

Renewable Energy  
Feasibility Study  
Leading to  
Development of the  
Native Spirit Solar  
Energy Facility

Final Report  
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January 2008

**Southwest Tribal  
Energy Consortium**



**MORONGO  
BAND OF  
MISSION  
INDIANS**



Pauma Yuima



HOVVISH NATION

**SAN MANUEL**  
BAND OF MISSION INDIANS

Submitted to:

DeAnna Meetze  
Roger Meyer  
Morongo Band of Mission Indians  
Business & Economic Development  
49750 Seminole Road  
Cabazon, CA 92230

Lizana Pierce  
Program Manager  
U.S. Department of Energy, Tribal Energy Program  
Golden Field Office  
1617 Cole Boulevard  
Golden, CO 80401-3393

Submitted by:

Carolyn Stewart and Tracey LeBeau  
Red Mountain Tribal Energy  
2122 E. Highland Avenue, Suite 260  
Phoenix, AZ 85016  
cstewart@redmnttribalenergy.com  
602.516.7540

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## Executive Summary

The Morongo Band of Mission Indians (“Morongo”), a federally recognized Indian Tribe organized under the Indian Reorganization Act of 1934, is one of several members of the Southwest Tribal Energy Consortium (“SWTEC”). Initial members of SWTEC include the Morongo Band of Mission Indians, the Agua Caliente Band of Cahuilla Indians, the Fort Mojave Indian Tribe, and the Pauma Band of Mission Indians. The San Manuel Band of Mission Indians joined SWTEC during 2007.

This group of Tribes, initially convened by the Council of Energy Resource Tribes (“CERT”), has been working together for the last several years to explore potential collaborative Tribal energy development opportunities. The multi-Tribe energy organization investigation leveraged work completed in June 2002 by the Southern California Tribal Chairmen’s Association (“SCTCA”).

The Tribes comprising SWTEC reside in the Southwest and Southern California. These areas are rich with both renewable and conventional fuel supplies, with access to both viable power markets and delivery infrastructure. The Tribes sought to determine the feasibility of developing renewable power generation projects that could leverage available resources, optimum siting locations, and access to delivery infrastructure, thus forming the basis for a successful multi-Tribal project. The Tribes’ primary interest was in large-scale projects that could potentially support power export beyond or between the Reservation(s) involved. Each Tribe has well-established gaming operations, strong leadership, an understanding of the key connections between energy matters and economic and community development, and interest in energy self-sufficiency.

In early January 2005, the SWTEC group had completed a high-level concept definition study to identify potentially viable projects within the Reservation lands of the participating Tribes. While high-level in nature, this study indicated the viability of a number of renewable and conventional generation projects on lands belonging to SWTEC members. This study considered factors including: resource supply, generation technology alternatives, water needs, transmission access and interconnection, potential power markets, financing alternatives, leveraging incentives, and other parameters. The initial projects identified included both wind and natural gas resources.

In early 2006, SWTEC began this DOE-funded renewable energy feasibility study. During the course of the study, SWTEC members considered multiple options for the organization structure, selected a proposed organization structure, and drafted a Memorandum of Understanding for the SWTEC organization. High-level resource assessments for SWTEC members were completed; surveys were developed and completed to determine each member’s interest in multiple participation options, including on-reservation projects. With the survey inputs in mind, multiple energy project options were identified and evaluated on a high-level basis. That process led to a narrowing of the field of technology options to solar generation, specifically, utility-scale Concentrating Solar-Powered Generation projects, with a specific, tentative project location at the Fort Mojave Indian Reservation.

Once the project and site were identified, initial transmission studies were completed, which indicated that current planned upgrades in the project area should be adequate to support the proposed project. Multiple scenarios were developed based on key inputs into project economic models:

- transmission data,
- estimated interconnection costs,
- high level environmental review,
- an extensive technology evaluation,
- applicable renewable and tax incentives, and
- multiple project structures and financing options.

Once the economic modeling was completed and estimated levelized costs of energy calculated, the project focused on:

- preparation of a Request for Information from possible project partners,
- preparation of a Request for Expressions of Interest from possible project partners,
- numerous meetings with possible project development partners and financial advisors,
- development of project timelines, and
- outreach with possible power purchasers.

SWTEC members also initiated discussions with a group of Southwest utilities, the Southwest Utility CSP Consortium, (“SW Utility CSP Consortium”) that has expressed interest in purchasing power from a project such as that proposed by SWTEC. The SW Utility CSP Consortium issued a Request for Proposal (“RFP”) in late 2007, and anticipates CSP project development and commercial operation by 2010. Primary project site considerations for the SW Utility CSP Consortium include insolation, transmission access and capacity, natural gas supply, and water supplies, all of which are an excellent match for the SWTEC-identified site at the Fort Mojave Indian Reservation.

In conclusion, the project concept was determined to be feasible, with existing CSP technology, at the identified project site on the Fort Mojave Indian Reservation. The market for renewable and solar power is strong in this locale, and as SWTEC proceeds through the typical energy project development steps, it is likely to achieve success.

## Section 1: Project Background

The Morongo Band of Mission Indians (“Morongo”), a federally recognized Indian Tribe organized under the Indian Reorganization Act of 1934, is one of several members of the Southwest Tribal Energy Consortium (“SWTEC”). Initial members of SWTEC included the Morongo Band of Mission Indians, the Agua Caliente Band of Cahuilla Indians, the Fort Mojave Indian Tribe, and the Pauma Band of Mission Indians. The San Manuel Band of Mission Indians joined the SWTEC effort in mid 2007.

As sovereign Nations, the participating SWTEC members have demonstrated long-standing commitment to the preservation of their resources and cultural heritage, and to creating opportunities for its members to become economically and socially self-sufficient as individuals, families and as Tribal governments. As part of this vision, the SWTEC participants, individually and collectively, believe that self-determination in managing energy matters is a key part of economic development. Further, the Tribes believe that the results of the SWTEC proposed project will create local and regional environmental benefit, and contribute to self-sufficiency and human capacity. Three SWTEC members have already been active in energy infrastructure and self-generation projects, and have seen first-hand the impact of energy self-sufficiency on community and economic development.

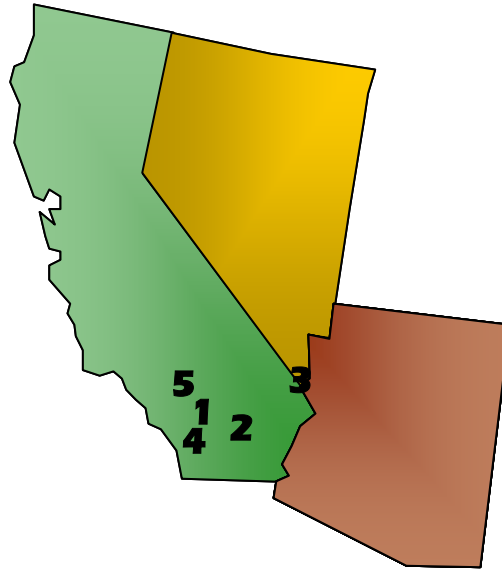
This group of Tribes, initially convened by the Council of Energy Resource Tribes (“CERT”), worked together for the last several years to consider potential collaborative Tribal energy project development opportunities. The Tribes sought to determine the feasibility of developing renewable power generation projects that could leverage available resources, optimum siting locations, and access to delivery infrastructure, thus forming the basis for a successful multi-Tribal project. The Tribes’ primary interest was in large-scale projects that could potentially support power export beyond or between the Reservation(s) involved. Each SWTEC member Tribe has well-established gaming operations, strong leadership, an understanding of the key connections between energy matters and economic and community development, and an interest in energy self-sufficiency.

The SWTEC group completed a high-level concept definition study in early January 2005 to identify potentially viable projects within the Reservation lands of participating Tribes. While high-level in nature, this study indicated the viability of a number of renewable and conventional generation projects on lands belonging to SWTEC members. This study considered factors including:

- considered resource supply,
- generation technology alternatives,
- water needs,
- transmission access and interconnection,
- potential power markets,
- financing alternatives,
- leveraging incentives,
- and other parameters.

The initial projects identified included both wind and natural gas resources.

The Tribes comprising SWTEC all reside in the Southwest and Southern California, areas rich with both renewable and conventional fuel supplies, with access to both viable power markets and delivery infrastructure. Solar is a viable resource on all SWTEC Reservations, with insolation levels in the range of 6-8-kWh/m<sup>2</sup>. All have access to natural gas as well. Although wind resources are present on several of the SWTEC member reservations, the SWTEC member group has narrowed its focus to solar generation, specifically, utility-scale Concentrating Solar-Powered Generation projects.



1. Morongo Band of Mission Indians (east of Riverside, CA)
2. Agua Caliente Band of Cahuilla Indians (Palm Springs, CA)
3. Fort Mojave Indian Tribe (intersection of AZ, NV and CA)
4. Pauma Band of Mission Indians (south of Temecula, CA)
5. San Manuel Band of Mission Indians (San Bernardino, CA)

A small, but growing number of examples of Tribally-owned energy projects presently exist. Three SWTEC members have prior history and experience with such energy matters. Fort Mojave has been a leader in Tribal utility formation for a number of years and currently provides its members, businesses and Tribal administration facilities with electric and gas distribution services. It also supported development of the 540 MW Calpine South Point gas-fired generating station, placed into operation on the Fort Mojave reservation in 2001. The Morongo are owners and operators of a successful 8 MW gas-fired cogeneration facility that supplies power to the Tribe's Casino Resort & Spa facility in Banning, CA. Agua Caliente also developed gas-fired cogeneration of 1.4 MW, to serve its Spa Resort Casino in Palm Springs and is considering a cogeneration unit at its Agua Caliente Casino in Rancho Mirage. All are showcase examples of Tribally-owned energy project ventures. As described earlier, each of these tribes has recognized that the critical link between economic growth and affordable and reliable energy is growing.

The Morongo Band of Mission Indians reservation is located in Banning, CA, north and south of Interstate 10, about 20 miles west of Palm Springs, CA at the foot of the San Geronio and San Jacinto Mountains. The reservation covers more than 35,000 acres and overlooks the Banning Pass. Resilient and resourceful, the Morongo have overcome many adversities. Today close to 1,000 members reside on the reservation, which is still home to wild buckwheat, mesquite and chaparral. Morongo was one of the first Tribes to develop a gaming enterprise in 1983, and has continued to stress business and community development, as evidenced by its development of a water bottling plant in 2002, and new casino development in 2004. Morongo has a strong interest and understanding of the interrelationships between business development and energy, and has focused on energy self-sufficiency, as evidenced by the development of gas-fired cogeneration units to power its newest gaming venture, Morongo Casino Resort & Spa. Morongo's community involvement is legendary, as illustrated by its unprecedented gift of \$1 million to Riverside County Chapter of the American Red Cross, its annual Thanksgiving turkey gifts to Riverside, Imperial and San Bernardino County residents, regular Blood Drives, and decision to become the first Native American Tribe to host the Council of Energy Resource Tribe's American Spirit Award Dinner in 2005.

The Agua Caliente Band of Cahuilla Indians is based in Palm Springs, CA, with more than 400 members and a community base that includes families, businesses and civic organizations. As a Sovereign Tribal Government, the Tribe stewards more than 31,500 acres of ancestral land which includes cities, county and protected Bighorn sheep habitat. Agua Caliente strives not only to maintain its cultural heritage, but also provides support for the surrounding community which includes Palm Springs, Cathedral City, Rancho Mirage and parts of Riverside County. Before the Agua Caliente Band of Cahuilla Indians opened their first casino in a tent next to the Spa Resort Hotel in Palm Springs, the Tribe was unable to even qualify for a credit card at Kmart. Now, more than 10 years later, the Tribe has a hotel, two casinos, a golf resort, and another hotel under construction. With these businesses in place, the Tribe has developed the resources to support Tribal government and the Tribal community. In turn, the Tribe has also been able to support its neighboring governments and civic organizations that help make the area a strong and vibrant community. Agua Caliente's energy vision embraces the continuous provision of exceptional quality and service to all team members and guests. The availability of safe, reliable, affordable, and clean energy is critical to achieving this vision. The Tribe is committed to further its goals for self-sufficiency, self-determination, and sustainable development through empowerment in the Tribe's energy interests; to ensure adequate supply and quality of energy to meet the Reservation's present and future needs; and, thereby, contribute to the economies of the Agua Caliente Band of Cahuilla Indians and the surrounding Coachella Valley, consistent with the Tribe's dedication to a clean, safe, and secure environment.

The Fort Mojave Indian Tribe reservation is comprised of roughly 42,000 acres in Arizona (23,669 acres), California (12,663 acres), and Nevada (5,582 acres). In 1911, by executive order, the Ft. Mojave's were granted a reservation consisting of the old military reserve, areas called the hay and wood reserves on the California and Nevada side of the Colorado River, and adjacent checkerboard land on the Arizona side. The checkerboard arrangement came about because the government gave the railroad every other section of land. Today, the reservation is home to approximately 1,100 members. The Fort Mojave Indian Tribe celebrates the positive changes that resulted from careful planning, sound investment, and



hard work. Ten years ago the potential of the Tribe's water resources, land, and strategic location went untapped. Today, the Tribe's agricultural operations are profitable and expanding. A tribally-owned gas and electric company, and telecommunications company provide service to Indian and non-Indian customers. Development of Aha Macav Power Service was driven by an interest in providing cost-effective power to the Avi Resort and Casino. The Avi hotel has 302 rooms, a beach and lagoon on the Colorado River, a championship golf course, and an RV park. New houses ring the golf course and a new casino-hotel and a truck stop on Interstate 40 is planned. Fort Mojave's interest in energy led to development of the Calpine South Point 540 MW gas-fired generating plant, which began operating in 2001.

The Pauma Band of Mission Indians reservation is comprised of 4 separate tracts of land totaling roughly 5900 acres, about 65 miles northeast of San Diego. The residential portion of the reservation is 225 acres, home to approximately 150 members. Recreation, tourism and agriculture are main components of the economy, all of which require reliable, reasonably priced electricity. Pauma has developed an avocado grove, and an orange grove, which provide full-time employment to Tribal members, and has considered manufacturing/assembly operations. The Casino Pauma opened in 2001. Pauma recently agreed to partner with Foxwoods Development, the casino arm of the Mashantucket Pequot Tribe, to develop a resort on the reservation. While small in membership and land base, Pauma has been well-represented in energy matters by its Chairman, Chris Devers, who serves as the Chairman of the Council of Energy Resource Tribes.

The San Manuel Band of Serrano Mission Indians is a federally recognized American Indian tribe located near the city of Highland, Calif. The reservation is named after Santos Manuel, a great tribal leader, and is located in California, in the foothills of the San Bernardino Mountain region, just north of the city of Highland, California. It consists of over 800 acres of mostly mountainous land and is home to Indian Springs, which dates back to the earliest records of California's rich history. The Serrano Indians are the indigenous people of the San Bernardino highlands, passes, valleys and mountains who share a common language and culture. The San Manuel reservation was established in 1891 and recognized as a sovereign nation with the right of self-government. Since time immemorial, the San Manuel tribal community has endured change and hardship. Amidst these challenges the tribe continues to maintain its unique form of governance. Like other governments it seeks to provide a better quality of life for its citizens by building infrastructure, maintaining civil services and promoting social, economic and cultural development. Today San Manuel tribal government oversees many governmental units including the departments of fire, public safety, education and environment. Over time, the San Manuel Band of Mission Indians has become a self-sufficient entity in the community with an established economic and social outlook. The San Manuel Band of Mission Indians is active in donating funds for a variety of projects in neighboring areas. Nearby cities and towns receive support from the San Manuel Band of Mission Indians in the form of monetary and bottled water donations for cultural, social, and economic projects benefiting the common good of communities in which they live and work.

At the beginning of the project, SWTEC was an informal ad hoc assembly of Tribes with no charter, bylaws, or formal agreement existing between members. As part of the DOE-funded study, various Tribal organizations were identified, evaluated and considered as models for the SWTEC organization. The members have supported formalizing SWTEC's structure,

building a foundation for creation of the entity that will oversee and own/operate the identified project asset(s). It was the intent of current SWTEC members to create a flexible, scalable structure that will allow inclusion of additional Tribe members as interest in future activities grows. Although the Memorandum of Understanding has been drafted for the SWTEC organization, it had not yet been formalized during the project period.

## Section 2: Project Objectives and Scope

The Tribes' objective was to study the feasibility of developing renewable power generation projects that could leverage available Tribal renewable energy resources, optimum siting locations on member reservations, and access to renewable energy markets and delivery infrastructure, in pursuit of a successful multi-Tribally developed project.

The SWTEC member Tribes collectively had strong interest in the value that renewable development, in particular, could add to their goals – in terms of alignment with the Tribes' cultural values of sustainability and resource stewardship, and additional leveraging incentives available for renewable projects. All are located in, or close to major metropolitan areas with air quality issues, which affect their members' health and well-being on a daily basis. Renewable power generation facilities positively impact air quality issues.

SWTEC members came together on this effort, in part, because of their recognition of mutual and overlapping interests in leveraging the natural resources contained within their respective Reservation lands, and also because of their recognition that large-scale renewable projects do indeed appear to be viable. Larger projects are attractive because of the potential for economy-of-scale benefits and larger-scale project returns. And at the same time, the capital and other resource requirements are correspondingly larger than those of smaller-scale projects. As such, SWTEC members also recognized the value of more effectively meeting project resource requirements through a diversified consortium of participants.

As noted previously, the proposed project entailed a first-of-its-kind approach to Tribal collaboration in energy initiatives. Although precedents for other types of multi-Tribal enterprise ventures have been established, utilization of sustainable energy management as a means to support Tribal economic growth has not yet been demonstrated. The collective vigor and financial resources of the participants gives rise to a strengthened ability to (i) leverage resources across several Reservations, and (ii) bring to the table the capital (debt and/or equity) resources of a diversified group of participants, thereby minimizing risk and leveraging the resource strength of the participants. Nationally, there is increasing awareness that Tribes can and should move beyond gaming activities in order to develop enterprise capacity and improve economic conditions for Tribal members. This proposed project would be the first Tribally-developed initiative to demonstrate ownership and operation of a renewable energy project that creates value for multiple Tribes. Implementation of this project can translate SWTEC's strategic energy goals from concept to action, and can be an important first step toward developing a regional model as well as providing the prototype of a reusable platform for Tribes everywhere.

Several specific project objectives directed SWTEC efforts during the study period. One primary objective of the Project was to create a formal SWTEC organization that would clarify future roles, responsibilities, and funding requirements for member Tribes, as well as for other Tribes that may wish to participate. Once created, each participant could clearly establish its own level of investment, and gain commitment from its respective organization for future activities and involvement.

A second objective was to determine the feasibility of one or more renewable generation projects on SWTEC participant's lands. Primary determinants were renewable and conventional energy resources available, interconnection requirements and costs, applicable incentives, financing options, and environmental considerations. In determining feasibility, the study would evaluate whether a fully renewable, but intermittent power product, or a renewable hybrid firm power product, would better meet identified Tribal and market needs.

A third objective was the identification of a generation project with the greatest potential among alternatives that could be successfully financed, constructed and operated. Definition of the successful project would be based on all the elements listed above, as well as on the potential for Purchased Power Agreements (PPAs) for project power. Ultimately, the project would create renewable energy generation resources, as well as Tribal energy knowledge that will improve the quality and reliability of electric service on the reservations, support energy self-sufficiency and encourage future economic development, as well as contribute to environmentally clean energy. Through key project learning, SWTEC members would gain experience and knowledge required for successful development of renewable generation, as owners and participants in future projects.

The fourth objective was potential for Tribal job creation and related economic impacts from development, construction and eventual operation of identified project(s). According to research by Sargent & Lundy, Concentrating Solar Projects such as those considered by SWTEC members could employ as many as 45-50 Tribal members for ongoing operations and maintenance. These positions would be relatively high paying jobs, with extensive training in energy matters. The knowledge gained from member participation and employment would serve to benefit each Tribe, as they move forward with their own individual energy planning efforts.

In addition to job creation, each participating Tribe would benefit from significant positive economic development impacts. Assuming the project(s) will provide dependable long-term power to the reservations, at lower costs, and with less price fluctuation, all Tribes that elect to purchase power from the project will have more control over energy costs, and be able to provide a greater quality of utility service to other businesses they contemplate, as well as attract to the reservations. Tribes are increasingly recognizing that diversification is key to sustainable Tribal economic and community development. Power generation is essentially a means to the end, and plays a key role in economic development, reservation employment, skills development, job growth, and ultimately supports community prosperity.

An additional benefit that the Tribes realize is the human capacity that will grow as a result of the project. Though external help was retained to carry out much of the study, SWTEC member representatives were extensively involved, which ensured that learning and knowledge transfer occurred throughout the study. Ultimately, the project will create renewable energy generation resources, as well as Tribal energy knowledge that will improve the quality and reliability of electric service on the reservations, support energy self-sufficiency and future encourage economic development, as well as contribute environmentally clean energy. Through key project learnings, SWTEC members would gain experience and knowledge required for successful development of renewable generation, as owners and participants in future projects.

## Section 3: Primary Project Tasks and Activities

Specific task categories included:

- Consortium Development and Capacity Building
- Energy Needs Analysis
- Project Identification
- Fatal Flaw Analysis
- Community Education
- Preliminary Feasibility Analysis
- Development Support
- Decision Support

**Consortium Development** focused on evaluating the appropriate organization structure for SWTEC. Various Tribal organizations were identified, evaluated and considered as models for the SWTEC organization. SWTEC members analyzed options for the formation of an appropriate multi-Tribe entity that would best enable 1) execution of the proposed project development activities, as well as 2) identification a sustainable financial structure for the Tribal energy entity. The options considered ranged from multiple Tribal utility authorities, where Tribal participants may have partial or full equity interests in energy projects, to the formation of a multi-Tribe cooperative, which would own and operate the identified generating facility, and /or portions of the associated delivery system. SWTEC members were in favor of creating an entity that would oversee, and ultimately own/operate a project asset, through creation of a flexible, scalable structure that would allow inclusion of additional member Tribes as interest in future activities expanded.

Consortium Charter drafts were developed at various points in the study, ultimately focusing on development of a draft Memorandum of Agreement to form the Southwest Tribal Energy Consortium LLC. While members supported formalizing SWTEC's structure, by the end of the project period, the organization had not yet been formed.

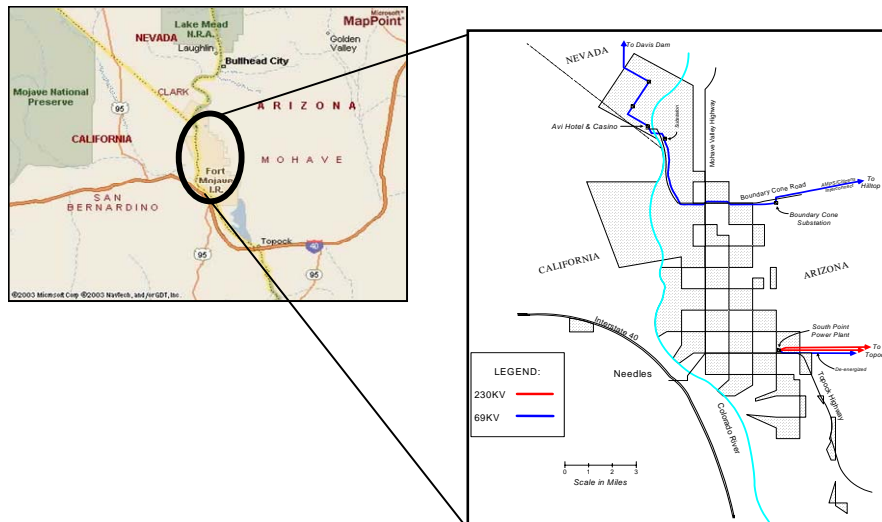
**Capacity Building** and knowledge transfer took place in a number of different ways. Regularly scheduled (weekly/bi-weekly) project conference calls, numerous in-person meetings hosted by each SWTEC member, tours/site visits of various solar facilities in the Southwest region, and discussions with numerous industry experts all contributed to developing knowledge and capability for each SWTEC member representative.

The **Energy Needs Analysis** phase of the effort was critically important, in that it provided the fact base for all future activities and analysis. A survey was developed (see Appendix) to summarize and evaluate the energy needs of each Tribe by identifying recent analyses and studies, and to ascertain the level of interest, commitment, and ultimate intent to participate in multiple aspects of energy project development process. Each Tribe participated and this

summary formed the basis for the next task in the study, which focused on potential project identification. Also as a part of this task, summaries of relevant regulatory, legislative and market incentives were developed to help frame the boundaries of potential energy project proposals.

In the **Project Identification** phase, each SWTEC member reservation was evaluated, consistent with SWTEC member survey inputs, to determine wind, solar, and natural gas resource availability. Biomass and geothermal resource assessments were not completed, due to lack of interest on the part of the SWTEC member Tribes. Once resource assessments were complete, technologies were evaluated, and multiple potential projects were identified consistent with identified resources, reservation land applicability, transmission access and economics.

The result of this phase was to narrow the resource, technology and project location options to solar generation, specifically, utility-scale Concentrating Solar-Powered Generation projects, with a specific, tentative project location at the Fort Mojave Indian Reservation as shown in the figure below.



Once the project and site were identified, a preliminary market assessment was completed, including summary market pricing, and potential purchasers were identified. Multiple technologies were evaluated, and preliminary system capital costs were identified.

Initial transmission reviews were completed, which indicated that current planned upgrades in the project area should be adequate to support the proposed project, and detailed interconnection costs developed. Although power flow studies will ultimately be required, they were not completed as a part of this study. Relevant environmental studies for the nearby Calpine Southpoint natural gas plant were collected, and reviewed, to establish a high level environmental clearance. Development costs, including permitting requirements, financing activities, legal and tax analyses, and applicable incentives and tax credits were identified and summarized. All of the key project components were included as inputs into summary project economic models, resulting in calculation of project levelized cost estimates

(LCOEs), and cash flow projections utilizing various project structures, and multiple scenarios using varying assumptions.

Considerable activity toward project **Development Support** was completed during the course of the study. Evaluation of available insolation data was completed, and steps taken to establish further solar monitoring activity. Summary project information was developed for use in identifying various project funding sources, and numerous discussions held with project financiers and analysts.

Multiple project timelines were developed for discussion and review, and a Request for Information document was developed and provided to a list of identified Concentrating Solar Power developers and technology providers. Once responses were received, reviewed and evaluated, and in-person discussions held, SWTEC issued Requests for Expressions of Interest to a select group of development and technology partners. Further discussions took place with the responding developers and technology providers, although no final decisions were made during the course of the study.

Outreach for power marketing was initiated, including detailed identification of potential power purchasers in the Southwest, such as investor-owned utilities, municipalities and cooperatives, and Tribal utilities. In addition, multiple dialogues were held with the Southwest CSP Utility Consortium, which had been identified as a key potential purchaser of power in the relevant market.

**Decision Support** took place during the course of the study, via SWTEC member representatives, to various Tribal entities and Councils. A workshop was held in April 2007 for SWTEC member entity Board members, and Council members, to provide background information on the proposed project, technologies considered, site location, project structures and economics, and SWTEC consortium development plans. Late in the study period, presentations were made to SWTEC member Councils to provide basic information about the project, as well as to seek formal support for project participation.

## Section 4: Deliverables

Copies of all project deliverables are included in the list below. All are considered proprietary and confidential by SWTEC; therefore they are not provided in this report.

These include the following documents:

- Project Kickoff March 2006
- April 2006 Update
- May 2006 Update
- May 2006 Energy Needs Survey
- August 2006 Update
- October 2006 Update
- November 2006 Update
- January 2006 Phoenix Meeting
- February 2007 Update
- April 2007 Palm Springs Meeting
- June 2007 Agua Caliente Meeting
- July 2007 Phoenix Meeting
- July 2007 Agua Caliente Council Presentation
- July 2007 San Manuel Business Council Presentation
- August 2007 SPPR Presentation



## Section 5: Conclusions

### **Consortium Development**

At the beginning of the project, SWTEC was an informal ad hoc assembly of Tribes with no charter, bylaws, or formal agreement existing between members. As part of the study underway, various Tribal organizations were identified, evaluated and considered as models for the SWTEC organization. A draft Memorandum of Understanding has been drafted for the SWTEC organization, and the organization papers have been filed in Delaware.

### **Proposed Project**

The initially identified location for a renewable energy project is on the Fort Mojave Indian Reservation, which spans lands in California, Nevada and Arizona. Property close to the existing Calpine Southpoint gas-fired generating station is currently under consideration. All of the SWTEC participants have growing economies, populations, and dramatically increasing energy requirements. As such, the proposed project could potentially provide participating Tribes, as well as other Southwest Tribes, an opportunity to meet some of their collective energy requirements via clean, sustainable energy facilities that will hedge against fuel volatility risks.

### **Relevant Power Market Opportunities**

In addition to the Tribal needs indicated above, the Southwest represents a particularly strong market for renewable power, primarily due to environmental portfolio standards that exist in several key states, associated renewable energy fund development, and an emerging market for Renewable Energy Certificates (“RECs”). All of the U.S. power markets relevant to the proposed effort (California, Arizona, Nevada, and Colorado) have renewable portfolio requirements in place. These requirements require regulated utilities to provide specified percentages of their delivered electricity through renewable generation facilities. This creates a well-defined demand for energy generated from renewable resources. Further, changes in regulatory frameworks, natural gas price volatility, and renewable energy technology advancements have made renewable energy far more technically and economically feasible than in prior years.

In response to these drivers, the Southwest Utility CSP Consortium (“SW Utility CSP Consortium”) effort was begun in 2006. All member utilities in the effort, representing Arizona, Colorado, Nevada and California, are subject to state-mandated renewable portfolio standards, or internal commitments to increase renewable energy-generated power. Member utilities are interested in purchasing power from utility scale Concentrating Solar-Powered projects, as they recognize that CSP represents the most cost-effective resource, with significant potential for cost competitiveness with conventional fuels in the near future. They have met as a group multiple times during 2006 and 2007, and issued a Request for Proposals (“RFP”) in late 2007. The RFP anticipates CSP project development and commercial operation by 2010.

SWTEC members approached the SW Utility CSP Consortium in December 2006, and have had multiple discussions to date. The SW Utility CSP Consortium has shared its plans, intent,

and scheduled with SWTEC, expressed interest in the SWTEC-identified project and site, and committed to add SWTEC to its short-list of RFP recipients.

### **Project Advantages**

Primary project site considerations for the SW Utility CSP Consortium include insolation, transmission access and capacity, natural gas supply, and water supplies, all of which are strengths of the SWTEC-identified site at Fort Mojave. In addition, Tribal power generation projects have certain advantages over non-Tribal projects, especially as they relates to project approvals and environmental reviews. Fort Mojave has already proven its willingness to support aggressive power project development through Calpine's Southpoint plant approval and construction. With SWTEC as a co-developer of a Fort Mojave-located CSP project, the plant would not be subject to Arizona Corporation Commission plant siting requirements, other than associated project laterals, which may be restricted to Tribal lands. For this reason Fort Mojave would appear to be a supportive host for a project that could potentially meet the Utility Consortium needs on a timely basis. And even if the project were not selected by the SW Utility CSP Consortium as its initial CSP effort, a SWTEC project could potentially have multiple partner options among the member utilities.

Clearly, the Southwest renewable power market is strong and growing. As commercial scale projects are built, and utilities become more comfortable dealing with renewable energy generation and as renewable portfolio requirements are continually strengthened, large-scale renewable generation projects will become the norm, rather than the exception.

## Section 6: Lessons Learned

The challenges the SWTEC dealt with in working through this study are similar to those any group of interested parties would face, and none were significant with regard to completion of the study. The SWTEC Tribes were committed to working through a large volume of information, much of it fairly technical in nature. The participants all learned a great deal about renewable technologies, energy project siting, project financing, project structures, and tax incentives during the course of the study.

Ultimately, the SWTEC members worked through the complexities of forming an entity to pursue energy project development, and by the time this report is finalized, had created the necessary vehicle through the Southwest Tribal Consortium LLC.

The project concept was determined to be feasible, with existing CSP technology, at the identified project site on the Fort Mojave Indian Reservation. The market for renewable and solar power is strong in this locale, and as SWTEC proceeds through the typical energy project development steps, it is likely to achieve success.

Success in this project, however, is not just the building of a plant at this site. Success also will be measured by the level of involvement of the participating SWTEC Tribes. SWTEC members had the ability to learn much about the technical aspects of the project, which will serve them well as they proceed through the process.

One key lesson learned was the importance of articulating to the potential project participants – power purchasers, technology providers, developers, financiers, etc. – all of the advantages and value provided through development of such a project by a group of Tribes, on Tribal lands, thereby establishing adequate credibility for the SWTEC member project Tribes and their project. This was a consistent challenge throughout the process, and will resurface multiple times as the project continues. These advantages include the following:

### **Advantage 1 - Location**

The Native Spirit Solar Energy Facility (the name chosen for the proposed project) has an outstanding location, with an excellent solar resource, access to natural gas, access to water, access to adequate transmission, and excellent proximity to market. Many Indian reservations, including the Fort Mojave reservation, have been utilized as the backbone of transmission systems and other energy corridors for energy companies, federal hydroelectric projects and infrastructure projects. Originally thought to be low-cost, out-of-the-way options to site valuable infrastructure, many Indian reservations in the last few decades have witnessed population centers encroaching their territories as well as developing an additional energy infrastructure utilizing this backbone.

In the case at hand, the project host reservation lies in close proximity not only to market but also to several trading hubs which are providing a unique array of transmission options.

## **Advantage 2 - Tribal Jurisdictional Primacy**

The Native Spirit Solar Facility could be developed in a very short interval, given strong Tribal leadership support for the project, and the ability to work through the permitting and approval process very quickly, without the need to comply with state siting and permitting requirements.

In most cases across the country, Tribal governments have retained and maintain jurisdictional primacy over siting, environmental and taxation regulatory authority related to projects, personal property and transactions occurring on Indian reservations. Tribes have the ability to 1) establish statutory and regulatory regimes to regulate water, air, waste, telecommunications, energy and other activities occurring within their exterior boundaries and 2) enforce those regulations through reliable judicial systems, like their state and federal counterparts.

In relation to leasing Tribal trust lands, an activity which seeks to encumber tribal trust assets, the Department of Interior has an ongoing fiduciary obligation to Tribes to maintain a residual level of trust review of any encumbrances of trust assets. In doing so, an Interior Department's agent in this matter, the Bureau of Indian Affairs, routinely reviews certain leases that are not leased by a Tribal federally-chartered section 17 corporation but by the Tribal government directly.

As a result, for the project site currently contemplated for Native Spirit Solar Energy Facility, the underlying lease and project will require Tribal and federal review and contingent NEPA evaluations. The project itself will *not* have to undergo state regulatory review as the state lacks jurisdiction over such projects on Indian lands. The current Calpine South Point Plant was properly sited and underwent a federally-approved Environmental Impact Statement without State of Arizona review. The State indicated it does not believe its Powerplant and Line Siting Committee would have any jurisdictional review of this project either. As state and local siting requirements and processes can delay and drive up costs for projects significantly, this poses a unique and compelling advantage to anyone seeking to site, construct and operate a project of this nature in a competitive, quick moving market environment.

## **Advantage 3 – Project Structures able to Utilize Tax Incentives**

Available tax incentives are critically important to the economics of a project such as the Native Spirit Solar Facility. The challenge for the Team was to innovate possible business structures for the project in such a way as to take advantage of existing incentives and tax credits, which would not necessarily apply to Tribal projects. Taxation is clearly a significant motivating factor in developing and structuring a large-scale commercial solar project in the United States. Currently only about a half dozen developers in the United States can utilize large federal tax subsidies offered for renewable energy projects. This reality has caused the rest of the market to innovate transactional structures to utilize large institutional equity investors to participate in renewable energy financings in order to claim the attendant tax subsidies and inject some of that value in partnership with the developer. Through rapid depreciation and current investment tax credits, current federal tax provisions pay for nearly 60% of the capital costs, without including any of the reservation-based tax incentives (described below) or the upcoming domestic manufacturing deductions starting in 2010.

#### **Advantage 4 - Accelerated Depreciation of Property Sited on Indian Lands**

With the passing of the Tax Reform Act, the Modified Accelerated Cost Recovery System (MACRS) is the primary depreciation method condoned and accepted by the IRS. Its updated contents include the expansion of the number of property classes featured and a half-year convention was added to simplify the first and final years of a property's recovery life. The intent of the creation of MACRS was to encourage capital purchasing -- by allowing for faster depreciation of capital assets. Additionally, MACRS allows for higher depreciation at the beginning of the life of the capital asset so the tax deductible depreciation expense is taken sooner, increasing the net present value of that capital purchase and providing more income early in the depreciation cycle.

In 1993, Congress passed the Revenue Reconciliation Act which provided for substantial tax incentives based on certain business activity within Indian reservations, including an employment tax credit for employers and an accelerated depreciation allowance for certain business property used and located within an Indian reservation. The accelerated depreciation allowance has been reauthorized several times and is expected to be reauthorized again. It is currently in place for equipment placed into service before 2008.

With respect to business property placed in service on Indian Reservations, Internal Revenue Code Section 168 provides for faster write-offs (recoveries) for certain classes of property on Indian reservations placed in service. These special MACRS recovery periods apply for purposes of computing MACRS depreciation for both regular tax and alternative minimum tax purposes. For purposes of a renewable project sited on an Indian Reservation, as an example, a 5-year depreciable property can take a reduced 3-year recovery period, which provides an added benefit to the project.

Some restrictions include property acquired for use outside the United States, tax-exempt use property, or properties financed by tax-exempt bonds that do not qualify for the faster write-off. Also, business owners electing the MACRS alternative depreciation system cannot use these accelerated rates.

#### **Advantage 5 - Partnership Flips**

Partnership flip structure has been successfully used in other renewable (wind) projects, and was identified as one partnership model option for this project to improve power costs, project returns, and overall economics. In the past, partnership flips occur when a project developer brings in an institutional equity tax investor to own the project for an identified term, throughout which the tax investor is allocated the lion's share of the returns until the tax credits have run, or later when the investor reaches their targeted return on investment. At this point, the tax investor's interest often flips down to single digits for the remainder of the project via purchase options.

In flip transactions, a tax investor's interest can be as high as 99/1 of the general/limited partnership during the Production Tax Credit or Investment Tax Credit period. Once that period ends, the ownership would flip. Flips could have varying tax ownership percentages, depending on the nature of the project, the project participants, the size of the overall financing, the credit ratings of the project participants and offtakers and several other key variants which are negotiated. Again, the flip date, and terms, are normally negotiated and

pegged to the time when the tax benefits have been taken or when the institutional investor reaches his targeted rate of return.

One important note about the timing of a flip, specific to the Investment Tax Credit, which can be taken with a solar project of this nature, is that the ITC is subject to recapture in the event the property is disposed of or ceases to be qualifying property during the five-year required vesting after the property is placed in service. This means that 20% of the ITC “vests” in each of the five years following placement in service. In the event of a recapture event, the tax basis of the property is increased for depreciation purposes by 50% of the recapture amount.

Another note about the ITC is that it is a part of the general business credit subject to limitations that prevent reduction of tax liability below certain floor amounts. The general business credit cannot reduce tax liability below the tentative minimum tax (under the AMT) and cannot reduce tax liability to an amount less than 75% of what the tax liability would have been absent the credits. For that reason, these tax credits have been primarily applicable to large energy investors with substantial ongoing tax liabilities.

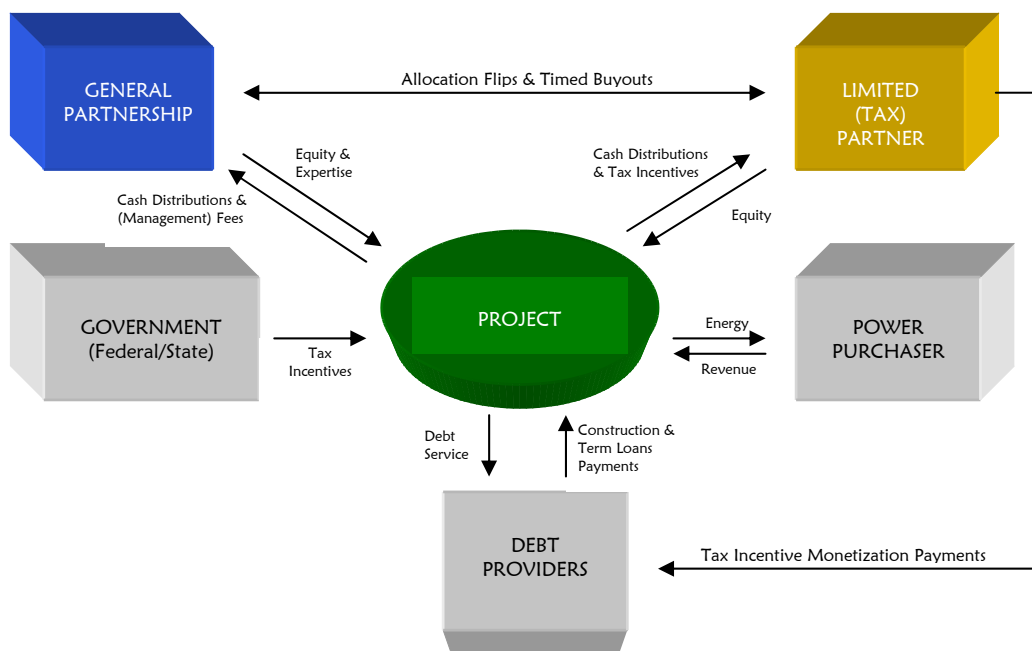
This flip structure has been utilized in a number of large wind transactions, particularly in the last five years; however it is important to note that it has not yet been utilized on Tribal energy projects or energy projects sited on Tribal lands. The process, while successful, is still undergoing some refining that will affect the structural planning for a large solar project. One such refining process has been driven by the IRS. In 2005, the IRS issued two private letter rulings regarding partnership flip transactions, both of which were found adequate to allocate tax benefits to the tax investors. In 2006, the IRS placed a moratorium on partnership flip letter rulings.

Notably, the IRS issued guidance late in 2007 about specific terms and conditions it will accept in similar partnership flip transactions. In essence, the following encompasses clarifications by the IRS regarding these structures, particularly around valuation and agreements amongst the partners to pass ownership of the project assets after the tax credits fall away. Specifically, the guidance includes the following wherein the partners and the partnership must satisfy the following 12 requirements:

- (1) The Investor’s investment return must be reasonably anticipated to be derived from both section 45 credits and participation in operating cash flow;
- (2) The Developer must have a minimum 1% interest in all partnerships items, including section 45 credits;
- (3) The Investor must have a minimum interest in partnership income and gain equal to 5% of its largest share of such items during its ownership of an interest in the partnership;
- (4) The Investor must make and maintain at least a 20% minimum investment (not protected against loss) in the Project Company, but reduced for distributions of cash flow;
- (5) At least 75% of the Investor’s capital contributions must be fixed and determinable and not contingent in amount or certainty of payment;
- (6) Neither the Developer, the Investors nor any related parties may have a purchase option at a price less than fair market value (determined at the time of exercise);

- (7) The Developer (or party related to the Developer) may not have a purchase option exercisable earlier than five years after the wind facility is first placed into service;
- (8) Neither the Project Company nor the Investors may have a put option with respect to the Wind Farm, property included in the Wind Farm, or interest in the Project Company;
- (9) No person may guarantee or otherwise insure the Investor the right to any allocation of the section 45 credit;
- (10) The Project Company must bear the risk of wind availability (no guarantees except from third parties if the Project Company or an Investor directly pays the cost of or premium for such guarantee);
- (11) The Developer (or a party related to the Developer) may not lend any Investor the funds or guarantee any indebtedness with respect to acquisition of its interest; and
- (12) Section 45 credits must be allocated in accordance with the partnership rules (e.g., in the same manner as receipts from the sale of electricity produced at the Wind Farm are allocated).

Of interest to the contemplated project, in some recent Midwest projects, the agreements between developer and tax investor called for the tax investor to pay down 100% of commercial debt during its ownership period, leaving the developer with a debt-free project once the flip occurs.



### Other Tribal Advantages

Other advantages of Tribal participation in a CSP project include the ability to host manufacturing/component integration facilities, and take advantage of available business incentives and workforce development incentives. The Indian Employment Tax Credit was created in the Revenue Reconciliation Act and reauthorized effective until 2008 in tandem with the accelerated depreciation language (Code Sec. 45A(f), as amended by Act

Sec. 111). The Indian employment credit (claimed on Form 8845) is 20% of the excess, if any, of the sum of qualified wages and qualified employee health insurance costs (not in excess of \$20,000 per employee) paid or incurred (other than paid under salary reduction arrangements) to qualified employees (enrolled Indian tribe members and their spouses who meet certain requirements) during the tax year. Tax credits claimed for certain terminated employees are recaptured and deductions for wages and health insurance costs are reduced by the credit.

Businesses involved in international trade that site on a reservation designated as a Foreign-Trade Zone (FTZ) can defer, reduce or in some instances completely eliminate U.S. Customs duties on products imported or exported through the FTZ/reservation. Additionally, state and local ad valorem taxes cannot be imposed upon imported tangible personal property stored, or processed, on the FTZ/reservation. Nor can state or local ad valorem taxes be imposed on property produced in the U.S. and held in the FTZ/reservation for exportation in its original or processed form. FTZ businesses could also save money by avoiding per-shipment customs processing fees in favor of a 'weekly entry fee that is imposed irrespective of the number of shipments.

### **Energy Policy Act Provisions**

Title V of the Energy Policy Act of 2005 contained several Indian-specific provisions, including:

- Preference purchasing provisions that authorizes any Federal agency or department to give preference to an energy production enterprise, partnership, consortium, corporation or any type of business organization in which the majority interests are owned and controlled by one or more Indian Tribes;
- Another interesting provision authorizes the Western Area Power Administration and Administrator to encourage Tribal energy development by taking such actions as the Administrator deems appropriate, including, but not limited to, taking into consideration power allocations from WAPA to Tribes to meet firming and reserve needs of Indian-owned energy projects on Indian land; and
- In this session of Congress, several proposals were presented on the House and Senate side which called for authorizations to double the Renewable Energy Credits (RECs) produced from renewable energy projects on Indian lands.
- In addition, government agency purchases of renewable energy produced on Indian lands allow for doubling of the Renewable Energy Credits.