



Hualapai Tribal Energy Program

DOE-BIA Peer Review

October 26, 2006

Hualapai Reservation



Solar Water Pipeline 1997 to Present



- USDA Water Project
- Upgraded to provide water to Grand Canyon West Tourism area
- Currently being upgraded for increased flow and domestic water quality improvements

Earthship Project - 1999



- Funded by DOL Jobs in Recycling program
- Built by WIA workers
- Solar PV
- Water Catchment system

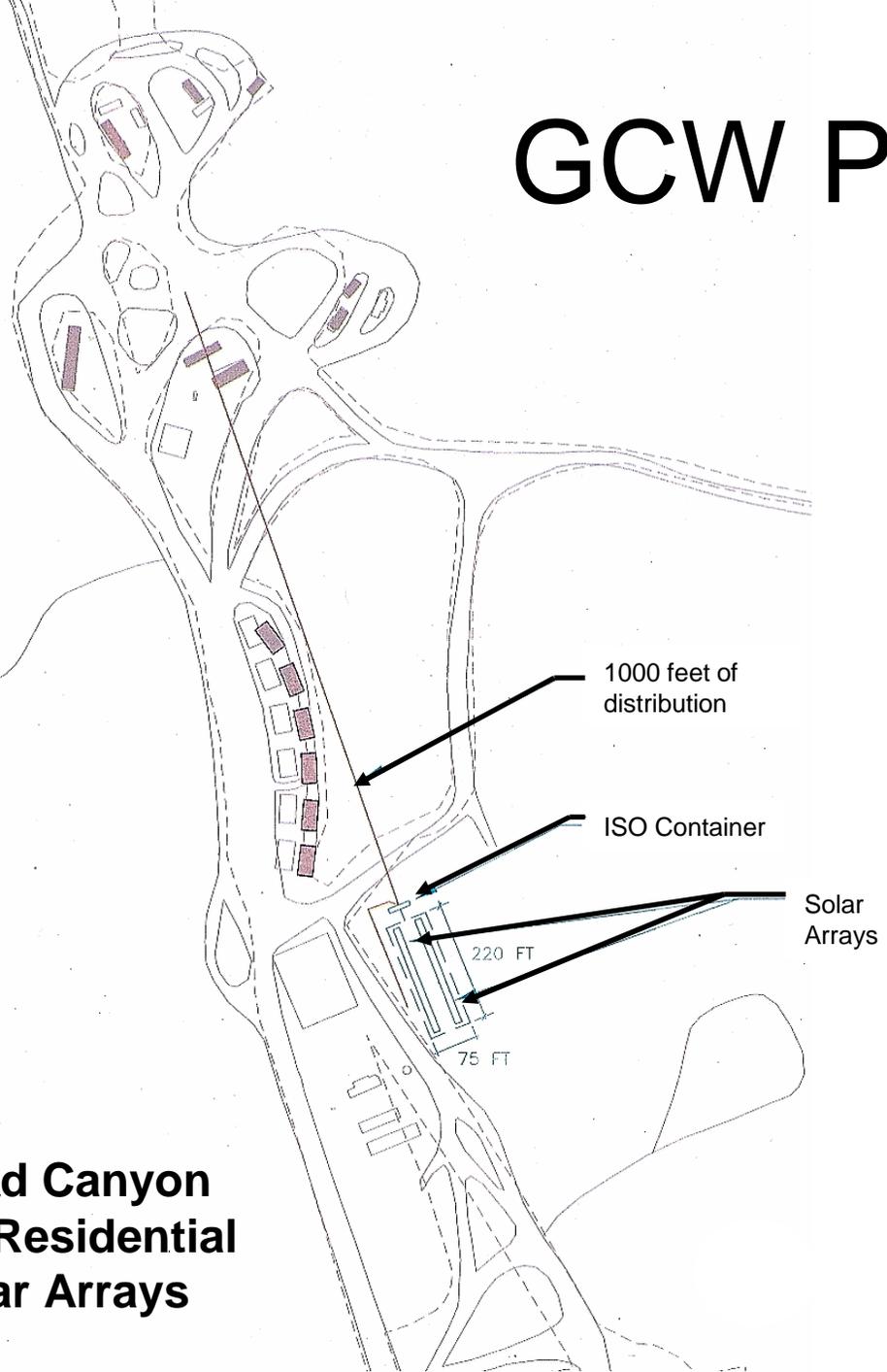
Guano Point 2000



- Off Grid 7 kilowatt PV and wind system
- Power for lights, kitchen, and cooling

GCW Power Project

**Grand Canyon
West Residential
Solar Arrays**



- Solar Hybrid Power System for GCW
- Base for Centralized Solar-Wind-Hybrid
- BIA-MAP Wind Assessment

Hualapai Tribal Utility Feasibility Study DOE First Steps 2005

Objectives

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

Participants

- Daystar Consulting, LLC
 - Project Management
- Utility Strategies Consulting Group
 - Load Forecast and Financial analysis
- KR Saline & Associates
 - Infrastructure & Wind Interface
- Glenn Reddick, PE
 - System Valuation Study
- Dean Suagee, Attorney
 - Tribal Utility Plan of Operations - Legal Issues

Accomplishments

- Progress without help from Co-op
 - System Mapping
 - Load Forecasts
- Intervention in BIA -MEC Dispute
 - Dispute over Responsibility for power line to Havasupai affects relationship between MEC and Hualapai
 - ACC Settlement in Process

Issues

- Uncooperative existing Co-op
 - To allow success in acquisition, maintenance & new renewable commercial energy project
 - No Information
 - Refused Access to Facilities
 - Delays and refusal to participate
 - ACC Action

Hualapai Wind Assessment Project

BIA-MAP 2005 - 2006

Overview

- Assess Wind Resources
 - Grand Canyon West - 50 meter up
 - Peach Springs Area - 2 years data
 - Blue Mountain - 9- months data
 - Nelson - NEW Resources area -50m Tower up
- Feasibility Study
 - Interconnection
 - Market
 - Environmental Impact

Wind Resource Areas



Objectives

- Wind Assessment
 - Grand Canyon West Stand Alone Centralized Power System
 - Community Scale Demonstration Turbine
 - Wind Farm
- Feasibility Study
 - Make as much progress toward implementation as possible on a limited budget



Participants

- Daystar Consulting, LLC
 - Project Management, Data Collection
- Windots
 - Resource Assessment
 - Turbine Type and Placement
- KR Saline and Associates
 - Interconnection Study
- West Inc.
 - Avian Assessment
- Two Riders
 - Community Compatibility Assessment



Accomplishments

- Progress Despite Problem with Contractor DisGen
 - Self Management is more flexible
- Discovery of New Resource Area
- 1 Year of Wind Data Collected
 - Resource “As good as any in Arizona”
- Relationship with Local Wind Developer-International
 - Donation of 65kW Turbine and Tower
- Broadened concept to have accomplishments
- Great sense of importance to native theme of environmental justice, harmony & economics



Future Plans

- Construction of GCW Power System
- Installation of 65kW Demonstration Turbine
- Completion of Tribal Utility Assessment
- Implementation of GCW Utility Service
- Development of Hualapai Wind Farm Business Plan
- 2007 Application for Biomass Feasibility Study BIA or DOE
- 2007 Application for Large Scale Solar Feasibility Study BIA or DOE



Supply & Demand

- Population growth and power demand will increase 3 times faster than supplies.
- Dependence on current sources will have a devastating affect.

