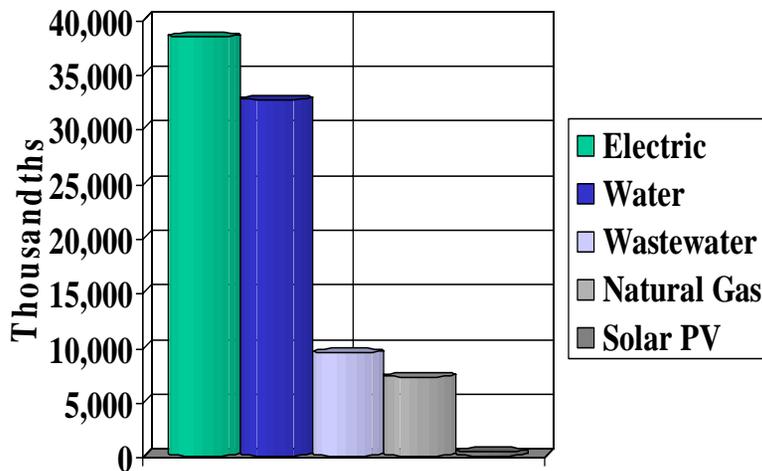
Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

- Navajo Nation Council created NTUA in 1959
- to provide modern utility services to the Navajo people.
- NTUA operates under a Plan of Operation as a non-profit Tribal Enterprise charged with providing utility services at a reasonable rates to the public
- NTUA is governed by a Management Board to direct the operation of the Authority.
- The Board is appointed and confirmed by the Government Services Committee.
- The Board was granted certain powers thru Section 7 of Title 21 of the Navajo Nation Code.



Navajo Tribal Utility Authority

NTUA provides and operates Electric, Natural Gas, Water, Wastewater and Solar PV services on the Navajo Nation in Arizona, New Mexico, and Utah



- Operates five District offices and four sub-offices.
- 38,322 electric customers
- 32,571 water customers
- 9,437 wastewater customers
- 7,225 gas customers
- 220 photovoltaic accounts
- NTUA purchases electric power and energy at wholesale from several sources.
- NTUA does not generate any electric power for its use.



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

SOLAR PHOTOVOLTAIC GOAL



VISION STATEMENT

Renewable Energy Power will become a realized source of available, competitive, alternate energy, both for residential and commercial needs on the Navajo Nation



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

GOALS;

To be a leader within Indian Country in renewable energy through creative, state-of-the-art construction designs and legislation, working together with Navajo Nation citizens, government, business, private and public educational groups; creating positive relationships to renewable energy issues,

OBJECTIVES;

- Establish a clear lines of communications throughout the Navajo Nation to support for renewable energy.
- Educate NTUA Customers and Navajo Nation governments/Chapters using Solar as a method and forum to advance renewable energy applications.
- Create a network of positive relationships to achieve productive changes throughout NTUA territory.
- Become a champion for Indian Country to communicate positions, ideas and input on renewable energy issues facing Navajo Nation .

Estimated 18,000 occupied structures on the Navajo Nation that lacks electric power.



Navajo Nation estimates that 18,000 out of 48,000 homes on the reservation are without electricity.

Nationwide a total of 14.2% of Native American households have no access to electricity, as compared to only 1.4% of all U.S. households.

“The Navajo Nation accounts for 75% of the households without electricity”



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

NTUA-Solar Program,



NTUA Solar Program



- WAPA assisted NTUA in providing residential Solar PV Systems
- WAPA funded \$300,000.00 grant to procure Solar PV systems for lightning-small AC systems.
- Sandia National Laboratory of Albuquerque New Mexico played a key role in providing technical assistance.
- 72 Solar PV units were purchased- 1000 watts per day systems
- In 2002 NTUA Management Board approved the appropriation of \$2 million dollars to purchase 200 PV units –1.7 KWh day
- Congress appropriated \$ 800,000 in 2002 and \$ 1,150,000.00 in 2003 – Navajo Electrification Demonstration Program- Design and Deployment of new Hybrid Solar-Wind System
- 2005 Navajo Housing Authority procured 5 five new Solar Systems for their Scattered Site Housing.- 2.8 Kw per Hr. w/ wind turbine.

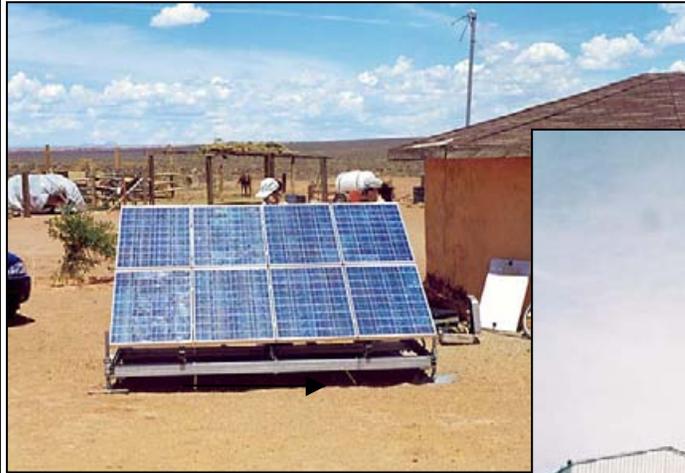


Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

NTUA Solar Program



40



200



107



4

1998

2002

2004

2005



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Tariff rate for Solar Energy

	Financing	Customer Price / month	Array Output	Total Kilowatt-hour / day	# of Units	Manufacturer (Integrator)	NTUA Champion
1993	DOE - WAPA	\$40	240 Watt 260 Watt	1.3 kWhr/day	40	Solar Mart	Jimmie Daniels
1999-2001	USDA - RUS	\$95	640 Watt	1.6 Kw hr/day	200	Photo Com. / Kyocera	Paul Denetclaw Jr., Pam Myron
2002-2003	DOE - NEDP	\$75	880 Watt hybrid small wind (Phase I)	2.0 Kw hr/day	40	SunWize (NADAC)	Larry Ahasteen
2002-2003	DOE - NEDP	\$145	880 Watt hybrid LP gas generator (Phase I)	2.0 Kw hr/day	4	SunWize (NADAC)	Larry Ahasteen
2003-2004	DOE- NEDP	\$75	880 Watt hybrid small wind (Phase II)	2.0 Kw hr/day	63	SunWize (Ducommon Tech.)	Larry Ahasteen



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Tariff rate is published by the Authority to institute necessary controls for orderly rendering of utilities services to the Navajo people

RUS Hardship Loans-



Department of Agricultural - Rural Utility Services approved a hardship loan to purchase Solar Systems.

•NNTUA applied for and was approved for \$4.8 million dollars @ 5% interest loan to purchase PV power systems.

—\$1.3 million dollar was eligible for reimbursement for all units installed.

—NNTUA procured 200 Solar PV Systems of the 350 Solar PV System.



Remote PV system inspection on the Navajo Reservation.



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Solar Program Authorized by NTUA Management Board



- NTUA Management Board approved the Solar Program to purchase and install PV power systems.
- Authorized \$2,000,000 dollars from General Funds.
- NTUA purchased 200 Stand Alone PV units.
- Hired staffs to train and install Solar PV Systems reservation wide
- In house staffs were assigned to oversee the Program .
- Develop in house financing for NTUA Solar customers- lease to own purchase agreement.



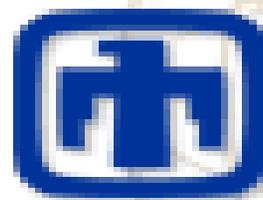
Department of Energy- T&TA



- College Interns
- Training
- O&M procedures
- Design
- Testing PV System

Sandia National Laboratories (Sandia) has an active relationship with the Navajo Nation/ NTUA.

Formation of strategic multi-year plans oriented toward the development (EmPowerment) of sustainable Native American renewable energy projects and associated business development.



Sandia
National
Laboratories



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Training/ Operation and Maintenance Program



- **Customer Education**
- **Training on installation**
- **O&M of PV Systems**



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Navajo Electrification Demonstration Program



- The program was established Nov. 2000, pursuant to legislation sponsored by U.S. Senators, Jeff Bingman and Pete Domenici of NM.
- Pursuant to Public Law 106-511, Section 602, the Secretary of Energy, Spencer Abraham
- Authorized to establish a five-year program to assist the Navajo Nation to meet its electrical needs.
- The legislation authorizes 15 Million Dollars per year for five years.
- Nov. 12, 2001 , U.S. President, George W. Bush signed the Energy and Water Development Appropriation Act of 2002 into Public Law 107-66.
- The Act provided :
- 1 year-3 Million Dollars for the NEDP. NTUA submitted a proposal to use \$ 800,000 for Hybrid PV Power Systems and 2 Million Dollars to construct power lines.
- 2d Year –2.3 Million for NEDP- \$ 1,150,000.00 For Electric Line 1,150,000.00 for Solar Program
- 3rd Year- \$ 2.860,804. Electric Line
- 4th Year- No funding
- 5th Year- \$ 900,000.00 for Electric Line extension



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

NTUA 240 Watts PV Systems



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NTUA 640 Watts PV Systems



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880 Watts PV Hybrid Power Systems



Navajo Tribal Utility Authority
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NTUA Solar Power System- NHA



Navajo Tribal Utility Authority
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NTUA-Solar Power Station

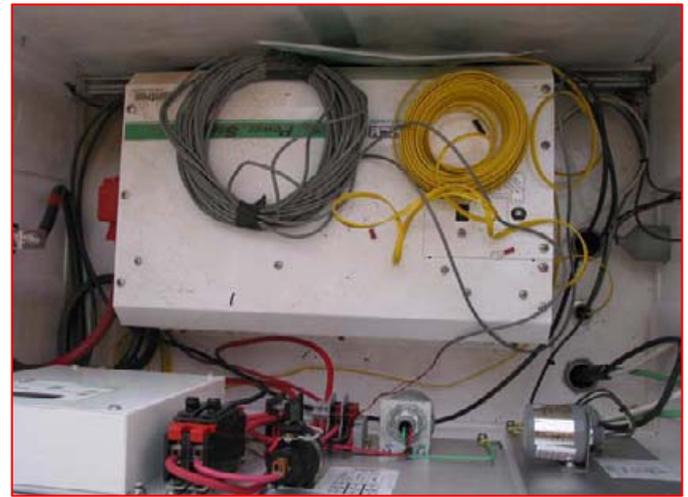


Training
Testing
Transporting



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

NTUA-Solar Power Station



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation



NTUA- Solar Installation- Certified Installers



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

NBC News-NTUA Solar



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Syda Bbumba, Minister of Energy and Mineral Development for Uganda- Tour of NTUA Solar Project



Pilot project for the World Bank in Africa- Rural Solar Systems



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Solar Program-Congressional Tour



Navajo Electrification Project



**My Hope is to provide a light
in every Hogan !
1960**

**W. (Vance) Vanderhoff, a non-Navajo, is named
NTUA's first General Manager. ...**



Navajo Tribal Utility Authority
Enterprise of the Navajo Nation

Questions

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