Hualapai Renewable Energy Program
DOE Tribal Energy Peer Review

November, 2011
History - Background

- 2004 DOE Native American Anemometer Loan
- 2006-2009 BIA EMDP Phase-I Feasibility Study
  - 50-Meter MET Towers at Nelson and Grand Canyon West
  - Phase-I Environmental Screening Report Completed
  - Avian Impact Assessment Completed
  - Transmission Study Completed
- 2009 MOU with Clipper Windpower
- 2009 MOU with Mohave Sun Power
- 2010 DOE Tribal Energy Program Phase-II RE Business Development
GCW Solar Power System
2005 -2008

2 100Kw solar -diesel hybrid non-grid tied systems with 16kW solar- and 5400amp hour battery banks. Latest SatCon digitally integrated Inverters 50% -70% reduction in generator run time.
Hualapai Tribal Utility
Feasibility Study
DOE First Steps 2005

1. Feasibility of Stand Alone Utility Providing Service at Grand Canyon West -

2. Feasibility of Take-over of Reservation Electric Service from Local Co-op -

3. Feasibility of integrating Hualapai Wind Resource to meet tribal load-
Hualapai Wind Assessment Project
BIA-MAP 2005 - 2009

Overview

Wind Resource Assessment Sites
- Grand Canyon West
- Peach Springs
- Nelson

Feasibility Study
- Phase I Environmental Screening Completed
- Avian Impact Assessment Completed
- Interconnection Study underway
- Wind Development Partner Identified
Funding Support

- DOE Tribal Energy Program
  - 2005 First Steps - Tribal Utility Study
  - 2010 Wind Farm Business Development Phase

- BIA Energy and Mineral Development Program
  - 2006- Renewable Energy Feasibility Study
  - 2010 Solar Power Plant Feasibility and Planning

- USDA-Rural Utilities Service-High Energy Cost Rural Communities Program
  - Grand Canyon West Solar Power System
MOUs

- Clipper Windpower Development Company
  - Complete Final Wind Farm Feasibility

- Mohave Sun Power, LLC
  - Complete Transmission & Interconnection
  - Complete PV Solar Power Plant Feasibility
Manufacturer of Clipper wind turbines
Developer of wind farm projects
Priority for Native American Wind Farm Projects
340 MW Concentrating Solar Power Facility
Grand Canyon West - Clay Springs Wind Farm
Transmission and Interconnection

- Hualapai Valley Solar - leads interconnection to WAPA system
- WAPA TIP wants diversity - Solar CSP, PV Solar, and Wind. High priority for Native American projects
- WAPA funding to build interconnection substation & upgrade existing lines
- HVS - Connections to other APS- SCE transmission lines and power markets
Benefits of Renewable Energy Development

- Reliable Revenue Stream to the Tribe
  - Lease / Royalty Payments
  - Co-Ownership Revenues

- Jobs
  - Construction
  - Construction Support
  - On-going Operations

- Power Connection to Grand Canyon West

- Tribal Electric Utility control on Reservation
Phase II - Business Development

- Business modeling
  - Ownership Scenarios & Financing Options
    - Tribal
    - Partnership
    - Lease to Developer
- Transmission and Interconnection Study
- Environmental Assessment Activities - Pre EIS
- Detailed Site planning
  - Turbine locations, roads, interconnections,
- Final Project Feasibility Determination
Participants

- Clipper Windpower & Mohave Sun Power
  - Economic Modeling, Business planning, PPA research
- V-Bar
  - Wind Resource & Site Assessment, Turbine Placements
- PDS Consulting
  - Transmission & Interconnection Study
- Daystar Consulting, LLC
  - Project Management,
- Tierra Environmental
  - Site Mapping, Environmental Assessment
- Squire Sanders Dempsey
  - Tribal Renewable Energy Business Education
Current Status

- Clipper Windpower - MOU Terminated
- Mohave Sun Power
  - Lost their PPA and development partner
  - Project is being re-invented as a PV project
- Solar Feasibility Final Report in Draft
- Grand Canyon Solar solar power system in preliminary design
- Wind Feasibility Report
Clay Springs RE Project

- 50MW Wind at Clay Springs
- 50MW Wind at Grand Canyon West
- 50MW Wind on BLM Land
- 100MW Solar at Clay Springs
WAPA Interconnection Request

- Filed by the Hualapai Tribe as applicant for Clay Springs Project
- Secures Queue Position for the Tribe
- Starts the WAPA Study Process
  - System Impact Study
  - Facilities Design Study
Lessons Learned

- Collect and Retain your wind data
- Control your development plan yourself
- Developers can change their minds at any time
- Money / credit worthiness does the talking
- Small projects are easier to do
- Push parallel lines of development
- Keep your projects in the public eye