NAVAJO TRIBAL UTILITY
AUTHORITY

Navajo Electrification Demonstration Program

U.S. Department of Energy
Tribal Energy Program
2004 Program Review Meeting
Golden, Colorado
October 20, 2004

Presented By:
Paul Denetclaw Jr.- Electric Engineer Supervisor
Larry Ahasteen- Renewable Energy Specialist
Overview of NTUA Presentation

- Introduction
- Project Overview
  - Project Location------- Video
  - Project Participants----- Video
- Objectives
- On-going projects
- Project Status
  - Accomplishments
  - Technical or Management Issues
  - Activities Yet to Be Completed
- Future Plans
- Navajo Electrification Demonstration Program –Video
"Navajo Nation want to improve the lives of its people and to provide them access to electricity"

- 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 Nation, NTUA and the U.S. Congressional Office has taken action to develop plans and funding to address the need for electrification of homes on Navajo land.
According to the 'Census 2000' report from the Division of Economic Development, Navajo Nation.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>47,603</td>
<td>Occupied housing units on the Navajo Nation</td>
</tr>
<tr>
<td>15,279</td>
<td>Homes, or 31.9 percent, lack complete plumbing;</td>
</tr>
<tr>
<td>13,447</td>
<td>Homes, or 28.1 percent, lack a complete kitchen facility</td>
</tr>
<tr>
<td>28,740</td>
<td>Homes, or 60.1 percent, lack telephone service.</td>
</tr>
</tbody>
</table>

The Navajo Tribal Utility Authority has 29,125 residential customers reservation wide. To obtain the number of homes without electric power subtract total homes from the 2000 census data of 47,603 occupied homes on the Navajo Nation divided by 29,125. NTUA Residential homes with electric. This will give you an estimate of **18,478 homes of the Navajo Nation without electric power.**
## Navajo Electrification Demonstration Program

**Total Project- $7,972,000.00**

1560 Homes will receive electricity

<table>
<thead>
<tr>
<th>Electric Line Extension</th>
<th>Solar Energy Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FY-2002</strong></td>
<td>581 Homes-Electric</td>
</tr>
<tr>
<td><strong>FY-2003</strong></td>
<td>212 Homes-Electric</td>
</tr>
<tr>
<td><strong>FY-2004</strong></td>
<td>650 Est. Homes-Electric</td>
</tr>
<tr>
<td><strong>FY-2002</strong></td>
<td>44 Solar projects</td>
</tr>
<tr>
<td><strong>FY-2003</strong></td>
<td>63 Solar projects</td>
</tr>
<tr>
<td><strong>FY-2004</strong></td>
<td>5 NHA Solar Projects</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,443 Homes</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>117 Projects</strong></td>
</tr>
</tbody>
</table>

Note: FY 2004 has awarded on Sept. 30, 2004

**Project Leader:**
Paul Denetclaw Jr., Electric Engineering Supervisor

**Project Leader:**
Larry Ahasteen, Renewable Energy Specialist.
# Navajo Electrification Demonstration Program

Total Funding Amount - $7,972,000.00

## Electric Line Extension

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY-2002</td>
<td>$2,011,000.00</td>
</tr>
<tr>
<td>FY-2003</td>
<td>$1,150,000.00</td>
</tr>
<tr>
<td>FY-2004</td>
<td>$2,861,000.00</td>
</tr>
</tbody>
</table>

**Total** $6,022,000.00

**Note:** Grant Award for FY 2004 approved by DOE until September 30, 2004

**Project Leader:**
Paul Denetclaw Jr., Electric Engineering Supervisor

## Solar Energy Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY-2002</td>
<td>$800,000.00</td>
</tr>
<tr>
<td>FY-2003</td>
<td>$1,150,000.00</td>
</tr>
<tr>
<td>FY-2004</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

**Total** $1,950,000.00

**Project Leader:**
Larry Ahasteen, Renewable Energy Specialist
Navajo Electrification Demonstration
Program

Electric Line- Issues

**Key Issues**

- Grant Management- Change in Regional Offices
- Utility Right of Way clearance.
- Delivery lead times of electric transformers
- Equipment break down
- Competing with other power line projects

**Readdressing Key Issues**

- Working with Navajo Nation on Right of Ways clearance.
- Purchase large quantities and scheduling deliveries on contracts.
- Rental of large equipments
- Working with District Superintendents and Manager concerning prioritizing NEDP projects
Navajo Electrification Demonstration Program

Solar Energy Program - Issues

**KEY ISSUES**

- Change in the funding for the NEDP grant - Electric Line construction is a priority.
- Funding for Solar Program.
- Cost of Solar-Wind Power Systems
- Cost to maintain these Solar Power systems.
- Backlog of potential customers
- Customer Education on Renewable Energy.
- More power – More dollars
- Request to maintain or troubleshoot other solar units
Future Plans
Electric Line Extension

- Implement FY 2004 Program with DOE Chicago Field Office.
- Assembly NEDP Project Management team to begin work plan for FY 2004 projects.
- Work with Community Chapters/Elected officials on NEDP activities.
- Coordinate activities with Navajo Nation government.
- Meet with Federal Officials on reporting requirements for new grant funds.
Future Plans
Solar Energy Program

- Closeout the Solar Program- submit final reports to DOE Albuquerque Support Office
- Finalize work plan with NHA on the Scatter Site Housing Development.
- Monitor the 107 Solar-Wind stand alone Solar Power Systems
- Work with Community Chapters on rural electrification.
- Develop new plan on micro-utility plant for scattered homes.
- Monitor and collect datas for the Solar and Wind power systems.
- Develop new plans for Wind Power Systems
- Negotiate and sell Solar Credit
- Assist local communities colleges, trades schools, and high schools on Renewable Energy Project.
Future Plans
Renewable Energy Program

- Expand the Navajo Wind Project to monitor wind speed on the Navajo reservation.
  
  **Cat-5,6,7** Grey Mountain (Approved by Chapter to install tower)
  **Cat 4,5** Espil Ranch, and Big Boquillas Ranch
  Blue Gap Arizona
  **Cat 3** Cow Spring and Steamboat, Arizona
  Rough Rock Az., Tohatchi, NM and Crownpoint NM.
  Winslow Tract

  Preliminary report to be completed by 12-31-2005
  NN Council- Oversight Committee and NN President express interest in touring Wind Farm and meeting on Renewable Energy.

  Navajo, New Mexico- Closed Sawmill Plant

- Investigate and inventory renewable energy resources on the Navajo Nation.

- NTUA plans to host Southwest Native American Renewable Energy Leadership Summit-2004-2005 in Window Rock, Arizona
Navajo Wind Project

ARIZONA
- Grey Mountain, Az.
- Luepp Az.
- Blue Gap, Az.
- Cow Spring Az
- Steamboat, Az.
- Rough Rock, Az.
- Chilchinbeto, Az
- Black Mesa, Az.
- Sanders, Az.

NEW MEXICO
- Crownpoint, NM
- Hogback NM
- Deeza Bluff, NM

OTHER
- Winslow Tract
- Espila Ranch
- Big Boguillas Ranch
Grey Mountain Wind Site

- Navajo Nation support of this project.
- Chapter land users approve the site.
- Cameron Chapter Support
- NTUA completed all land clearance and site evaluation.
- NAU will assist NTUA- 30 meter tower
- Preliminary Wind Study should be competed by December 2005.
Grey Mountain Wind Site

South Side of Wind Tower Site

West Side of Wind Tower Site
Grey Mountain Wind Site

North Side of Wind Tower Site

West Side of Wind Tower Site

S/E Side of Tower Wind Site
NTUA was awarded Federal Funds under Navajo Electrification Demonstration Program-PL 106-511- Sponsored by Senator Bingaman

Under NEDP Phase 11- Solar Program was awarded $1,950,000.

- 107 Solar PV were purchased
- 880 Watts PV array
- 770 AH Batteries
- 2500 Watts-120 V Inverter
- Self-Contained Steel Skid
NEPD Solar Program
1. Navajo Nation-NTUA Future plan to generate electric power and resell to its customers.

2. Due to the shutdown of the sawmill- NTUA has an idling substation near this facilitate.

3. Navajo Nation will be able to manage its forest debris and reduce the chance of a wildfire.

4. Navajo Nation can utilize an existing sawmill plant at Navajo, New Mexico that was shutdown.

5. NFPI had a powerhouse that generated 10.6 Meg Watts of power.
Proposed Navajo Nation Feasibility Plan
-Bio-Mass Project-
Proposed Navajo Nation Feasibility Plan
-Bio-Mass Project-
Thank-you

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