



Formation of a Hopi Sustainable Energy Program

**DOE Tribal Energy Program Review Meeting
Golden, Colorado
November 19, 2003**

**The Hopi Tribe
New West Technologies
Margaret M. Schaff, PC**

Introduction to Hopi

NE Arizona

Population: ~7,000

High Desert

Relatively Remote

Primary Industries

Coal Mining

Crafts & Tourism

Agriculture



Economic Drivers at Hopi

- **High Unemployment**
- **Threat of Closure of Black Mesa Coal Mine and/or Fort Mohave Generating Plant (related to depletion of local groundwater and regional airshed emission concerns)**
- **Electric Delivery System is Unreliable and Antiquated**
 - **Reservation Served by a Single 69 KV Transmission Line/“Dead End” Radial 34.5 KV Distribution Line**
- **Forthcoming Allocation of WAPA Hydropower**
- **Large, Unmet Demand for Housing**
 - **Tribe is Planning a “New Town” That is 15+ Miles from the APS Distribution Grid**



Energy-Related Initiatives

- Tribal Council Energy Committee Has Been Formed (Hopi)
- EPA Clean Air Partnership Project (Hopi)
 - Economic Impact of Coal Mine Closure and Alternate Uses of Coal
 - Preliminary Assessment of Energy Efficiency Opportunities
 - Identification of Wind Resource Monitoring Sites (towers to be installed)
 - Other Energy-Related Business Opportunities
- Formation of Hopi Tribal Utility Regulatory Authority (Hopi)
 - To Oversee the Improvement of Energy and Telecommunication Services
 - To Manage an Allocation of Hydropower from WAPA
 - To Consider the Formation of a Tribal Operating Utility
 - To Establish a Sustainable Energy Program
 - Renewable Electric Systems
 - Energy Efficiency
- Renewable Portfolio Standard (State of Arizona)
 - Credits Available (via AZ IOUs) for Solar and Wind Energy Systems



Sustainable Energy Options

- **Energy Efficiency (lighting, space conditioning, etc.)**
 - Schools
 - Institutional Buildings
 - Tribal and Village Government
 - BIA Facilities
 - IHS Facilities
 - Housing
 - Commercial/Agricultural (e.g. water pumping)
- **Solar Electric (PV)**
 - Hopi Has a World Class Solar Resource
 - Sizable Number of Remote PV Systems in Place
 - Looking to Do More
- **Wind Power**
 - Hopi Wind Resource is Largely Uncharacterized
 - Two Meteorological Towers to Be Installed to Gather Data
- **Other Distributed Power Technologies**
 - Fuel Cells (propane-fueled)
 - Turbines/Engines (propane-fueled)



Sustainable Energy Program Activities

- **Train Program Staff and Energy Committee Members**
 - On-Site Training
 - Off-Site Training (such as this meeting)
- **Inventory and Characterize Sustainable Energy Project Opportunities**
- **Assess Funding and Financing Strategies for Implementation**
- **Coordinate with Federal agencies (e.g. BIA/IHS) and Local Utilities to Plan and Implement Projects**
 - **Example: Lighting Retrofit of Hopi High School**