
Southwest Tribal Energy Consortium



DOE Review Meeting

Denver Colorado

November 8, 2007

Discussion Outline

- Participants
- Development of Business Strategy
- Native Spirit Solar I Development phases
- CSP technology options
- Project Concept
- Project location for Native Spirit Solar I
- Project Status

Primary Participants to Date

- Tribes are developers/owners/operators



- Participants include 3 of the 4 largest Gaming Tribes in California

- Advisors: Council Of Energy Resource Tribes (CERT)
- Initial Funding: Department of Energy – Tribal Energy Program
- Technology Advisors: National Renewable Energy Lab CSP Program
- Primary Consultant: Red Mountain Tribal Energy (including initial legal)

Management Committee

- Management committee (Tribal) makes all decision and directs all activities – may serve on SWTEC LLC Board- committee meets frequently and has telephonic meetings once or twice a week on average
- DeAnna Meetze --- Morongo
- Todd Hooks --- Aqua Caliente
- Mark Dansby --- Aqua Caliente
- Joe Jankosky --- San Manual
- Jeff Castillo --- Fort Mojave
- Bill Cyr --- Aha Macav Power

Development of Business Strategy

How did we get here

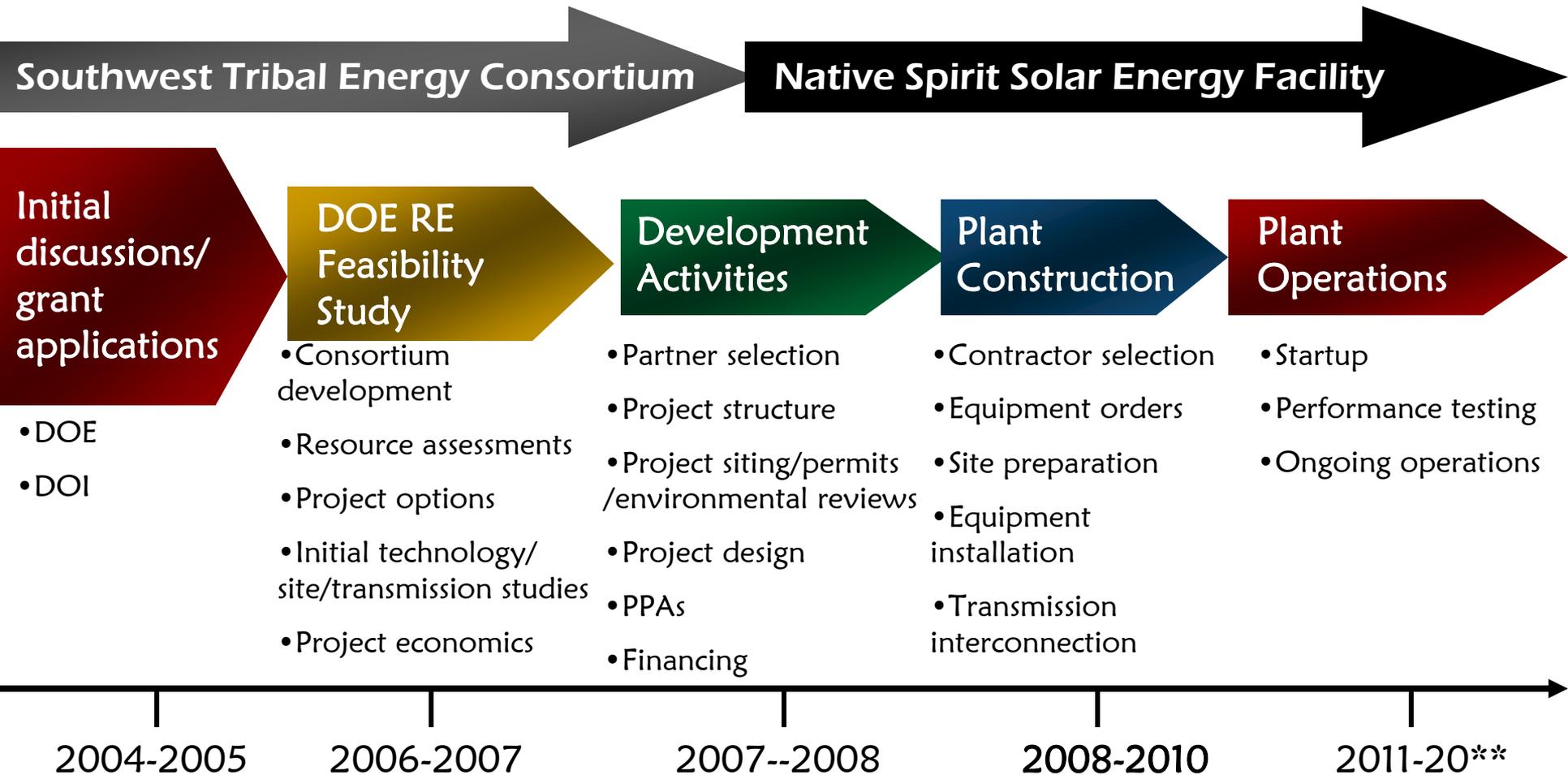
- CERT-led initial Tribal discussions –Establish Vision
 - Need for Tribal Portfolio Diversification Beyond Gaming
 - Tribal Cultural Values are Aligned With Renewable Technology
 - Utility Scale Generation can Provide Significant Revenues
 - Acquired DOE Grant for Renewable Energy Feasibility Study
 - Assessment of each participant energy needs
 - Assessment of each participants renewable resources
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- Decision to pursue solar project @ FMIT

Development of Business Strategy

Key Aspects

- Utility Scale Solar is a Large Project by any measure
100MW == 350+ million 500 MW === 1.5+ Billion
- Group must act and be viewed as professional and be able to make decisions quickly – must be a structure understood by investors
Formation of Delaware LLC
- Business Model that results in Tribal ownership requires investors with Tax Appetite during initial years
Wisconsin style flip structure
- Utility Scale Solar is still in its early years – real potential is still down the road- great opportunity to get in early
Native Spirit Solar I (first of multiple plants)
Possible manufacturing opportunities

Project Development Phases For SWTEC/Native Spirit 1



Concentrating Solar Powered Project Technology Evaluated Options

(other technologies considered but not evaluated)



Power Tower



Parabolic Trough



Dish-Engine



HCPV

- Power Tower: Uses a circular field array of individually-tracking mirrors to focus sunlight onto a central receiver which powers a conventional turbine generator to produce electricity
- Parabolic Trough: Uses trough-shaped mirrors to focus sunlight on thermally efficient receiver tubes that contain a heat transfer fluid; fluid is heated and pumped through a series of heat exchangers to produce superheated steam, which powers a conventional turbine generator to produce electricity.
- Dish-Engine: Uses an array of dish-shaped mirrors to focus solar energy onto a receiver located at the focal point of the dish; fluid in the receiver is heated and used to generate electricity in a small engine or turbine attached to the receiver (*ELIMINATED FROM CONSIDERATION*)
- High Concentration Photovoltaics (HCPV): Uses high efficiency PV cells with concentrating (Fresnel) lenses that multiply the sun's intensity, requiring hundreds of times less photovoltaic material to achieve the same energy output as PV cells without concentration (*ELIMINATED FROM CONSIDERATION*)

Concentrating Solar Powered Project Technology

Evaluated Options-General Observations



Power Tower

This is an emerging industry/technology with several more generations required to evolve the product driving down costs and improving component performance



Parabolic Trough

Large scale deployment of all technologies evaluated has not occurred in USA – Limited deployment in other countries.

(California 1985 Kramer Junction – Nevada 2006 Boulder)

About a dozen or so real contenders for market share. Market has room for two or three winners



Dish-Engine

Mirrors – heating tubes – controller systems – rheostats are all still mostly proprietary (Shott/Solel)



HCPV

Large scale projects are required to enable development of manufacturing plants that will drive down per unit costs

Very little true development experience available today

Native Spirit Solar Energy Facilities Concept

a vision for the deployment of concentrating solar

- Opportunity to develop a significant business footprint in most attractive and rapidly growing solar corridor in North America
 - Concentrating Solar Generation Blocks on 640 acre parcels
 - Partner to supply proprietary solar field technology
 - Solar Power Blocks to be inserted throughout southwest on single section parcels (640 acres)
 - Native Spirit Solar, LLC as Tribal Project Development Vehicle
 - Partners/Participants for each selected site may/will vary
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- Manufacturing opportunities to support deployment
 - Tribal ownership after ITC is monetized

Hurdles yet to overcome

- Technology is not in full scale production yet
- Developers must deliver on technology
- Manufacturing must be developed to drive down costs of widgets
- Tribes can not monetize ITC or PTF without outside participants
- Outside investors are not familiar partnering with Tribes
- Although green -- use of large tracts of Tribal land represents a deviation from current land use

Technology Partner Selection Process

- Initiated a staged process to identify potential partners
- Identified more than a dozen major Renewable Developers and Technology Providers/Equipment Manufacturers with the help of DOE, NREL and Red Mountain
- Issued RFP-executed MOU's
- Received multiple responses and had detailed discussions with the majority of respondents
- ~~3 rounds of interest/due diligence analysis is complete~~
- Currently in detailed discussions with 4 finalists

Native Spirit Solar I

- Proposed site location for first plant is adjacent to Calpine South Point plant on Fort Mojave Reservation

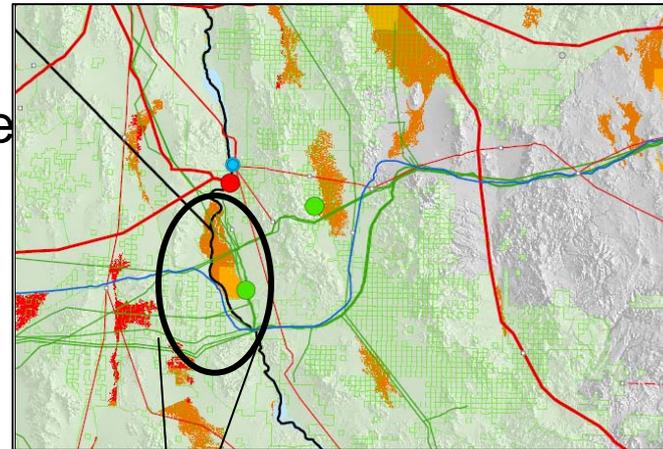
 - Market power to Southwest utilities (California, Arizona, Nevada) future markets for Native Solar II, III beyond initial three states

 - Power delivery
 - Picked up by off takers at various node points along Parker Davis System to serve utility native loads (Liberty, Mead, Gene, Gila...)
 - Great opportunity for network service (Under review by WAPA)
 - Available to other customers through multiple wheels

 - Products offered
 - Energy (may have dispatch ability depending on customer needs)
 - Capacity
 - Green Tags
 - Bundling of above products
 - Scalable & replicable power generation blocks
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Proposed Project Site

- Fort Mojave Indian Reservation
- 640-acre section on 42,000-acre reservation
- Insolation excellent for CSP (world class)
- Electric transmission access
- Natural gas access
- Water access

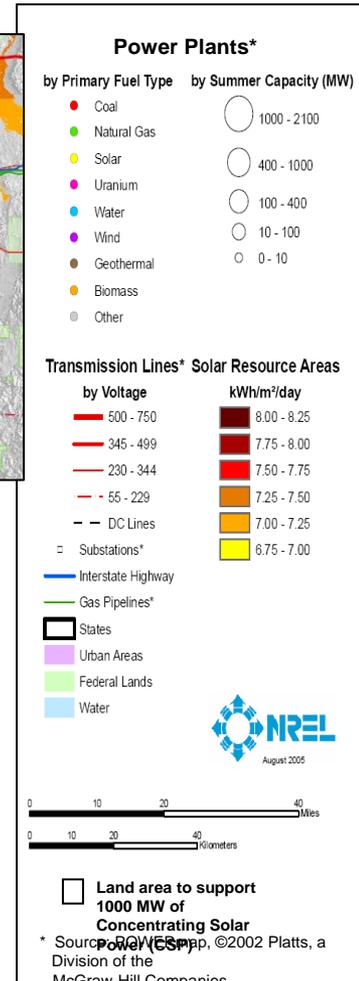


Source: National Renewable Energy Lab (NREL)

Average annual insolation at the site falls in the range of 7.0 – 7.5 kWh/m²/day, a range excellent for CSP applications.

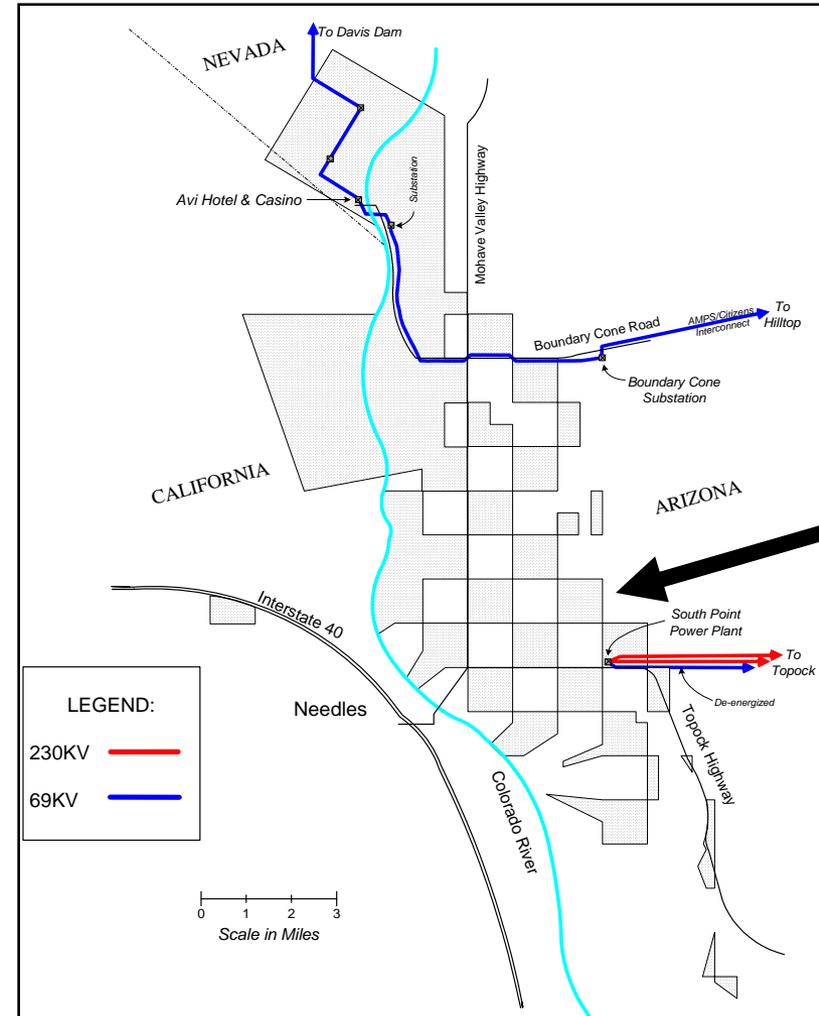


The Fort Mojave Indian Reservation includes lands in Arizona, California and Nevada.



Proposed Project Site Specifics

- Electric transmission
 - ❑ Existing AMPS 69-kV line is located on project section
 - ❑ Connected at Topock
 - ❑ Connected to Needles (2008)
 - ❑ Good for up to 80 MW
- Level site
- Zero emissions
- Accelerated Permitting
 - ❑ Not subject to State siting rules



Project Development Status

- Site Control Completed
- LLC Document Completed awaiting execution by all members
- Financial Modeling Completed
Initial model completed; efforts continue
- Permitting
Initial Site Evaluation Review Completed
- Joint Tribal Leadership Informational/update Completed
- Transmission Interconnection Design Completed
 - AMPS Interconnection Study In Progress
 - WAPA review initiated through joint planning meeting with WAPA
- Power Purchase Agreements
 - Ongoing – accelerating effort – Grand Canyon Trust Supporting Effort
- Technology/Equipment
 - Technology Partner selection process continues
- Financing
 - Initial discussions completed – Final selection process being developed