

Navajo Tribal Utility Authority - an enterprise of the Navajo Nation



NAVAJO NATION RENEWABLE ENERGY INITIATIVES

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- **NTUA Background & Services**
- **Renewable Energy/Green Initiatives**
 - Green Building Initiatives
 - Off-Grid Residential Power
 - Other Initiatives
- **Utility Scale Renewable Energy Generation**





NAVAJO TRIBAL UTILITY AUTHORITY

Background

- The Navajo Tribal Utility Authority (NTUA) is a non-profit enterprise created 1959 to provide utility services to the Navajo Nation
- Navajo Nation Council oversees NTUA through:
 - Government Services Committee
 - Economic Development Committee.
- Governed by a seven-member Management Board, which is appointed and confirmed by the oversight committees
- Lead by a General Manager, who is selected by the NTUA Management Board and confirmed by the Navajo Nation Council

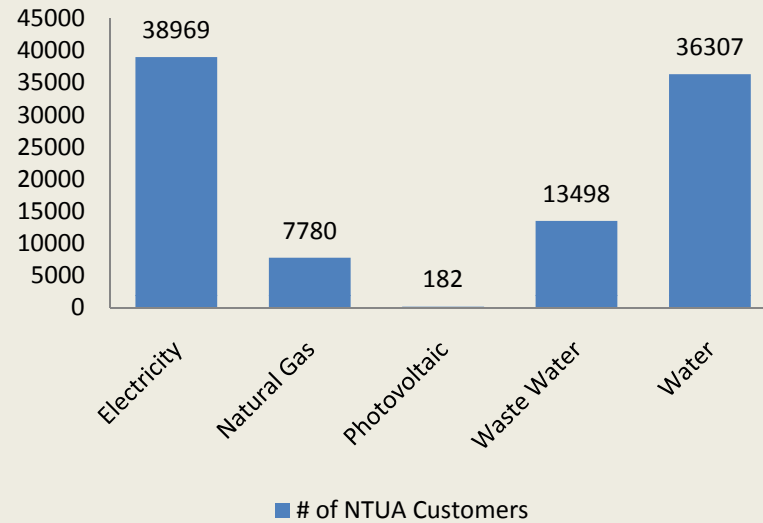




UTILITY SERVICES

NTUA provides a range of services on the Navajo Nation in Arizona, New Mexico, and Utah:

- Electricity
- Natural Gas
- Photovoltaic
- Waste Water
- Water





NTUA OPERATIONS

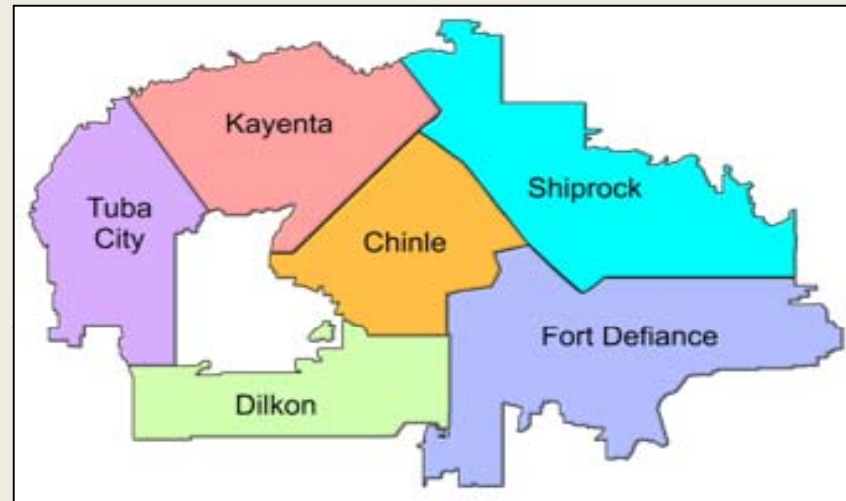
- Organized for the operation, maintenance, and expansion of utility services to customers within the Navajo Nation
 - To promote employment for Navajo people
 - To improve the health and welfare of the residents of the reservation
- Operates as a non-profit corporation
- May participate in electricity generation and telecommunication services
- Codified by Navajo Nation Code





NTUA OPERATIONS AND SERVICES DELIVERY

- Six District Offices
- Three Sub-Offices
 - Crownpoint
 - Nageezi
 - Red Mesa
- Matrixed Organization
 - W/WW/NG Construction
 - Electric Construction





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GREEN BUILDING INITIATIVES

- Construction of LEED-certified buildings:
 - Chinle District Office
 - Crownpoint Sub-Office
 - Headquarters Building
- LEED building initiative focusing on:
 - Energy Efficient Design
 - Radiant Heating
 - Ground-source Heat Pump
 - Natural Lighting
 - Materials
 - Renewable Energy System Integration
 - Photovoltaic Solar (rooftop/ground)
 - Solar Water Heating





OFF-GRID RESIDENTIAL POWER



- Offers an alternative energy solution for access to residential power away from the electricity infrastructure
- Photovoltaic technology is skid-mounted for ease of installation; augmented by wind power
- NTUA currently has 182 installed photovoltaic systems





POWER AND REFRIGERATION PROGRAM



- The current offering includes 680w PV and 880 PV-wind power systems
- In 2010, NTUA is introducing a new generation of hybrid systems which include a 1,080w PV array and 400w wind turbine with an Energy Star refrigeration solution





OTHER NTUA INITIATIVES

- Energy Auditing and Weatherization
- Energy Efficient Appliances
- Smart Grid: AMI Metering
- Net Metering
- Energy Efficiency and Conservation Information Campaign





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UTILITY-SCALE RENEWABLE ENERGY PROJECTS

- Development of utility-scale renewable energy resources on the Navajo Nation
- Prospective wind project sites:
 - Boquillas Ranch, Seligman, Arizona
 - Gray Mountain, Cameron, Arizona
 - Black Mesa, Kayenta, Arizona
- Prospective solar project sites:
 - Reclamation Mine Sites
 - Chapters initiatives
 - Non-Trust lands (e.g. Boquillas Ranch)





Big Boquillas Wind Project



- Boquillas Ranch is located west of Flagstaff, AZ
- Phase 1A and 1B will be located on the Aubrey Cliffs (Tribal fee land and AZ State land)
- Navajo Nation's first utility scale tribally-owned Green Energy generation project





Big Boquillas Wind Project

Project Summary

	Phase 1A	Phase 1B
Project Size	85 MW	Up to 200 MW
Construction Start Date	December, 2011	December, 2012
Construction Completion Date	December, 2012	December, 2013





Big Boquillas Wind Project

Project Structure

- NTUA has formed a for-profit wholly owned corporate subsidiary to develop, finance, construct, own and operate wind generation projects at Boquillas Ranch
 - NTUA Wind, Inc., formed in 2010
- NTUA Wind, Inc. will have a majority ownership position
- NTUA Wind, Inc. will share in the management of the project





Big Boquillas Wind Project

NTUA Involvement Key Points

- Majority Ownership by NTUA through NTUA Wind, Inc.
- The project will create a revenue stream to the Navajo Nation central government
- NTUA can economically resell renewable electricity to its customers, the Navajo people
- NTUA can foster green job training and employment for Navajo Nation citizens
- NTUA can obtain a revenue stream to fund other infrastructure improvement projects, including rural electrification





Utility Scale Solar Initiatives

NTUA Involvement Key Points



Source: SunCarrier

- Discussions with the Navajo Nation, Chapters (local governments), EPA, NTUA, and land owners have created the foundation for solar projects
- Creation of internal organizational infrastructure
- Assessment of potentially viable photovoltaic technologies
- Preliminary site analyses documents the available resource



Utility Scale Solar Initiatives

Next Steps



- Evaluating PV technology options
 - Fixed and Single-axis tracking Photovoltaic
 - Crystalline, thin film and concentrating systems
- Developing technical, financial, economic, and environmental impact models to inform technology selection





FUTURE OUTLOOK

- Electricity distribution has been the core service for NTUA -> Broadband, Renewable generation and other utilities developments will change this mix
- NTUA currently purchases almost all of its electricity from external suppliers -> Renewable generation will allow NTUA to self-generate
- NTUA looks forward to partnering with other Navajo Nation entities to utilize the Navajo Nation's vast resources, including renewable energy -> NTUA works closely with the Navajo Nation Renewable Energy Team to achieve its goals
- The Navajo Nation, with the support of NTUA, will gain control over its energy future





THANK YOU!

- For additional information about the NTUA Renewable Energy Program:
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