



**Final Report to the  
Department of Energy  
Renewable Energy and  
Energy Efficiency**

**Agua Caliente Band of  
Cahuilla Indians: Assessing  
the Feasibility of Renewable  
Energy Development and  
Energy Efficiency  
Deployment on Tribal Lands**

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Pre-Development Study**

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**Important Notice:** This feasibility study has been prepared by Red Mountain Energy Partners (Red Mountain) for presentation to the Agua Caliente Band of Cahuilla Indians (ACBCI) per requirements of the Consulting Agreement between Red Mountain and ACBCI.

This study has been prepared from information gathered by Red Mountain, which makes no guarantees as to the accuracy of its economic and financial assumptions and projections. No part of this Study should be construed as legal, financial or tax advice. ACBCI should consult professional legal, financial or tax advisors on such matters.



## Project Background

The Agua Caliente Band of Cahuilla Indians (ACBCI) conducted a feasibility and pre-development study of potential solar projects on its lands in southern California. As described below, this study was a logical and necessary next step for ACBCI. Support for solar project development in California, provided through the statewide California Solar Initiative (CSI), its Renewable Portfolio Standard and Feed-in Tariff Program, and recently announced Reverse Auction Mechanism, provide unprecedented support and incentives that can be utilized by customers of California's investor-owned utilities. Department of Energy (DOE) Tribal Energy Program funding allowed ACBCI to complete its next logical step to implement its Strategic Energy Plan, consistent with its energy and sustainability goals.

In August 2005, ACBCI was awarded a First Steps grant under the DOE Tribal Energy Program, to engage in development of a comprehensive Tribal energy plan designed to integrate with the Tribe's overall planning and economic development goals, and align with Tribal cultural, social, political, and spiritual values. The process involved building Tribal capacity within the areas of energy management, utility services, and energy technology development and commercialization, and energy generation and delivery. Deliverables from the project included creation of an Energy Vision that adheres to the Agua Caliente Band of Cahuilla Indians' overall Vision, Mission, and Goals, and identification of a set of viable energy options that ultimately led to the development of an actionable Strategic Energy Plan. The Energy Vision is formulated from the Tribe's overall Vision, Mission & Values Statement, and is intended to stand as an enduring policy instrument from which future decisions will be guided:

**Energy Vision:** The overall vision of the Agua Caliente Band of Cahuilla Indians 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. Thus 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.

### Strategic Energy Goals and Energy Objectives identified:

- To meet the intent of, and realize, the ACBCI Energy Vision
- To exercise Tribal sovereignty and rights of self-determination
- To utilize strategic energy management as a means to facilitate accomplishment of the Tribe's goals for creation of prosperity and enhanced quality of life for its members
- To integrate energy management into the Tribe's pursuit of economic and community development goals

- To utilize strategic energy management as a means to contribute to responsible and sustainable development on Reservation trust lands and in within the surrounding Coachella Valley
- To determine energy management alternatives that can further the Tribe's goals for enhanced quality of life through improved reliability, safety, and affordability of energy services for the Tribe
- To identify and act upon energy management alternatives, and/or viable energy efficiency, conservation, load management, and/or renewable generation projects that can facilitate economic and community development
- To identify and act upon opportunities for development of Tribal renewable energy resources that meet Tribal needs, consistent with the Tribe's mission to preserve resources, cultural heritage, traditional values, and beliefs
- To evaluate and act upon the formation of an appropriate Tribal Utility Entity, capable of advancing the Tribe's energy management objectives
- To act upon current trends and policy changes that create opportunities for empowering the Tribe in managing its energy affairs

Primary initiatives identified in the Strategic Energy Plan are listed below:

- Recommendation #1: Utility Organization
- Recommendation #2: WAPA Allocation
- Recommendation #3: Energy Management Goals
- Recommendation #4: Renewable Energy Generation Opportunities
- Recommendation #5: Energy Efficiency Building Codes
- Recommendation #6: Right of Way Documentation and Assessment
- Recommendation #7: Energy Technology

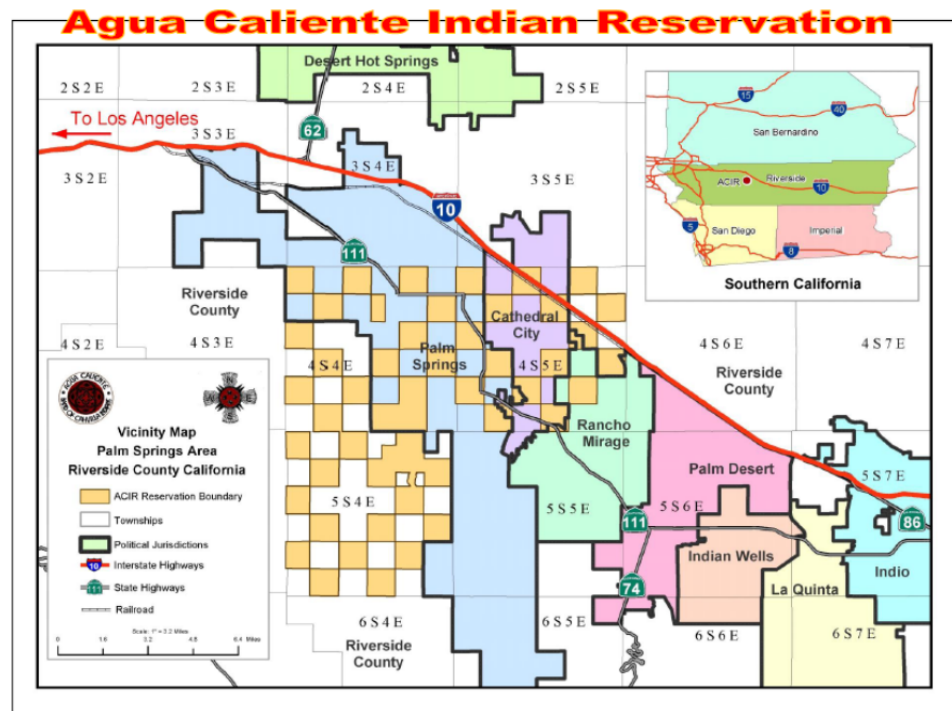
Since completion of the First Steps project, and following ACBCI Tribal Council approval of the Strategic Energy Plan initiatives in September 2006, the Tribe has already implemented, or has underway, the majority of recommended initiatives. Although ACBCI requested DOE funding for strategic energy plan implementation support activities in early 2007, none was awarded, but the Tribe was able to fund implementation efforts on its own for several years. It has made considerable progress, and the next logical step for ACBCI was to pursue renewable energy generation project opportunities focusing on ACBCI reservation-located solar opportunities, which is the subject of this final report.

### **Tribal Description**

Since time immemorial, the Agua Caliente Band of Cahuilla Indians has inhabited and governed some 2,000 square miles of ancestral land in the Palm Springs, CA area. Today, the Tribe has more than 400 members and a community base that includes families, businesses and civic organizations. ACBCI strives not only to maintain its cultural heritage and past, but also provides support for the surrounding community. ACBCI activities have had multiple economic impacts on the Coachella Valley stemming not only from the last 10 years of its casino operations, but also the extensive holdings remaining in the Tribe's historic land base, underlying much of what is now the cities of Palm Springs and Cathedral City, and portions of the City of Rancho Mirage

and Riverside County. Figure PB-1 below illustrates ACBCI reservation lands. Today, ACBCI has two hotels, two casinos, and a golf resort. With these businesses in place, the Tribe has been able to develop the resources to support the Tribal government and the Tribal community. In turn, ACBCI has also been able to support its neighboring governments and civic organizations, helping make the area strong and vibrant.

Figure PB – 1 Agua Caliente Indian Reservation Area



In accordance with the Tribe's Constitution and By-Laws, there is a two-tiered democratic Tribal government structure consisting of the Tribal membership and the elected Tribal Council. The Tribal Council sets policy, governs Tribal activities, makes laws and implements the direction voted upon by Tribal membership. The Council is also responsible for protecting and preserving Tribal property including wildlife, natural resources, and all Tribal facilities on the reservation. Additionally, the Tribal Council represents ACBCI before Federal, State and local governments. The structure of the Tribal Council includes five member positions and four proxy members. Tribal Council Members are elected by secret absentee ballot and the four proxy members are appointed by the elected Tribal Council. The three Tribal Council officer seats are for staggered two-year terms and two member seats have one-year terms.

Consistent with its stated Energy Vision, Mission and Goals, ACBCI has a strong interest in the value that renewable development, in particular, can add – both in terms of alignment with the Tribes' cultural values of sustainability and its commitment to resource stewardship. ACBCI has consistently demonstrated its commitment to meet its goals for self-sufficiency, self-determination, and sustainable development through empowerment in the

Tribe's energy interests and to ensure adequate supply and quality of energy to meet the Reservation's present and future needs. From a practical perspective, located in a major metropolitan area with air quality issues, ACBCI members' and the surrounding communities' health and well-being is negatively impacted on a daily basis. The City of Palm Springs has recently embarked on a path to a more sustainable future, and, as a leader in the community, ACBCI intends to play a major role in that effort. The city's focus includes sustainable city management and operations, economic vitality, sustainable urban development and mobility, climate change, energy conservation and renewable energy development.

Economic development is critically important to ACBCI as the Tribe continues to establish a vibrant and viable future for its people for generations to come. Moreover, by investing in diverse and strategic economic ventures both on and off the reservation, the Tribe has forged a long-standing history as an economic engine for the entire Coachella Valley. As a conscientious neighbor, and as one of the largest employers in the Coachella Valley with nearly 2,400 people on payroll, the Tribe continually works with surrounding municipalities to create economic ventures that build a strong economy for the community as a whole. The proposed solar project(s) being evaluated may be able to provide dependable long-term power to ACBCI facilities and to the reservation overall, at lower cost, and with less price fluctuation than at present, all with considerably less environmental impact than from fossil fueled generation. ACBCI will have more control over its energy costs, and potentially be able to provide electric service to other businesses being considered.

ACBCI recognizes that diversification is key to sustainable Tribal economic and community development, and particularly in California, energy is a means to that end. From a project development and ownership perspective, ACBCI believes that the opportunity to have an equity interest in renewable energy projects will provide potentially significant economic gain in an industry other than gaming. The proposed solar projects evaluated could be the first Tribally-developed initiative to demonstrate ownership and operation of a utility-scale solar renewable energy project, and could represent an important first step toward developing a regional model and creating a reusable platform for Tribes.

As described earlier, ACBCI has already been active in considering and evaluating energy infrastructure and self-generation projects, and has seen first-hand the impact of energy self-sufficiency on community development. The primary barrier to solar project development on ACBCI lands is the Tribe's need to balance the costs and benefits of alternative land uses. However, ACBCI believes that its contemplated projects will create local and regional environmental benefit, and contribute to self-sufficiency and human capacity. Long before the Federal Government imposed its first environmental requirements under the national Environmental Policy Act in 1970, Tribal Members determined in 1959 that they must provide comprehensive stewardship of the land while carefully managing their real estate resources. For this reason, the Tribe reserved all the Reservation's canyon lands from development and established the Indian Planning Commission to encourage responsible development of their real estate, while at the same time preserving

the environment that their ancestors had bequeathed to them. That stewardship continues today and applies to the Tribe's approach to development of sustainable energy projects.

Today, the Tribe has Land Use Agreements with the city of Palm Springs, Cathedral City, Rancho Mirage and Riverside County. Land use codes and permitting processes for ACBCI lands are established by the Tribe, and followed by the cities and county. These relationships have provided a blueprint for other Tribes across the nation, creating a model of government-to-government cooperation. ACBCI is well-versed on relevant codes and permitting processes in the area, and completes environmental reviews for its real estate development and construction processes on a routine basis. While much of the land being considered is already in trust, one large parcel is currently in the fee to trust land process. The Tribe would complete environmental reviews establishing any site as a viable one for solar project development.

ACBCI is always sensitive to political and social concerns, and will proactively approach opportunities for community discussion, seeking input and consensus around its contribution to the area's sustainability efforts. As previously described, the City of Palm Springs is actively following a path to sustainable development. As a leader in the community, ACBCI intends, and is expected to support and lead efforts in that regard. This approach is consistent with ACBCI's ongoing community outreach, and also with its existing city and county land use agreements. Moreover, establishment of the ACBCI Water and Energy Resource Authority in 2009 will provide a critical opportunity for ACBCI to communicate the purpose and focus areas for the organization, as summarized below:

- Preservation and prudent use of resources supports ACBCI long-term goals of economic development and diversification
- Creates focus on ACBCI role as stewards of existing resources consistent with ACBCI:
  - Sovereignty and resource control policies
  - Approach and decisions for development planning
  - Strategic Energy Plan recommendations and implementation goals
  - Local and national emphasis on water and energy conservation and sustainability
- Allows for investment in future water and energy infrastructure projects



## Project Goals and Objectives

The goals of this effort were as follows:

- Evaluate the feasibility of two primary solar project types: larger facility-scale projects serving major ACBCI facilities, and commercial-scale solar projects connected to the grid
- Prepare pre-construction studies and documents in anticipation of 2010/2011 construction, as appropriate.

Specific tasks undertaken in this study are summarized below:

Large Facility-Scale Solar Projects		
Task	Description	Deliverable
Identify available sites	Onsite review and evaluation of possible sites for solar projects at several large ACBCI facilities	Detailed maps of each proposed site indicating land availability for solar project use
Identify technology options	Compare cost, characteristics and performance of various solar technology options; evaluation would include applicability of CSI incentives; derate factor and project life degradation levels; Identify history of installations and/or relevant warranty information	Summary of solar technology options for each proposed site
Select optimal technology for available sites	Detailed review of optimal technology proposed for each site, including third-party evaluations, manufacturer spec sheets, etc.	Complete package on solar technologies remaining under consideration
Identify possible projects; create a shortlist of most-likely projects	Based on land availability, technology options, define a complete set of potentially viable project concepts	Summary of viable project options
High-level environmental review for all short-list projects	Evaluation of key environmental considerations for each site, including: geological/water use; geological hazards/soil erosion; water quality; airborne dust; wildlife habitat; fish/wildlife species; land use; visual impacts; hazardous waste; traffic; health/human safety; cultural resources; construction access; topography observations and interconnection issues; generate maps and photos as appropriate	Summary of key environmental considerations for each proposed site; identification of most-likely projects
Develop detailed economic models for most-likely projects, using	Using list of previously identified most-likely projects, develop Excel-based models to evaluate economics of most-likely projects under various ownership and incentives scenarios; model will consider tribal, tribal/investor joint venture, and developer	Scenario summary results for each most-likely project; generally 3-5 scenarios are developed for each

optimal technologies identified	ownership scenarios and all available, applicable incentives	project concept, depending on the number and impact of variables
Develop interconnection plan	Complete engineering plan for project interconnection for each approved project	Single-line drawing and interconnection equipment description
Develop financing plans	Pursue identification of financing sources, consistent with scenario results; these can include grant funding, private funding, financial institutions and tribal funding	Summarize financing sources for all relevant financial contributors
Develop project conceptual design	Develop conceptual drawing for approved projects	Completed conceptual design
Develop RFPs for project design and construction	Develop RFPs for design and construction of most-likely projects; identify firms for RFP distribution, as applicable	Completed RFP
Develop project summary package for potential investors	Summarize all relevant project information, including costs, timing, and economics for presentation to potential investors	Completed project summary

Commercial Scale Solar Project		
Task	Description	Deliverable
Identify available sites	Onsite review and evaluation of possible sites for solar projects at Whitewater Ranch location	Detailed maps of the proposed site indicating land availability for solar project use
Identify technology options	Compare cost, characteristics and performance of various solar technology options; considerations would include derate factor and project life degradation levels; Identify history of installations and/or relevant warranty information	Summary of solar technology options for each proposed site; proposed project concept
Evaluate transmission access/capacity	Based on project concepts identified, evaluate possible interconnection/transmission options	Summary of interconnection options and issues
Select optimal technology for available sites	Detailed review of optimal technology proposed for the site, including third-party evaluations, manufacturer spec sheets, etc.	Summary of solar technologies remaining under consideration
Identify possible projects; create a shortlist of most-likely projects	Based on land availability, technology options, define potentially viable project concepts	Summary of viable project options
Evaluate environmental impacts of the project	Evaluation of key environmental considerations for each site: geological/water use; geological hazards/soil erosion; water quality; airborne dust; wildlife habitat; fish/wildlife	Summary of key environmental considerations for proposed site

	species; land use; visual impacts; hazardous waste; traffic; health/human safety; cultural resources; construction access; topography observations and interconnection issues; generate maps and photos as appropriate	
Develop detailed economic model for each project concept, using optimal technologies identified	Develop Excel-based model to evaluate economics of project concepts under various ownership and incentives scenarios; model will consider tribal, tribal/investor joint venture, and developer ownership scenarios and all available, applicable incentives	Scenario summary results for each project concept; generally 3-5 scenarios are developed for each, depending on variable impacts
Select project concept for further consideration; prepare site plan	Develop conceptual drawing for approved projects	Completed conceptual design
Develop interconnection plans	Complete engineering plan for project interconnection for each approved project	Single-line drawing and description of interconnection equipment
Identify optimal ownership structure and requisite financing plans	Pursue identification of financing sources, consistent with scenario results; these can include grant funding, private funding, financial institutions and tribal funding	Summarize financing sources for all relevant financial contributors
Prepare development plan and documents to approach partners, if applicable	Summarize all relevant project information, including costs, timing, and economics for presentation to potential investors	Completed project summary

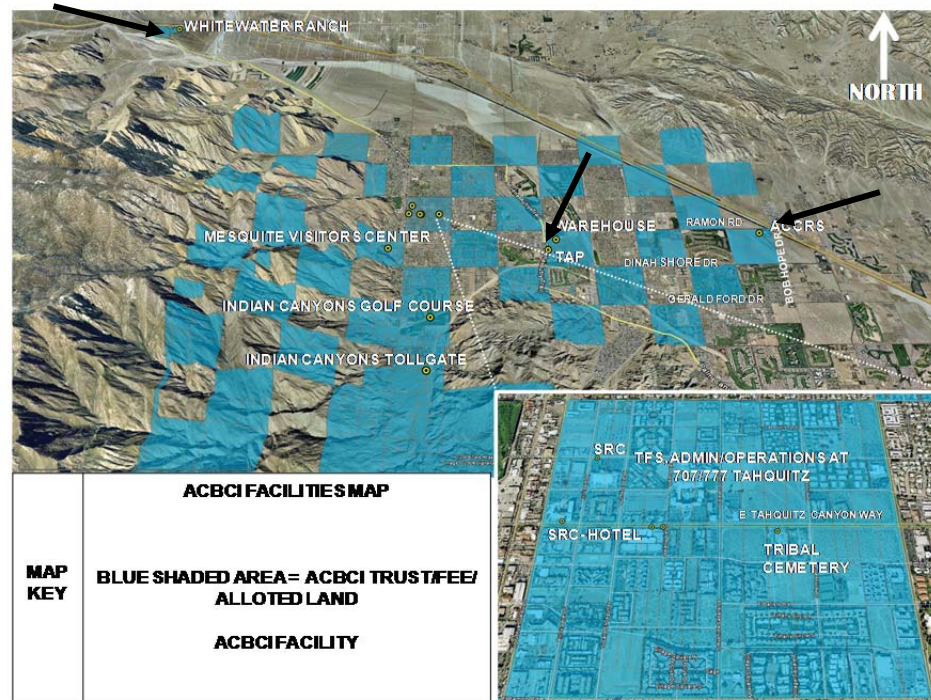
The sections following summarize the activities undertaken and relevant results.



## Relevant Solar Resources

The Agua Caliente Solar Feasibility and Pre-Development Project focused on evaluating opportunities for solar power at larger ACBCI facilities and on its lands, which are indicated in the map in Figure RSR - 1 below. Both large facility-scale and commercial-scale project opportunities were assessed at several locations. These include the Agua Caliente Casino Resort Spa (ACCRS), Tribal Administration Plaza (TAP), and Whitewater Ranch (WWR), identified below with arrows.

Figure RSR – 1 Map of Agua Caliente Band of Cahuilla Indians Reservation



### Solar Resource and Quantification

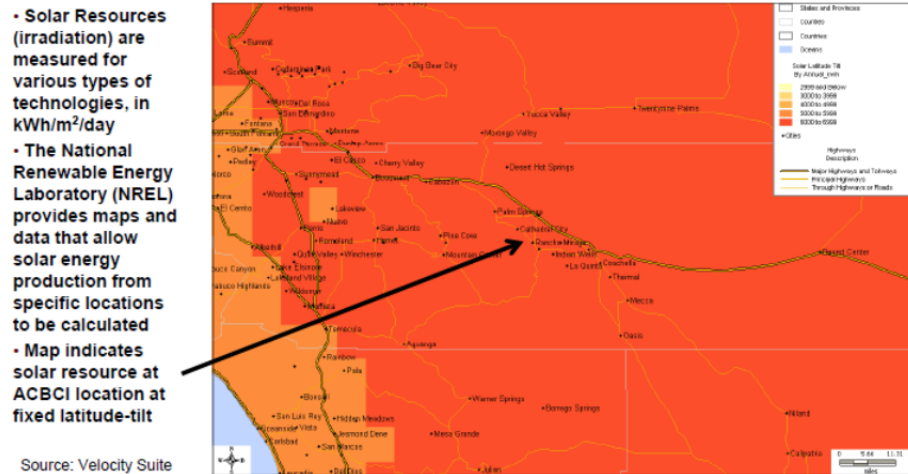
Excellent solar resources are indicated for the Agua Caliente Indian Reservation, measured by irradiation, which, according to the National Renewable Energy Laboratory (NREL), represents the rate at which radiant energy arrives at a specific area of surface during a specific time interval. Irradiation is a function of solar equipment technology assumed. Types of PV equipment vary in a number of ways – including the angle of the PV module plate tilt, as well as whether PV modules move with the sun to generate the maximum amount of power at a given site.

Solar resources on ACBCI lands are excellent for both PV and concentrating solar projects as shown in the maps and data provided below. The range and strength of the solar resources provide ACBCI a wide variety of options for development of possible solar projects. Direct Normal Insolation for PV flat plate in the range of 5.5 to 7.0 is well within range for a successful project; Concentrating solar resources are indicated to be in the 6.5 – 7.5 range. Data available from NREL supports the map indications, and may be supplemented

by onsite monitoring, although not necessarily required by financiers. Direct Normal Radiation Resources are noted in Figure RSR – 2.

Figure RSR – 2 Direct Normal Radiation Resources for ACBCI Reservation Area

## Direct Normal Radiation Resources (for PV) at Potential ACBCI Sites



A map indicating distances of ACBCI potential project sites from NREL Solar Data collection sites is shown in Figures RSR – 3, with data graphed in RSR - 4 below.

Figure RSR – 3 NREL Solar Data Measurement Sites in the ACBCI Area

Palm Springs International Airport is a site for NREL's Typical Meteorological Year (TMY3) data with contains hourly meteorological readings for the period of 1991 to 2005. The readings are valid within a 40 km radius; all three ACBCI sites that were studied are within the 40 km radius.

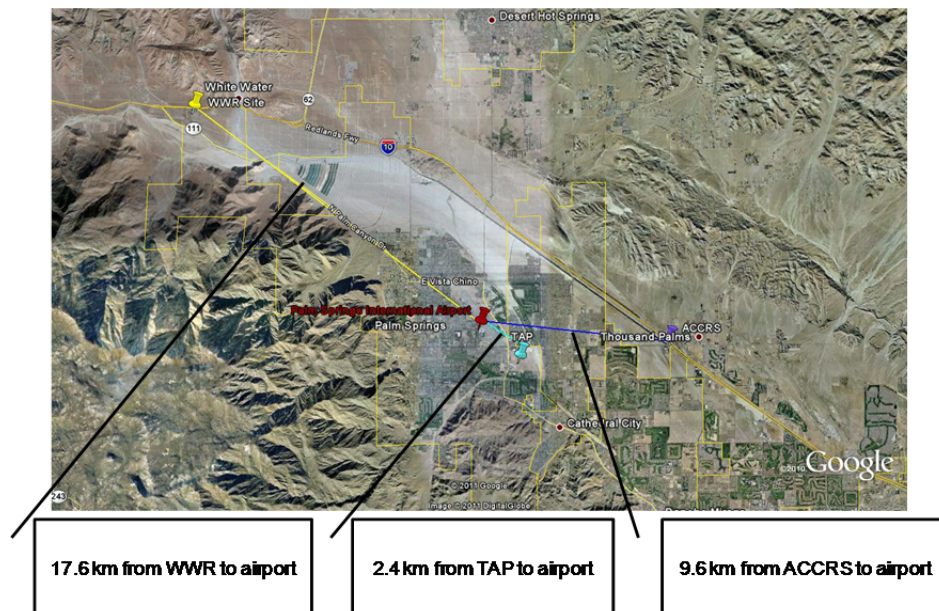
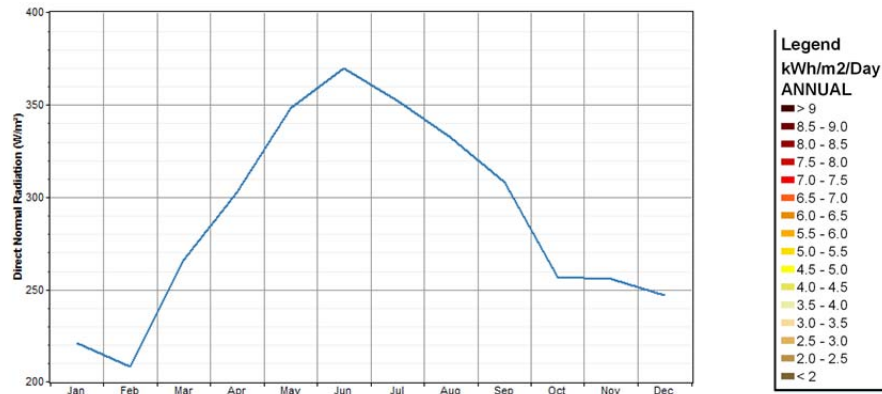


Figure RSR – 4 NREL Systems Advisor Model Data for ACBCI Area

## Monthly Direct Normal Radiation for Palm Springs International Airport

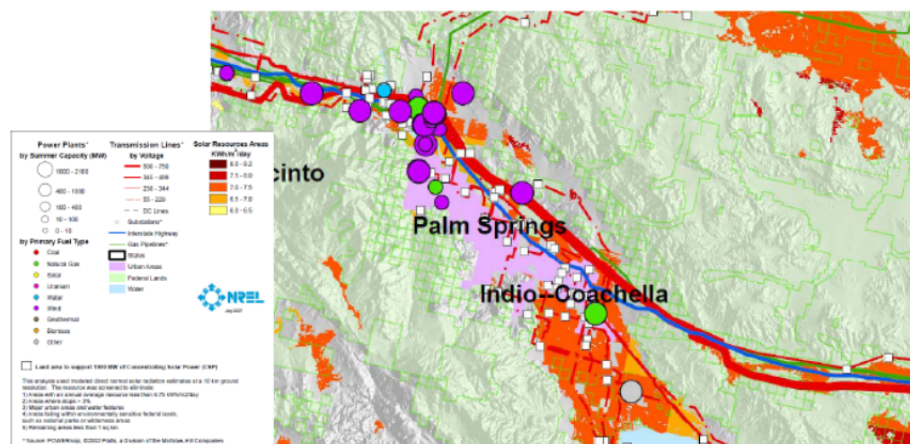


NREL's System Advisor Model shows the annual Direct Normal 2533.9 kWh/m<sup>2</sup>/yr. This is equal to 6.94 kWh/m<sup>2</sup>/day, which ranks very high per the scale shown in NREL's PV Solar Resource: Flat Plate Tilted South at Latitude map. The scale is on the right above.

Figure RSR – 5 below illustrates ACBCI Concentrating Solar Resources in the ACBCI area.

Figure RSR – 5 Concentrating Solar Resources for ACBCI Reservation Area

## Concentrating Solar Power Resources at Potential ACBCI Sites



As the maps and graphs above indicate, solar resources for either PV or concentrating equipment are very good at potential ACBCI sites, and as indicated previously, provide ACBCI a wide variety of options for development



of possible solar projects. While concentrating solar resources are indicated to be good, that does not necessarily mean that concentrating solar equipment would be preferred. PV equipment can often produce more power, even at lower irradiation levels, since power can be produced with PV equipment during times of diffused light, which is not the case for concentrating solar equipment. Also, in the ACBCI reservation area, wind is a significant factor affecting solar equipment selection. The Solar Technology Options Section discusses various technologies and their application for ACBCI.

## Power Market

The Southwest represents a particularly strong market for renewable power, primarily due to environmental portfolio standards that exist in California, Arizona, New Mexico, and Nevada. Of these, California has perhaps the most robust power market potential for renewable energy in the U.S. based on its natural resources, commitment to renewables and relatively high electricity rates.

California has a significant renewable energy goal (20% by the end of 2010; 33% by the end of 2020) driving development in the state, and very strong incentives in place for distributed renewable energy generation. In 2010, California's three large IOUs served 18% of their 2010 retail electricity sales with renewable power as follows:

Pacific Gas and Electric (PG&E) - 17.7%  
 Southern California Edison (SCE) - 19.4%  
 San Diego Gas & Electric (SDG&E) - 11.9%

Data from California IOU Renewable Portfolio Standard procurement activities is summarized in Figure PM – 1 below.

Figure PM – 1 2003 – 2010 CA IOU RPS Procurement Results

		2003	2004	2005	2006	2007	2008	2009	2010
PG&E	Target (GWh)	7,022	7,733	8,454	9,178	9,941	10,732	11,547	15,554
	RPS-Eligible Procurement (GWh)	8,686	8,660	8,707	9,118	9,044	9,817	11,493	13,760
	RPS GWh as % of Bundled Sales	11.5%	12.2%	12.1%	12.6%	11.8%	12.4%	14.1%	17.7%
	Cumulative Deficit/Surplus (GWh)	1,664	2,592	2,844	2,785	1,888	973	919	-876
SCE	Target (GWh)	11,254	11,960	12,690	13,440	14,228	15,023	15,833	15,028
	RPS-Eligible Procurement (GWh)	12,421	13,182	12,822	12,486	12,261	12,574	13,622	14,548
	RPS GWh as % of Bundled Sales	16.6%	18.7%	17.6%	16.6%	15.5%	15.8%	16.8%	19.4%
	Cumulative Deficit/Surplus (GWh)	1,167	2,390	2,522	1,569	-399	-2,848	-5,058	-5,538
SDG&E	Target (GWh)	296	447	605	765	933	1,104	1,278	3,257
	RPS-Eligible Procurement (GWh)	550	678	825	900	881	1,047	1,784	1,940
	RPS GWh as % of Bundled Sales	3.7%	4.5%	5.2%	5.6%	5.2%	6.1%	10.2%	11.9%
	Cumulative Deficit/Surplus (GWh)	254	485	706	841	788	732	1,239	-78
TOTAL	Target (GWh)	18,572	20,139	21,748	23,382	25,102	26,859	28,658	33,839
	RPS-Eligible Procurement (GWh)	21,657	22,520	22,354	22,504	22,185	23,438	26,900	30,249
	RPS GWh as % of Bundled Sales	13.8%	14.0%	13.7%	13.1%	12.6%	13.0%	15.4%	17.9%
	Cumulative Deficit/Surplus (GWh)	3,085	5,466	6,072	5,194	2,277	-1,143	-2,901	-6,492

Despite significant effort during the 2003 – 2010 period, none of the California IOUs met the 20% by 2010 RPS goal. Discussion of several of the major California incentive programs follow.

### California Solar Initiative

In January 2006, the California Public Utilities Commission (CPUC) adopted a program -- the California Solar Initiative (CSI) -- to provide more than \$3 billion in incentives for facility-scale solar energy projects with the objective of providing 3,000 megawatts (MW) of solar capacity by 2016.



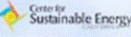
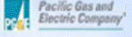

The CSI is available to residential, commercial and government/nonprofit California utility customers and provides for either an Expected Performance Based Buydown (EPBB), which is a front end payment per kW for solar projects under 30 kW in size, or a Production Based Incentive (PBI) which is an incentive payment based on actual production for the first five years for solar projects up to 1 MW in size

CSI incentives are available to projects based on a step-wise system, with the highest incentives available in the early years of the program. Incentives decline based on MWs remaining in that step for the applicable utility. The CSI program publishes a CSI tracker, available on a daily basis that indicates the then-applicable level of incentive.

CEC-certified contractors and equipment must be used in order to be eligible for the incentives. Projects require interconnection to the utility grid. An example of the CSI Tracker page is shown below in Figure PM - 2. Incentives applicable to ACBCI solar projects are noted within the boxes.

Figure PM – 2 CPUC CSI Trigger Tracker as of September 9, 2010

### CSI Trigger Tracker

Last updated 9/09/2010

Administrator	Customer Class *	Current Step	Initial MW in Step	Unused MW from Previous Steps	Revised Total MW in Step	Issued Conditional Reservation Letters (MW)	MW Remaining	MW Under Review
PG&E	Residential	7	31.00	0.40	31.40	19.97	11.43	2.64
PG&E	Residential	5	24.30	0.06	24.36	9.06	15.30	1.34
PG&E	Non-Residential	7	66.30	0.76	67.06	2.11	64.94	21.04
PG&E	Residential	7	7.30	0.10	7.40	4.50	2.89	0.43
PG&E	Non-Residential	7	14.80	2.60	17.40	10.17	7.23	6.96

Step	Statewide MW in Step	EPBB Payments (per Watt)			PBI Payments (per kWh)		
		Residential	Commercial	Government/Non-Profit	Residential	Commercial	Government/Non-Profit
1	50	n/a	n/a	n/a	n/a	n/a	n/a
2	70	\$2.50	\$2.50	\$3.25	\$0.39	\$0.39	\$0.50
3	100	\$2.20	\$2.20	\$2.95	\$0.34	\$0.34	\$0.46
4	130	\$1.90	\$1.90	\$2.65	\$0.26	\$0.26	\$0.37
5	160	\$1.55	\$1.55	\$2.30	\$0.22	\$0.22	\$0.32
6	190	\$1.10	\$1.10	\$1.85	\$0.15	\$0.15	\$0.26
7	215	\$0.65	\$0.65	\$1.40	\$0.09	\$0.09	\$0.19
8	250	\$0.35	\$0.35	\$1.10	\$0.05	\$0.05	\$0.15
9	285	\$0.25	\$0.25	\$0.90	\$0.03	\$0.03	\$0.12
10	350	\$0.20	\$0.20	\$0.70	\$0.03	\$0.03	\$0.10

### Feed-in Tariff Programs

California mandated Feed-in Tariff Programs include several solar incentives, including the Solar Photovoltaic Program (SPVP), which has a 2.6 MW limit on size of ground mount systems, competitive PPA pricing, and is subject to the standard interconnection study process, requiring a deposit, and potentially lengthy interconnection study.

The California Renewable Energy Small Tariff program (CREST) has a 1.5 MW ac limit on each CREST project, with feed-in tariff prices for PPAs based on time-of-day production per a published Market Price Referent. These projects fall within fast-track interconnection study process, but no incentives apply.

### CA Reverse Auction Mechanism

In late 2010, the CPUC issued an order for investor-owned utilities to develop a Reverse Auction Mechanism (RAM), a simplified and market-based procurement mechanism for renewable distributed generation (DG) projects up to 20 MW on the system side of the meter. The CPUC adopted RAM as the primary procurement tool for system-side renewable DG in efforts to promote competition, elicit the lowest costs for ratepayers, encourage the development of resources that can utilize existing transmission and distribution infrastructure, and contribute to RPS goals in the near term.

To begin the program, the Commission authorized the utilities to procure 1,000 MWs through RAM, streamlining the procurement process for developers, utilities, and regulators. It allows bidders to set their own price, provides a simple standard contract for each utility, and allows all projects to be submitted to the CPUC through an expedited regulatory review process. A strong focus on the < 20 megawatt market segment, also known as Wholesale Distributed Generation recognizes value of "locational benefits," rewarding projects that are sited close to loads to avoid unnecessary transmission expenditures, and requires utilities to provide specific grid details to help developers select project sites before they commit.

Each utility will develop its own standard RAM contract. The contracts must contain a few standard terms and conditions, some of which include:

- Project must be online within 18 months of contract execution, with one allowable 6-month extension for regulatory delays.
- Development deposit for projects 5 MW and smaller = \$20/kW. For projects 5-20 MW = \$60/\$90/kW for intermittent and baseload resources, respectively.
- Performance deposit for projects < 5 MW with conversion of development deposit to performance deposit. For projects at least 5 MW: 5% of expected total project revenues

Sellers compete for a contract in a renewable auction mechanism. Bids are selected by least-cost price first until the auction capacity is reached. Price (and contract) is not negotiable and is paid as bid.

The program capacity is 1,000 MW for the first 2 years, allocated to each utility in the proportions indicated in Figure PM - 3:

*Figure PM - 3 – Reverse Auction Mechanism Investor-Owned Utility Requirements*

Utility	Total Program (MW)	Per Auction (MW)
SCE	498.4	124.6
PG&E	420.9	105.2
SDG&E	80.7	20.2

Projects will be compared against similar product types: baseload, peaking, intermittent. Projects must utilize commercialized technology, be located in one of the utility's service territories, and demonstrate 100% site control

through (a) direct ownership, (b) lease or (c) an option to lease or purchase that may be exercised upon award of a RAM contract. One member of the development team must have (a) completed at least one project of similar technology and capacity or (b) begun construction of at least one other similar project.

### **Possible Off-takers**

Several possible off-takers have been identified as high potential for an ACBCI project. Each is described in the sections below.

### **Southern California Edison (SCE)**

Possible off-takers include Southern California Edison, the investor-owned utility serving ACBCI. SCE provides power to nearly 14 million people in 180 cities in 50,000 square miles of service area, encompassing 11 counties in central, coastal and Southern California. Its delivery system includes 16 utility interconnections and 4,990 transmission and distribution circuits. SCE has been active in renewable energy procurement and has several programs available to encourage renewable development.

SCE leads the nation in renewable energy, delivering approximately 13.6 billion kWhs of renewable energy to customers in 2009. This constituted about 17 percent of the energy delivered to customers. SCE currently has sufficient contracts in place that, when delivered, will meet 20 percent or more of its customers' energy needs with renewable energy. Among these include an agreement with AES Mountainview, calling for 66.6 MW from a wind farm in the San Geronio Pass near Palm Springs. This 10-year contract was signed in November 2008.

In addition, SCE launched its [Renewables Standard Contract Program](#), which was available for all renewable technologies of 20 MW or less. This program is designed to help smaller renewable generators contribute to reaching California's aggressive renewable energy and environmental goals. It provided a faster, simpler way for renewable projects under 20 MW to sell their power to utility customers. SCE has offered several solicitations for renewable projects less than 20 MW, in addition to multiple ongoing customer small renewable incentive programs.

In 2009, SCE's renewable energy portfolio was comprised of 26% wind, 57% geothermal, 6% solar, 7% biomass and 4% small hydro.

### **Los Angeles Department of Water and Power (LADWP)**

LADWP, the largest municipal utility in the nation, was established more than 100 years ago to deliver reliable, safe water and electricity supplies to some 3.8 million residents and businesses in Los Angeles. The Department provides service to 680,000 water customers and 1.4 million electric customers. In 2009 its power supply sources included 26% natural gas, 7% large hydroelectric, 14% renewables, 9% nuclear and 44% coal.

In June 2005, the Los Angeles City Council approved LADWP's RPS policy that called for providing 20% of its energy sales to retail customers from



renewable energy resources by 2017. In December 2005, the Board of Water and Power Commissioners, under the leadership of Mayor Antonio Villaraigosa, adopted an accelerated RPS goal to obtain 20% renewable energy resources by 2010. On December 13, 2005, LADWP management presented a master plan to meet the RPS goal of 20% by 2010. LADWP supports Mayor Villaraigosa's "[Green LA: An Action Plan to Lead the Nation](#)," which identifies a goal to increase the supply of renewable energy to 35% by 2020.

LADWP's Renewable Energy Program represents a multi-pronged approach toward meeting the goal of 20% by 2010. LADWP is aggressively seeking renewable energy generation projects, including those that offer immediate facility ownership or long-term purchase agreements that have an ownership option. LADWP believes that while purchase agreements comprise part of the strategy to meet the 2010 goal, ownership is critical in the long run. The energy crisis of the late 1990s proved that ownership is a key factor in providing reliable power and keeping costs as low as possible for ratepayers. Since LADWP maintained ownership of its generating plants, Los Angeles customers never experienced the rolling blackouts that affected other areas of the region and state.

Concurrent with developing and purchasing renewable generation, LADWP is planning new and expanded transmission systems to bring those renewable energy resources to Los Angeles. Two other key components of achieving the RPS goal include expansion of the Department's [Solar Rooftop Incentive Program](#) and [Energy Efficiency programs](#).

To boost green power as quickly and efficiently as possible in order to reach 20% of the city's power resource mix by 2010 and 35% by 2020, on March 12, 2009, LADWP issued a rolling request for proposals (RFP) designed to seek renewable energy proposals on a continuous basis throughout the year. In its announcement of the RFP, LADWP indicated that proposals would be accepted until March 11, 2010.

The purpose of the RFP was to dramatically increase the amount of clean and green energy provided in Los Angeles, by fast-tracking the process of procuring and developing renewable energy projects. The rolling RFP called for proposals for approximately 1,000 gigawatt-hours (GWh) per year of renewable energy resources such as solar, wind and geothermal power. This is enough energy to serve about 170,000 households per year, and represents nearly 4% of LADWP's power sales.

LADWP is looking to acquire renewable energy resources through either immediate ownership of power generation facilities or through long-term power purchase agreements. Under the terms of the new RFP, green power providers can submit their proposal anytime throughout the year. LADWP will open and consider the proposals on a monthly basis, and could then begin evaluation and negotiation of a particular project right away.

As stated in the RFP, LADWP will give preference to proposals that offer immediate facility ownership or to long-term purchase agreements that have an ownership option. Additionally, LADWP is targeting solar projects located in the high deserts of California, close to LADWP's existing transmission system.

Eligible renewable resources include wind, biomass (defined as organic material), solar thermal, solar photovoltaic, geothermal, small hydroelectric (30 megawatts or less), digester and landfill gas, and biodiesel. Other technologies may include ocean wave, ocean thermal and tidal current; and fuel cells using renewable fuels.

LADWP's renewable energy supply increased from about 3% in 2005 to 14% in 2009. As a result of prior renewable energy RFPs, LADWP has many viable renewable energy projects in the pipeline at various stages of planning and construction, including the 120-megawatt Pine Tree wind farm near Mojave, which will be the largest municipally-owned and -operated wind power facility in the nation.

### **Riverside Public Utilities**

Riverside Public Utilities (RPU) provides electric service to 106,000 customers in an 81.5 square mile area with a population of over 300,000. Established in 1895, RPU owns and operates 91 circuit miles of transmission, 1,300 circuit miles of distribution lines and 14 substations. Its historical peak is just over 600 MW.

In the fiscal year ending June 2010, RPU purchased 16.1% of its power supplies from renewable sources; 15.2% from nuclear; 58.4% from coal, and the remainder from natural gas, hydro and other sources. Its renewable energy resources are comprised of 46 MW of geothermal energy and 8 MW of wind energy.

RPU is committed to meeting or exceeding the Renewable Portfolio Standard (RPS) established by the State of California, as required of investor-owned utilities by the Public Utilities Code (SB 1078, 2002) and in keeping with the letter and spirit of the Public Utilities Code and the Health and Safety Code relating to air pollution (AB 32, 2006).

In 2003, the Public Utilities Board and the City Council respectively, adopted an RPS to increase procurement of renewable resources to reach a target of 20% of the Utility's energy by 2015. On March 16, 2007, the Public Utilities Board approved a new RPS, increasing the targets to 20% and 25% by 2010 and 2015, respectively. On May 4, 2007, the Public Utilities added an additional target of 33% by 2020. The City Council, on December 9, 2008, unanimously approved the revised RPS.

RPU anticipates meeting its 2020 target of 33 percent of the City's electricity originating from renewable resources due in part to recently completed geothermal energy contracts with the Northwestern Band of Shoshone Nation. RPU's wind energy purchases are from Wintec Energy, Ltd, for power

produced from its Gorgonio Pass wind projects, adjacent to ACBCI's Whitewater Ranch property.

### **San Diego Gas & Electric**

SDG&E is a regulated public utility that provides energy service to 3.4 million consumers through 1.4 million electric meters and 840,000 natural gas meters in San Diego and southern Orange counties. The utility's area spans 4,100 square miles.

SDG&E has been active in renewable energy procurement and has several programs available to encourage renewable development. SDG&E issues Requests for Offers (RFOs) on a periodic basis to solicit bids from developers to sell renewable energy. To date, SDG&E has issued a dozen solicitations seeking renewable energy which have produced over 20 CPUC-approved contracts to produce clean renewable power for SDG&E customers. SDG&E has procured excess renewables in nearly every year of the Renewable Portfolio Standard (RPS) program. SDG&E's energy plan is to provide 33% of its customers' electricity needs from renewable sources by 2020. All renewable procurement is in accordance with SDG&E's RPS Procurement Plan, which is approved annually by the CPUC.

In late 2010 and early 2011, SDG&E announced power purchase agreements with NRG (26 MW of solar), Pattern Energy (315 MW of wind), CSolar (130 MW of solar), and LS Power (45 MW of solar). In addition to these recent purchases, in 2006, SDG&E purchased 60 MW of wind power from a project on the Campo Indian Reservation, the nation's first wind farm on tribal lands. In June 2009, the Campo Kumeyaay Nation, Invenergy and SDG&E jointly announced a plan to begin development work on tribal lands for a wind energy project capable of generating up to 160 MW.

ACBCI's location is well-suited to provide power from a commercial-scale project at WWR to any of the above-mentioned utilities.

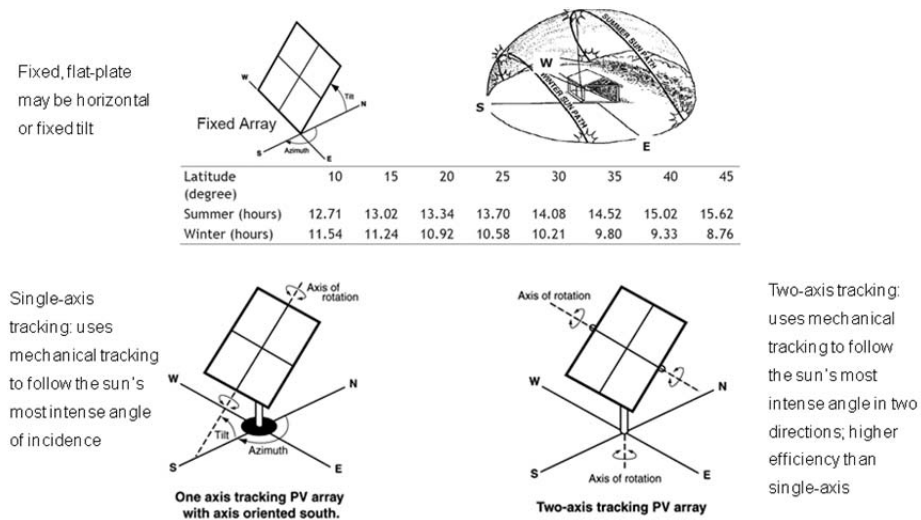
## Solar Technology Options

Photovoltaic (PV), concentrating photovoltaic (CPV) and concentrating thermal solar technologies (CSP) were considered for ACBCI projects. Discussions of all three options follow and highlights summarized at the end of this section.

### Photovoltaic (PV)

Photovoltaic structure types include fixed, both flat plate and latitude tilt, single-axis tracking, and dual-axis tracking. The graphic in Figure STO - 1, courtesy of NREL, illustrates the value of tracking structures.

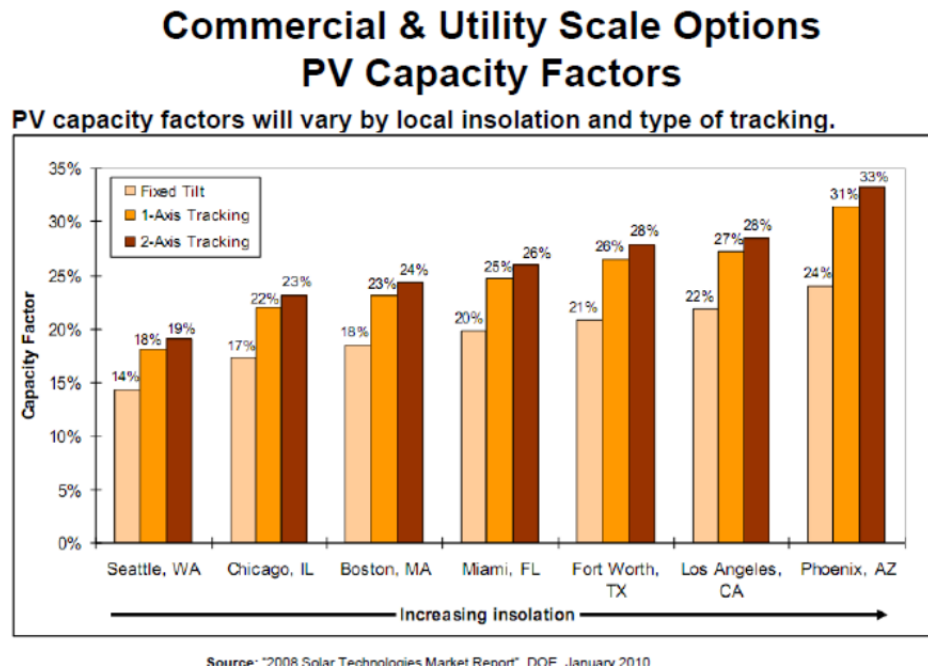
Figure STO – 1 Relevance of Solar Tracking and Tilt



Fixed flat plate systems are the most common, and absorb both direct and diffused insolation. Single-axis tracking systems track the sun's position during the day to maximize power production. Dual-axis tracking systems track both the sun's position, as well as the sun's seasonal position.

Data provided by DOE summarized in Figure STO - 2 illustrates the improvements in capacity factors and demonstrates the value of tracking structures in various locations.

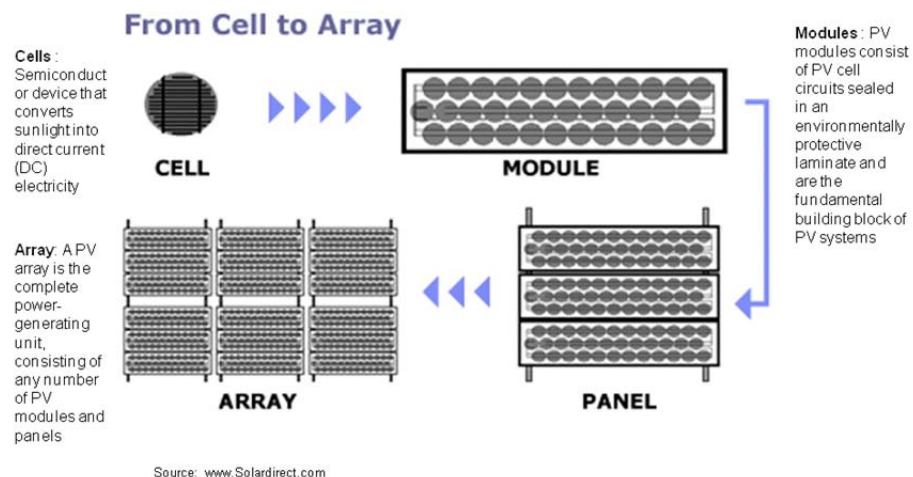
Figure STO – 2 DOE Statistics on PV Tracking Capacity Factors



The graphic below in Figure STO - 3 illustrates the various components of photovoltaic solar systems. The components include cells, modules, panels that, when all combined, compose solar arrays.

Figure STO – 3 PV Module Components

## PV Module System Components



The summary below in Figure STO - 4 compares the most-often used PV cell types used in commercial scale projects. Crystalline silicon and thin-film are the most mature. Crystalline silicon cells have efficiency ranges in the 20-28% range, and thin-film's efficiency is in the 12-20% range.

Figure STO – 4 PV Technology Types

## Kinds of PV technologies

### Crystalline

- More energy produced / sq. ft.
- More \$\$\$ per kW
- More prevalent
- Time-tested

#### Types:

- Mono-crystalline silicon
- Poly-crystalline silicon

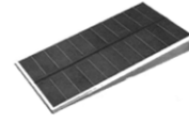
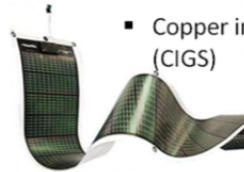


### Thin film

- Less energy produced / sq ft.
- Less \$\$\$ per kW
- Better performance in shading & heat
- Flexible and laminate forms

#### Types:




- Amorphous silicon (a-Si)
- Cadmium telluride (CdTe)
- Copper indium gallium diselenide (CIGS)



Other compound cell types are also available, but not as commercially mature. Figure STO - 5 below illustrates the market status for each type of module.

Figure STO – 5 PV Cell Description and Comparison

## Photovoltaic Cells

		Cost	Output	Market Maturity
	▪ Thin-film cells: Silicon material is vaporized and deposited on glass or stainless steel; both efficiency and cost are comparatively low	\$	+	+++
	▪ Silicon cells: Have different molecular "crystal" structures (polycrystalline, homogeneous, or amorphous) with a proportional trade-off between cost of manufacturing and energy conversion efficiency	\$\$	++	+++++
	▪ Other compound cells: Can be made of other compound semiconductors (Gallium Arsenide, Indium Phosphide, etc.); generally higher cost and efficiency than silicon	\$\$\$	+++	++



## Concentrating PV

Concentrating PV uses specialized mirrors and/or lenses to focus sunlight onto high efficiency cells allowing for greater energy production under the proper conditions.

Figure STO - 6 illustrates several types of concentrating photovoltaic technology types.

Figure STO – 6 Concentrating PV Cell Structures

## Concentrating Photovoltaic Cells/Modules



Concentrating PV can be used to optimize solar power production in certain locations.

## Concentrating Thermal

Several types of concentrating thermal technologies are summarized in Figure STO - 7 below.

Figure STO – 7 Concentrating Thermal Equipment Systems

## Concentrating Thermal



Parabolic Trough



Power Tower



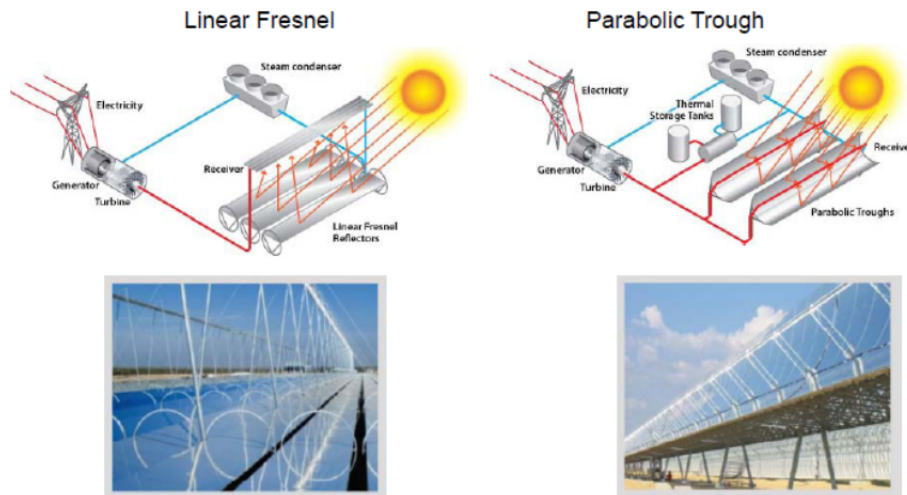
Dish-Engine

- Parabolic Trough
  - ✓ Uses parabolic 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
  - ✓ Nine trough systems between 14 and 80 MW, built in the mid to late 1980's, are currently generating 354 MW in So CA; 64 MW Nevada One near Boulder City, NV completed in 2008; new proposed 180 MW Solana Generating Station near Gila Bend, AZ
- Power Tower
  - ✓ Uses a circular field array of heliostats (large individually-tracking mirrors) to focus sunlight onto a central receiver mounted on top of a tower, which produces steam to power a conventional turbine generator to produce electricity
- Dish-Engine
  - ✓ Uses an array of parabolic dish-shaped mirrors (stretched membrane or flat glass facets) 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

Each type of CSP technology is illustrated in more detail below in Figure STO - 8.

Figure STO – 8 CSP Technology Schematics

## Commercial & Utility Scale Options CSP Technology





## Commercial & Utility Scale Options CSP Technology

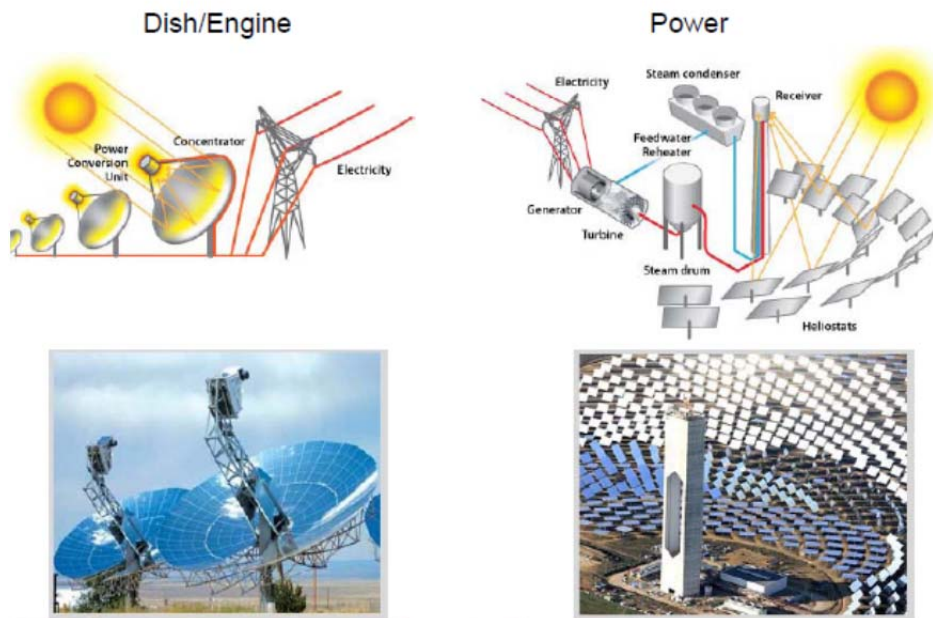
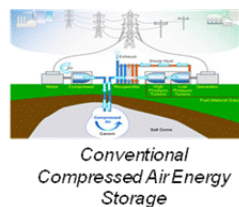
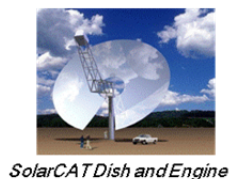


Figure STO - 9 describes a new solar technology, Solar Compressed Air Turbine, or SolarCAT. SolarCat is promising technology in certain locations such as WWR, where both wind and solar resources are present, but this technology is not available commercially today. A demonstration project is under construction at a test site in the Phoenix area, near the University of Phoenix headquarters.

Figure STO – 9 SolarCAT System Description

### Solar Compressed Air Turbine (SolarCAT)

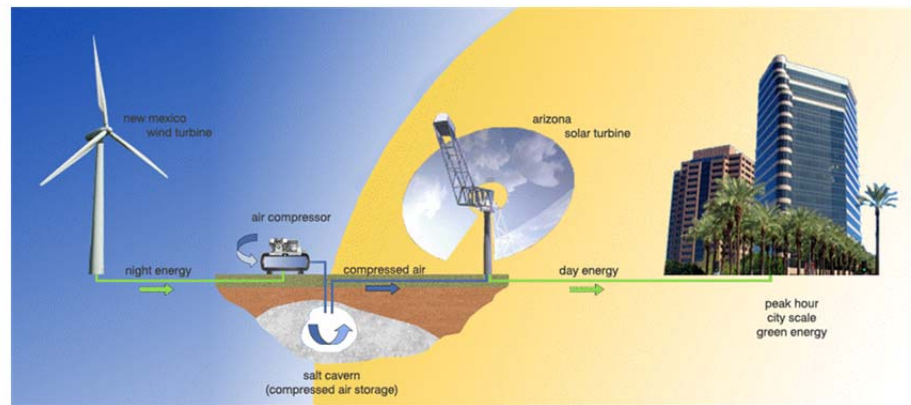


- SolarCAT is a solar-dish system that uses air-based turbines to generate power from solar heat; solar-dish field is combined with centralized compressed air storage, allowing off-peak power to be stored, and used to increase solar output
  - Air is compressed using off-peak power at night, or anytime from wind, PV or geothermal. This is called Compressed Air Energy Storage (CAES)
- Air is stored at 400 psi in tanks or in underground caverns. No heat is stored. No flammables or very high pressure
- During the day, the air circulates in funnel-shaped steel tubes where it is heated to 1700 F by focused sunlight from the solar-dish.
- The superheated compressed air powers a series of four small, high speed turbo-alternators to generate electricity
- Operation is clean, quiet, no emissions, no oil or water

The graphic below in Figure STO - 10 illustrates SolarCAT system operations.

Figure STO – 10 SolarCAT System Schematic

## Solar Compressed Air Turbine System



### Conclusion and Recommendation

The table in Figure STO - 11 compares the relative costs, performance, land use, as well as advantages and disadvantages of each technology type.

Figure STO – 11 Commercial-Scale Solar Technology Comparison

Type	Cost \$/Watt	Performance Initial kWh/KW	Acres/ MW	Advantages	Disadvantages
Fixed Plate PV – Latitude**	\$4,110	1,997	5	Well-proven technology; choice of modules	Power production limited by fixed plate
Adjustable Tilt**	\$4,190	2,012	5-6	Well-proven technology; choice of modules	Module tilt needs to be adjusted twice annually
Single Axis Tracking PV**	\$4,320	2,394	6 - 8	Well-proven technology; choice of modules	Increased O&M for trackers
Concentrating PV***	\$5,500	<b>2,030</b>	5-10	Modular; no commercial-scale installations in US	Few commercial-scale installations
Concentrating Thermal	\$5,000	2,350	5	Well-proven technology; thermal storage can be added	Significant scale required; high water use
Solar Compressed Air Turbine	\$3,000	2,400	1-2	Less land use; minimal water use; extended production period	New technology; requires container for compressed air w/storage

\*\* Consistent with recent proposals to ACBCI; \*\*\* Prior pricing indications

For the scale of indicated ACBCI commercial projects, single axis-tracking PV appears to provide the greatest value, at this time. As described previously, insolation in the ACBCI area is better suited to PV technology, as the limited site sizes likely to be available are better suited for modular technology, such as PV. PV technology is very well known, utilized, and can be financed relatively easily, and at the current time, module prices are relatively low. Concentrating thermal technology requires a larger site, and uses significantly more water. Concentrating PV, while potentially attractive, has not been utilized on a commercial scale in the U.S., to date, and could be more difficult to finance. Of the available technologies, single-axis tracking PV creates fewer siting issues. While SolarCat technology holds high promise for future

solar/storage applications, today, a SolarCat project would likely not be able to be financed. Also, SolarCat requires either underground storage sites, or steel air storage tanks for compressed air storage. Red Mountain is not aware that underground storage potential exists at or near any of the ACBCI locations.

Due to the relatively high winds in the area, flat plate, adjustable flat plate and single axis-tracking were considered for ACCRS and TAP sites. At WWR, only fixed flat plate was considered.

## ACBCI Project Options

The primary ACBCI solar project sites under consideration include facility-scale projects at the Agua Caliente Casino Resort Spa (ACCRS); facility- and commercial-scale projects at the Tribal Administration Plaza (TAP); and commercial-scale projects at the Whitewater Ranch (WWR) property.

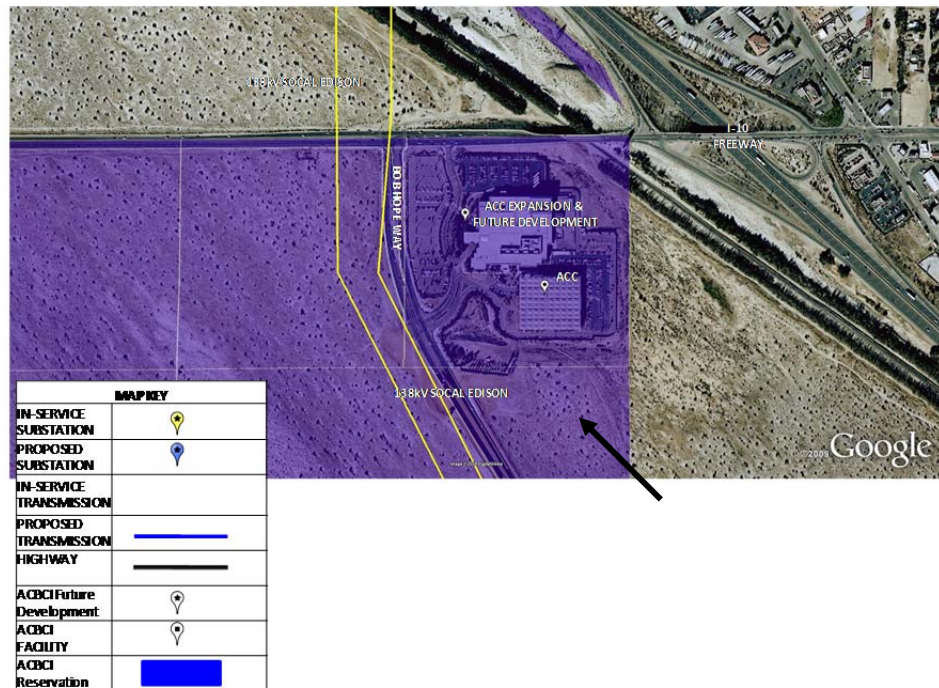
### ACCRS

At ACCRS, two facility-scale projects were considered on ACBCI trust land as listed below:

- 1 MW ground mount to offset ACCRS use, eligible for CSI incentives
- 2 MW ground mount to offset ACCRS use (1 MW eligible for CSI incentives)

The area highlighted in purple in Figure APO – 1 reflects ACBCI trust land in the area. The ACCRS facility is located on the upper right in the graphic below, and areas considered available for facility-scale solar are located directly south of the ACCRS buildings and parking facilities.

Figure APO – 1 ACCRS Area Trust Land



The aerial photograph below in Figure APO – 2 shows a close-up of the ACCRS area, and identifies specific lands considered for solar projects.



Figure APO – 2 Potential ACCRS Solar Project Area

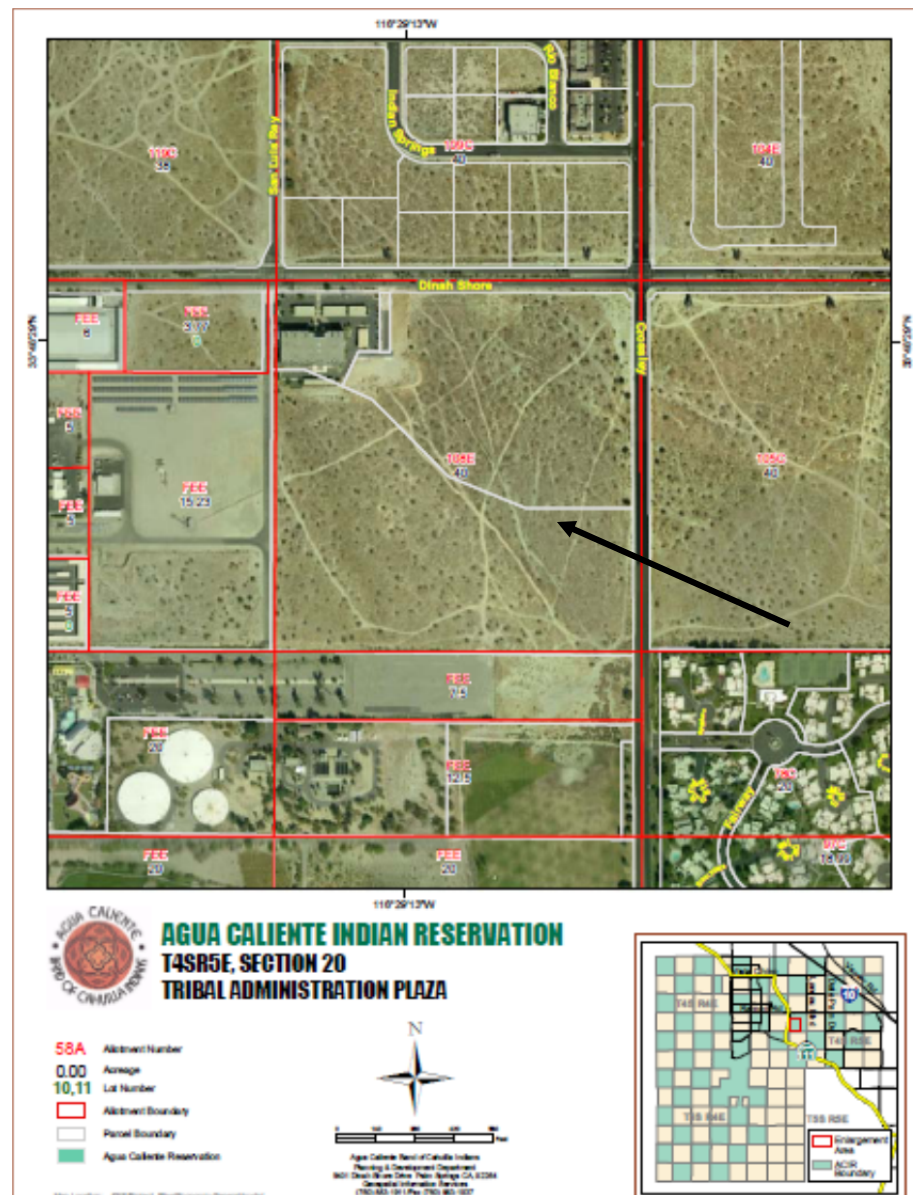


Although both areas noted in Figure APO - 2 as Solar Project Area, and VFCA Fee Impact Area, are available, project locations considered were limited to the Solar Project Area noted.

### **TAP**

At TAP, several projects were considered, including several facility-scale projects, as well as potential commercial-scale projects, all on allottee-owned land. Figure APO - 3 below highlights the area surrounding the TAP facility.

Figure APO – 3 TAP Allottee-Owned Land



Project options considered at TAP are listed below:

#### Facility-scale

- .5 MW solar ground mount project, plus a 93kW solar rooftop and 121kW solar parking canopy, to offset TAP load, eligible for CSI incentives
- .214 MW (parking canopy and rooftop) to partially offset TAP load (roughly one- half), eligible for CSI incentives

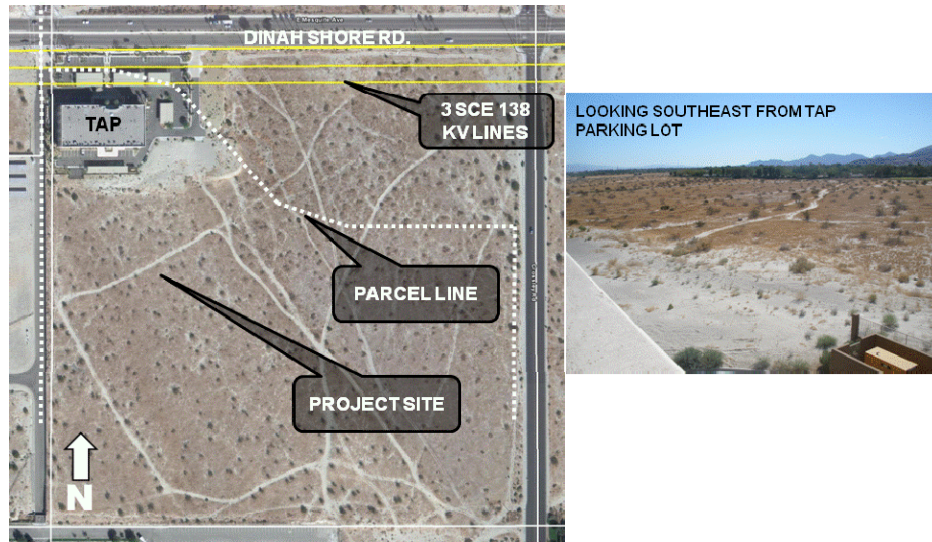
#### Commercial

- 1.5 – 2.5 MW ground mount solar project under CA feed-in tariff program (developer or ACBCI-developed)

- 3.4 – 5.0 MW ground mount solar project under CA feed-in tariff program (developer or ACBCI-developed)

Figure APO - 4 below illustrates the TAP land areas considered for facility-scale and commercial-scale projects. Portions of the site north of the parcel line were considered for facility-scale and commercial-scale projects, and portions south of the parcel line were considered for commercial-scale projects only.

*Figure APO - 4 – Tribal Administration Plaza Area for Commercial-Scale Project*



## WWR

Figure APO - 5 below identifies both ACBCI trust and fee land at WWR.



Figure APO – 5 WWR Trust and Fee Land

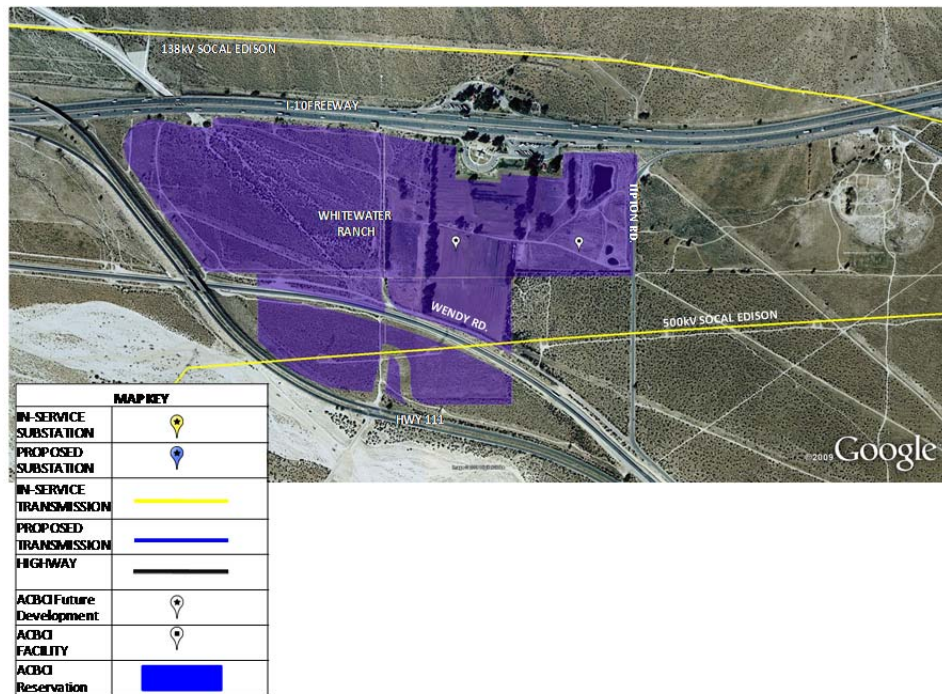
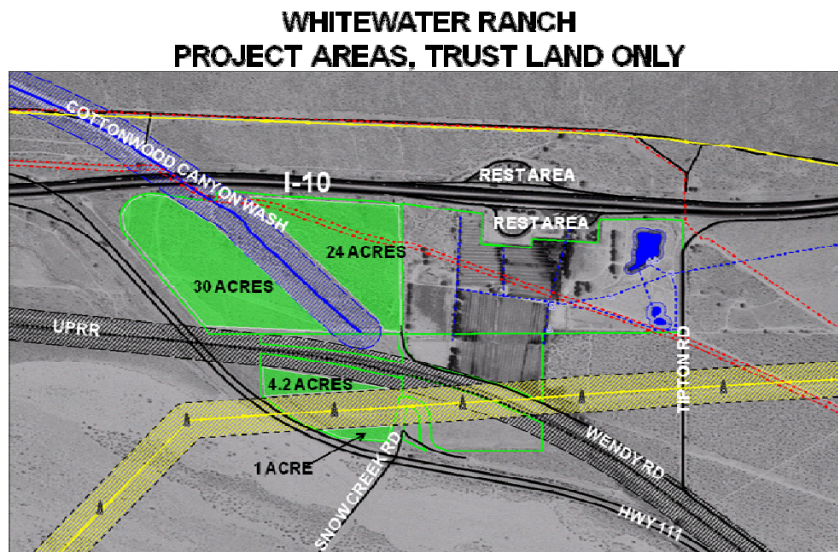


Figure APO - 6 below indicates WWR trust land area, which would allow for a roughly 10 MW commercial solar project. WWR is located in the San Geronio Pass, home to more than 4,000 wind turbines producing roughly 360 MW of power. While exceptional winds at the site could allow for a possible combination wind/solar project, DOE restrictions on grant funding for this feasibility study project would not allow consideration of wind resources or related projects.

Figure APO – 6 WWR Trust Land Available for Solar Project



The sections following review the project sites in more detail, and economic feasibility analyses completed for each of the project options listed above.



## Potential Project Sites

Typical site selection screening criteria for tribal communities was applied to the site feasibility analysis for each of the three potential solar project locations at ACCRS, TAP and WWR.

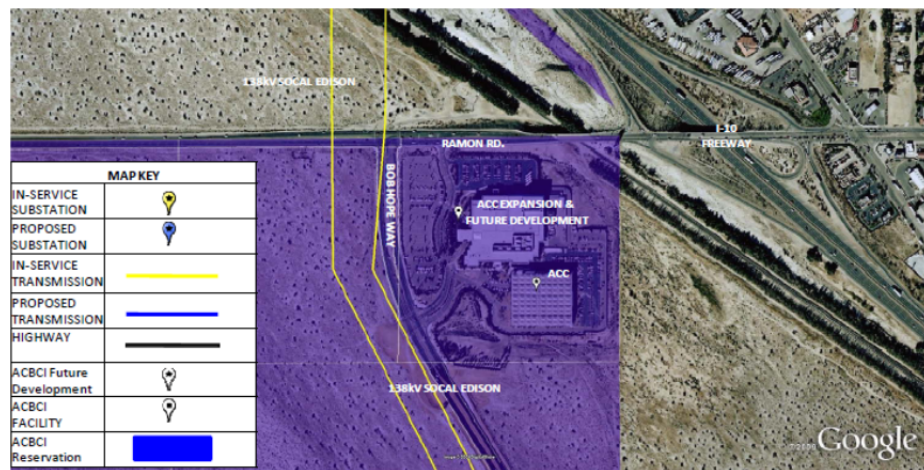
### ACCRS Project Site

#### Location

The ACCRS area is south of Ramon Road, west of Interstate 10, in Rancho Mirage, CA. The image below in Figure PPS – 1 is a close-up view of ACBCI Trust lands surrounding the ACCRS facility. The site is located within APN 673-120-026 of Section 24 in township 4S and Range 5E. The recorded lot size is 19.16 acres. Of this, 5-10 acres is considered available for solar project construction, south of the ACCRS facility, parking garage, and parking lot.

Figure PPS – 1 ACCRS Potential Project Site

## ACCRS



Initial views of the site suggested that more land was available for solar project equipment, since the aerial photos did not include recent parking lot paving south of the parking garage. Also, initial evaluations of the site did not include consideration of the Valley Floor Conservation Act Impact Area (VFCA) noted below. Photographs of the site from various vantage points are shown below in Figure PPS - 2.

Figure PPS – 2 ACCRS Project Area



### Site Description

The site is approximately 250 feet above sea level, with flat desert terrain and minimal to moderate brush scrub vegetation. It is not currently in use. The site has potable water, fire protection supply water, and sewer service. Natural gas is available, as is electricity. Regional access is provided by Interstate 10. Local site access is provided by Bob Hope Drive. No major easements were identified at the likely area of construction, allowing for reasonably straightforward project construction.

### Site Suitability/Constraints

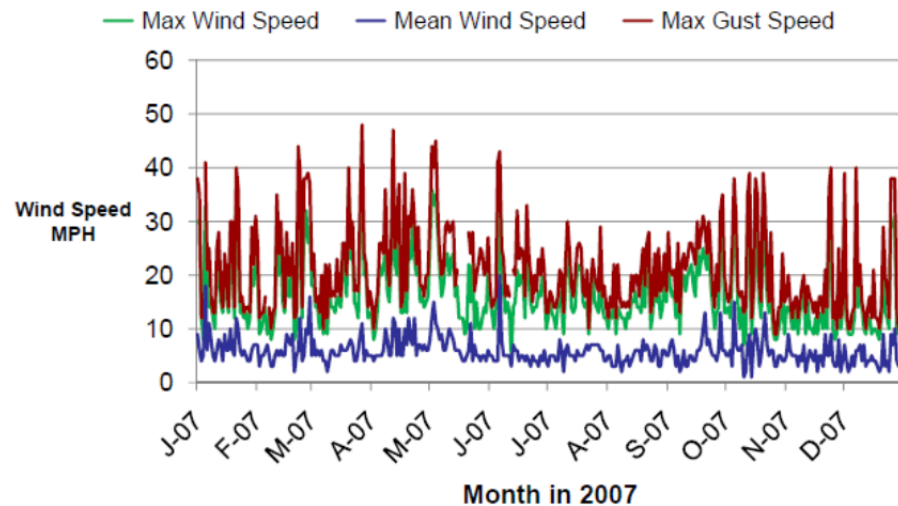
This is a previously studied site, and an Environmental Assessment was completed prior to initial ACCRS construction.

The site is suitable for Flat-Tailed Horned Lizard, and the Coachella Valley Fringed Toed Lizard. The Coachella Milk-Vetch occurs onsite. The site is not located within a fault zone, or within .5 miles of a fault zone. There is moderate risk for subsidence. Stormwater runoff and drainage flows to the Whitewater River. Construction and operation activities will impact any receiving waters making mitigation measures necessary. No cultural resources or water constraints were identified.

Key concerns for the ACCRS area, relative to site suitability include high winds. Figure PPS – 3 below summarizes data for Mean, Max and Max Gust Wind Speeds in the area, which will affect site and technology selection.

Figure PPS - 3 – Palm Springs Wind Speed Data

## Palm Springs 2007 Wind Data



### Permitting/Regulatory Requirements

The site is located with the Riverside County Integrated Project/Western Coachella Valley Planning Area, and within the city boundary of Rancho Mirage. The site is located within the Coachella Valley Multiple Species Habitat Conservation Plan fee area, the Eastern Transportation Uniform Mitigation Fee area, and the Western Coachella Valley Development Impact Fee area.

### Overall Site Assessment

The material below in Figure PPS - 4 summarizes the site description, potential environmental impacts and issues, and other site impacts and concerns. No issues of high concern were identified at the site that would affect potential solar project construction.

Figure PPS – 4 ACCRS Overall Site Assessment

ACCRS SITE ASSESSMENT SITE DESCRIPTION	
GENERAL DESCRIPTION	This site is located within APN 673-120-026 of Section 24 in Township 4S and Range 5E. The recorded lot size for APN 673-120-026 is 19.16 acres.
TOPOGRAPHY & TERRAIN	This site is at approximately 250 feet above sea level. Flat desert terrain. Minimal to moderate brush scrub vegetation.
CURRENT LAND USE	No current use.
EXISTING UTILITIES	CVWD provides potable water via an 18" pipeline. Fire protection supply water is supplied off this 18" line by a 12" line. Sewer service is provided via a CVWD 15" gravity sewer main. Natural gas is provided by Southern California Gas via a 6" service line along Bob Hope Dr. Electricity is provided by SoCal Edison via a 115 kV transmission line and 12 kV distribution line. Both these overhead lines are located onsite and on the same pole line.
CULTURAL RESOURCES	None identified.
WATER CONSTRAINTS	None identified.
PLANNING & PERMITTING ISSUES	This site is located within the Riverside County Integrated Project (RCIP Western Coachella Valley Planning Area. This site is located within the city boundary of Rancho Mirage. Rancho Mirage designates this area as of 2005 as Light Industrial. Rancho Mirage plans to update the Light Industrial zoning to Resort Hotel when it updates its General Plan.
DEVELOPMENT FEES	This site is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) fee area. This site is located within the Eastern TUMF (Transportation Uniform Mitigation Fee) area. This site is located within the Western Coachella Valley Development Impact Fee (DIF) area.
ENVIRONMENTAL IMPACTS & ISSUES	
SENSITIVE HABITAT & SPECIES	Suitable habitat occurs for the Flat-Tailed Horned Lizard ( <i>Phrynosoma mcalli</i> ) and the Coachella Valley Fringed Toed Lizard ( <i>Uma inornata</i> ). Also, the Coachella Valley Milk-Vetch ( <i>Astragalus lentiginosus</i> var. <i>cochellae</i> ), a sensitive plant species, occurs onsite
DRAINAGE & WATER QUALITY	Stormwater runoff and drainage flows to the Whitewater River. Construction and operation activities will impact any receiving waters making mitigation measures necessary.
VISUAL IMPACT	Visual impact would be highly dependent on specific solar technology. Glare and light reflection would occur at this site during operation.
AIR QUALITY	This site is located within the Salton Sea Air Basin (SSAB). Project construction would be the primary contributor of air pollutants at the project site.
NOISE GENERATION	Project construction would be the primary contributor of noise nuisance and pollution at the project site.
EXISTING GEOLOGICAL HAZARDS	This site is not located within a fault zone or within 0.5 miles of a fault zone. Minimal liquefaction potential exists.
CONTAMINATED OR IMPAIRED SITES	This site has a moderate risk level for subsidence.
OTHER SITE IMPACTS & CONCERNS	None identified.
SITE ACCESS	Regional access is provided by Interstate 10. Local site access is provided by Bob Hope Drive.
INTERCONNECTION ISSUES	Electricity is provided by SoCal Edison via a 115 kV transmission line and 12 kV distribution line. Both these overhead lines are located onsite and on the same pole line.
TRAFFIC & CIRCULATION	Project construction would be the primary contributor to traffic congestion.
HEALTH/HUMAN SAFETY	None.

## TAP Project Site

### Location

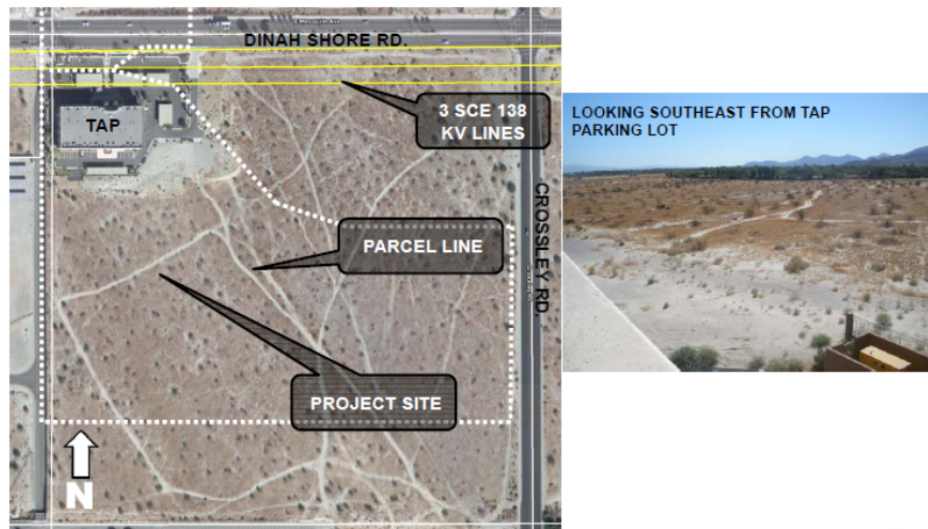
The TAP site is located in Palm Springs, CA at the intersection of Dinah Shore Drive and Crossley Road. The site is found within APN 60-180-050 of Section 20 in Township 4S and Range 5E. The recorded lot size is 21.36 acres.

### Site Description

The site is approximately 350 feet above sea level, with flat desert terrain and minimal to moderate brush scrub vegetation. It is not currently in use. The site is within the Desert Water Agency water and sewer service area. Electricity is available. Regional access is provided by Interstate 10. Local site access is provided by Dinah Shore Drive or Crossley Road. No major easements were identified at the likely area of construction, allowing for reasonably straightforward project construction. This is a previously studied site, and environmental reviews were completed prior to initial TAP construction. The entire TAP area is shown below in Figure PPS – 5.

Figure PPS – 5 TAP Potential Project Site

## TAP Project Site



### Site Suitability and Constraints

No sensitive habitat and species were identified for the site. The site is not located within a fault zone, or within .5 miles of a fault zone. Moderate liquefaction potential exists. There is moderate risk for subsidence. Stormwater runoff and drainage flows to the Whitewater River. Construction and operation activities will impact any receiving waters making mitigation measures necessary. No cultural resources or water constraints were identified.

Key concerns for the TAP area, relative to site suitability include high winds, consistent with ACCRS.

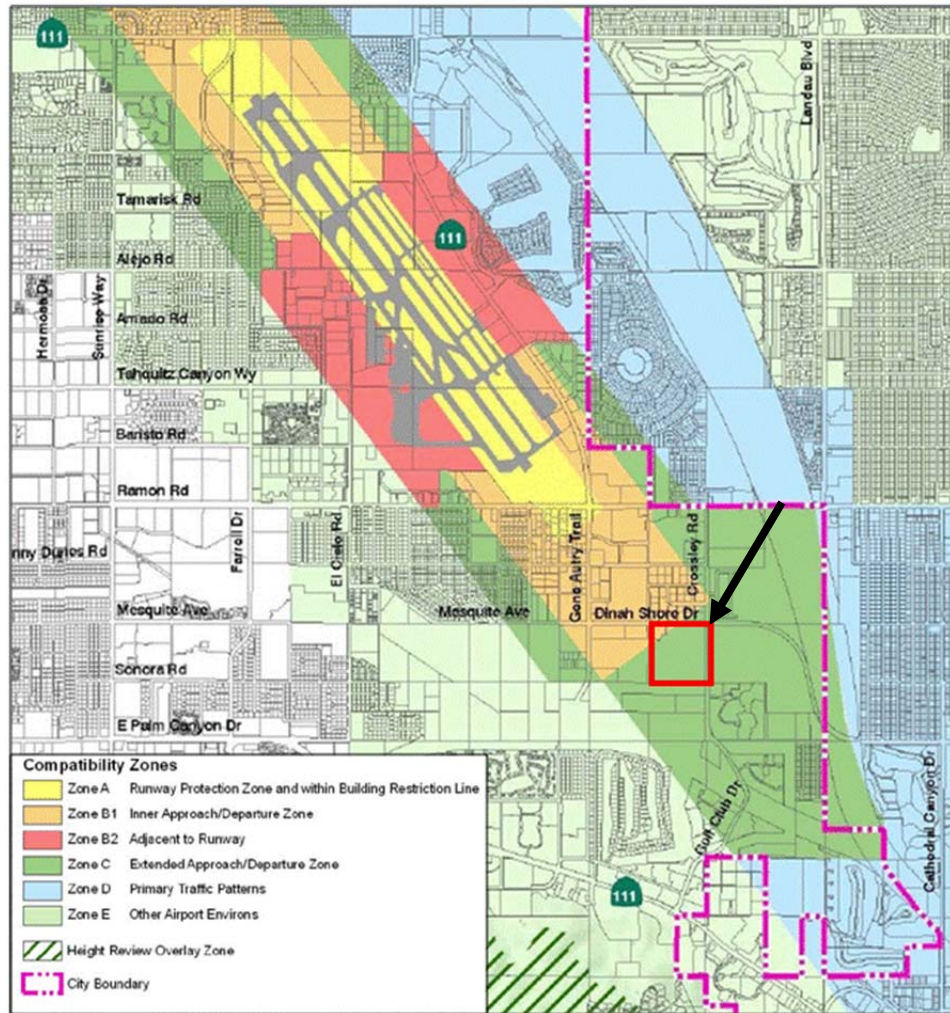
### Permitting/Regulatory Requirements

The site is located with the Riverside County Integrated Project/Western Coachella Valley Planning Area, and within the city boundary of Palm Springs. The site is located within the Coachella Valley Multiple Species Habitat Conservation Plan fee area, the Eastern Transportation Uniform Mitigation Fee area, and the Western Coachella Valley Development Impact Fee area. The site is located within the Airport Influence Area of Palm Springs International Airport as shown in Figure PPS - 6 below.



Figure PPS – 6 TAP Location Near Palm Springs International Airport

## Palm Springs Airport Compatibility Map



Anticipated permitting requirements are summarized below in Figure PPS - 7.

Figure PPS – 7 TAP Solar Project Likely Permit/Approval Requirements

POTENTIAL PERMITS/APPROVALS REQUIRED FOR ACBCI TAP SOLAR PROJECT				
Permit / Approval	Issuing Agency	Process Synopsis	Schedule	Comments
NEPA Environmental Review	Bureau of Indian Affairs (BIA)	- Pre-application meeting - Submit project plans / definition - Prepare Draft EA - Review - Final EA / FONSI	4 to 6 months	Assume that Environmental Assessment (EA) will be sufficient
Project Review	Tribal Planning and Development Department	- Submit plans - Reviewed by staff - Environmental Checklist	Estimated 2 to 4 months	For solar project site  Environmental review could be incorporated into NEPA and CEQA process (joint review)
Tribal Habitat Conservation Plan Compliance	Tribal Planning and Natural Resources Division	- Should be incorporated into project review and NEPA process	4 to 6 months	For solar project
Plan Check	Tribal Planning and Development Department	- Submit plans - Reviewed by staff	Estimated 1 to 2 months	For solar project site
Grading and Improvement Permit	Tribal Planning and Development Department	- Submit plans - Reviewed by staff	Estimated 1 to 2 months	For solar project site
Building Permit	Tribal Planning and Development Department	- Submit plans - Reviewed by staff	Estimated 1 to 2 months	For solar project site
Land Use Permit	City of Palm Springs  Planning Services Department	- Submit application - Reviewed by staff - CEQA - Commission / Council hearings	2 to 4 months	For transmission line  CEQA should be satisfied with IS/EA. Environmental review could be incorporated into NEPA and CEQA process (joint review)

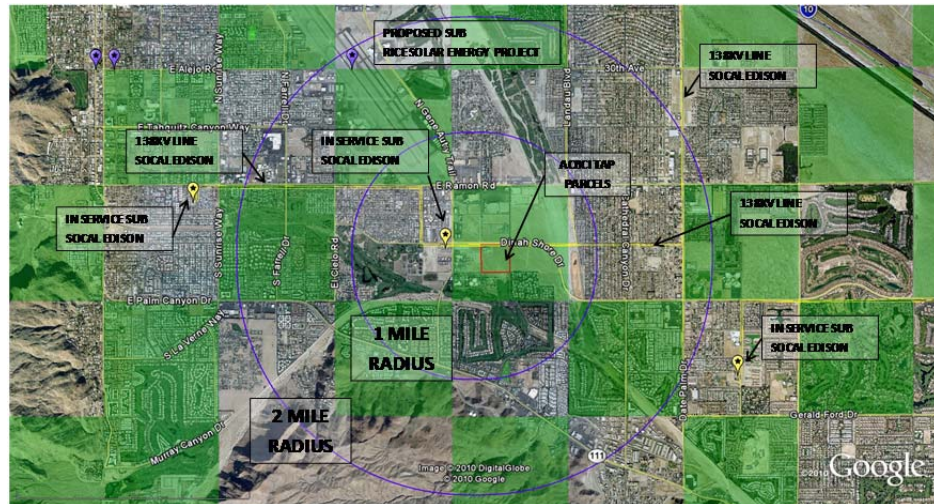
  

POTENTIAL PERMITS/APPROVALS REQUIRED FOR ACBCI TAP SOLAR PROJECT				
Permit / Approval	Issuing Agency	Process Synopsis	Schedule	Comments
Building Plan Review	City of Palm Springs  Building and Safety Department	- Submit building permit application  - Reviewed / approved by Planning and Economic Development	4 to 6 weeks	For transmission line
Encroachment Permit	City of Palm Springs  Public Works and Engineering Department	- Submit application  - Reviewed / approved by Department	6 to 8 weeks	Needed if new access to city street
Stormwater Permits - For construction - For operation	- US EPA	- Prepare Stormwater Pollution Prevention Plan (SWPP)  - Submit NOI to both ADEQ and EPA	Prepare SWPP and submit NOI at least 48 hours before activity	General Permit will cover both construction and operation so individual permit not necessary - only NOI.
Hazardous Waste Permits	EPA	- Apply for EPA identification number (Construction contractor should get number for wastes generated during construction and this could be transferred to owner for operation)	Apply 30 days prior to first disposal	Unlikely - Needed if site will generate sufficient amounts of hazardous wastes that need to be hauled away for disposal

### Interconnection/Transmission Access

For commercial scale projects, interconnection to the SCE system is available at a substation within roughly ¼ mile from the TAP parcels, or at distribution and transmission lines in the vicinity, as shown in Figure PPS - 8 below.

Figure PPS – 8 TAP Solar Project Interconnection Access



## Overall Site Assessment

The material below in Figure PPS - 9 summarizes the site description, potential environmental impacts and issues, and other site impacts and concerns for TAP. No issues of high concern were identified at the site that would affect potential solar project construction.

Figure PPS – 9 TAP Overall Site Assessment

### TAP SITE ASSESSMENT SITE DESCRIPTION

#### GENERAL DESCRIPTION

#### TOPOGRAPHY & TERRAIN

#### CURRENT LAND USE

#### EXISTING UTILITIES

#### CULTURAL RESOURCES

#### WATER CONSTRAINTS

#### PLANNING & PERMITTING ISSUES

#### DEVELOPMENT FEES

### ENVIRONMENTAL IMPACTS & ISSUES

#### SENSITIVE HABITAT & SPECIES

#### DRAINAGE & WATER QUALITY

#### VISUAL IMPACT

#### AIR QUALITY

#### NOISE GENERATION

#### EXISTING GEOLOGICAL HAZARDS

#### CONTAMINATED OR IMPAIRED SITES

### OTHER SITE IMPACTS & CONCERNS

#### SITE ACCESS

#### INTERCONNECTION ISSUES

#### TRAFFIC & CIRCULATION

#### HEALTH/HUMAN SAFETY

This site is located within APN 680-180-050 of Section 20 in Township 4S and Range 5E. The recorded lot size for APN 680-180-050 is 21.36 acres.

This site is at approximately 350 feet above sea level. Flat desert terrain. Minimal to moderate brush scrub vegetation.

No current use.

This site is located within the DWA water and sewer service area.

None identified.

None identified.

This site is located within the Riverside County Integrated Project (RCIP) Western Coachella Valley Planning Area. This site is located within the city boundary of Palm Springs. This site is also within the Airport Influence Area of Palm Springs International Airport.

This site is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) fee area. This site is located within the Eastern TUMF (Transportation Uniform Mitigation Fee) area. This site is located within the Western Coachella Valley Development Impact Fee (DIF) area.

None identified.

Stormwater runoff and drainage flows to the Whitewater River. Construction and operation activities will impact any receiving waters making mitigation measures necessary.

Visual impact would be highly dependent on specific solar technology. Glare and light reflection would occur at this site during operation.

This site is located within the Salton Sea Air Basin (SSAB). Project construction would be the primary contributor of air pollutants at the project site.

Project construction would be the primary contributor of noise nuisance and pollution at the project site.

This site is not located within a fault zone or within 0.5 miles of a fault zone. Moderate liquefaction potential exists. This site has a moderate risk level for subsidence.

None identified.

Local site access can be gained via Dinah Shore Drive or Crossley Road.

Project construction would be the primary contributor to traffic congestion.

None.

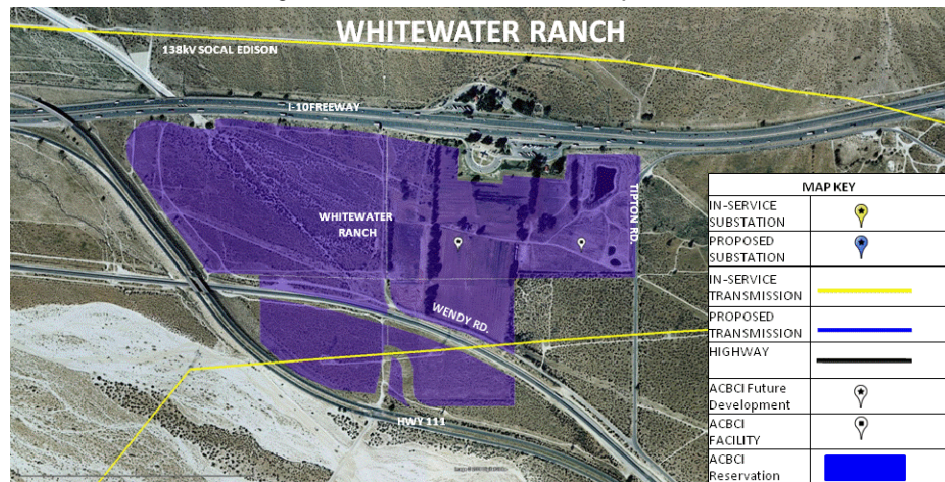


## WWR Project Site

### Location

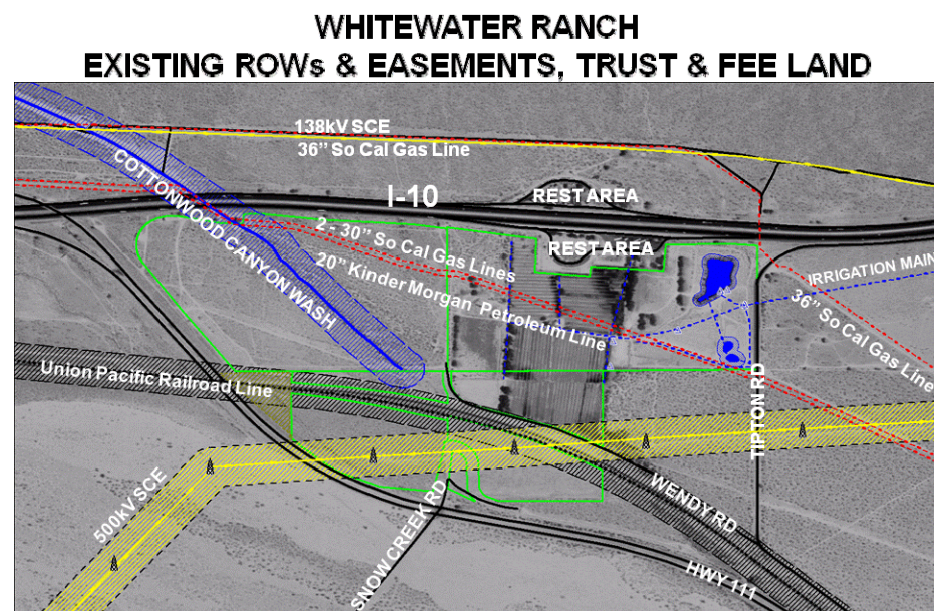
Figure PPS - 10 provides a close-up look at the 200-acre area, highlighted in purple.

Figure PPS – 10 WWR Potential Project Area



Detailed data from the ACBCI GIS Department, Ventyx and Riverside County data provided a very complete picture of the site. Data layers available included Whitewater Ranch property and parcel line data, irrigation pipelines, above ground water features, road centerlines, Union Pacific Railroad line data, electric transmission pole and line locations, contour and elevation line data, natural gas and petroleum pipeline locations, and FEMA flood zone data. Figure PPS - 11 provides a summary of the various features and lines that affect potential energy development parcels, detailed in the section below.

Figure PPS – 11 Whitewater Ranch Area Right-of-Ways and Easements



The above-ground SCE limited-use easements are regulated by the California Public Utilities Commission (CPUC). The “no structure” restricted area is shown as a 200 foot easement on either side of the transmission lines.

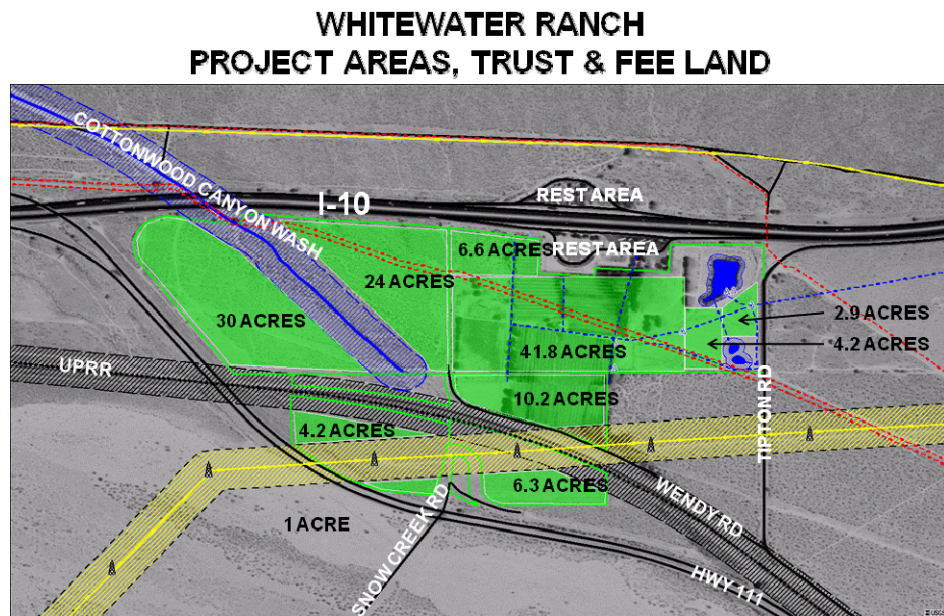
The Union Pacific Railroad limited use easement is also regulated by the CPUC. The easement varies from 80 feet to 180 feet on either side of the railroad track. Union Pacific is planning to add a third mainline track within the easement. The easement creates disconnected land islands that limit contiguous land development.

Below ground easements include water, Southern California Gas pipelines and a Kinder Morgan petroleum pipeline. These easements also limit the size of developable acreage at the site.

### Land Availability

Figure PPS - 12 below identifies available for development at the site in both trust and fee land status. A total of 130 acres was identified for possible Whitewater Ranch development, minus the easements described above.

Figure PPS - 12 Whitewater Ranch Land Availability

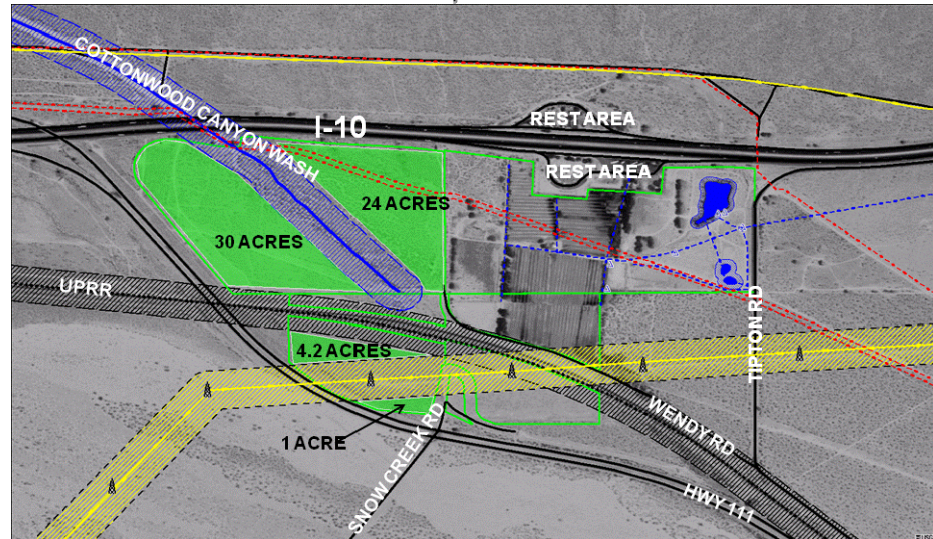


Assuming energy project development was targeted for trust land only, just over 58 acres was considered available, as shown in Figure PPS - 13 below.



Figure PPS – 13 Whitewater Ranch Trust Land

### WHITEWATER RANCH PROJECT AREAS, TRUST LAND ONLY



The remaining 72 acres is pending fee-to-trust status.

#### Site Description

Figure PPS - 14 below provides photographs and a diagram of the proposed Whitewater Ranch project site. Figure PPS - 15 illustrates topography and elevation considerations for the site.

Figure PPS - 14 Whitewater Ranch Project Site and Significant Components

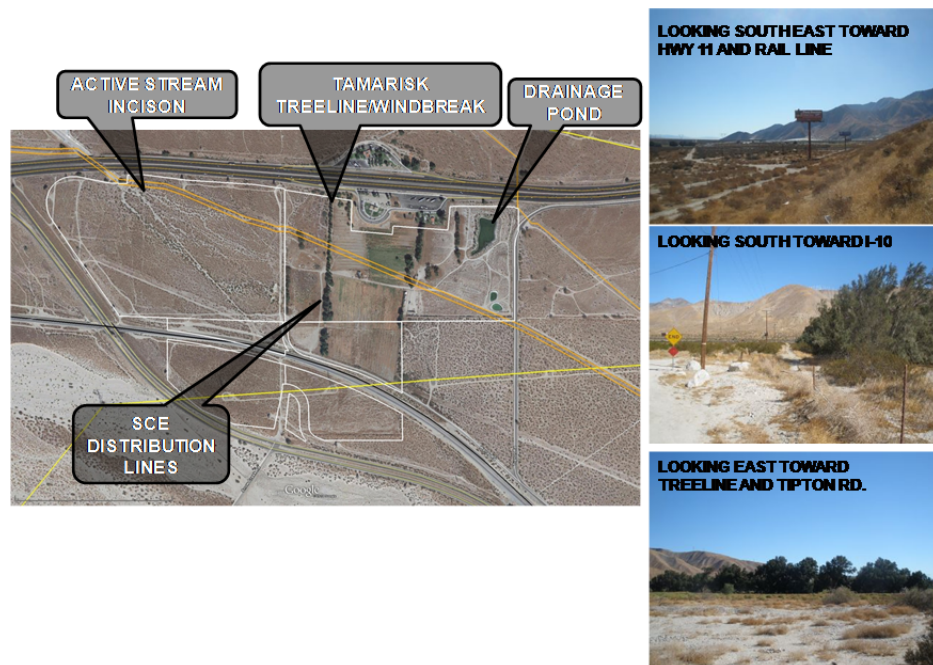
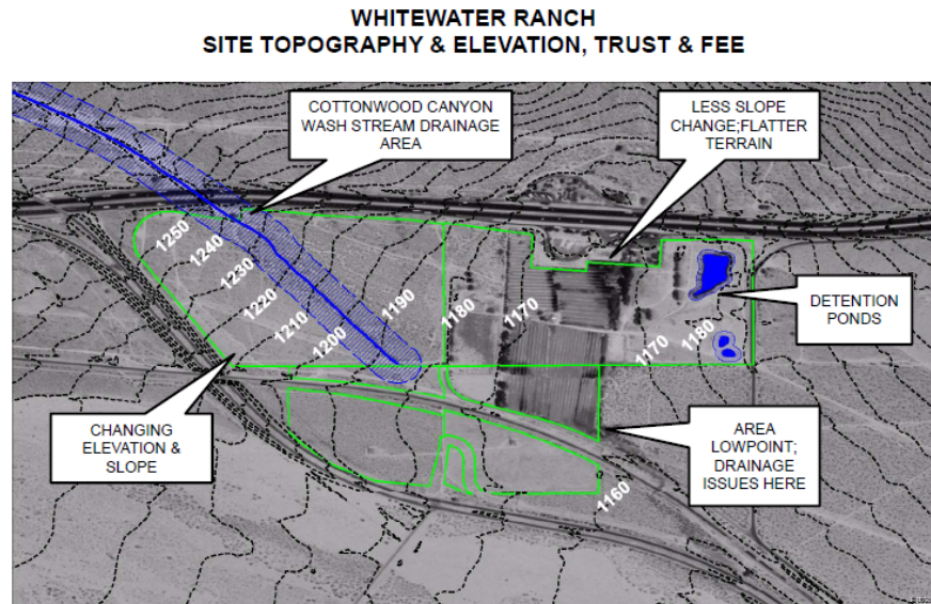


Figure PPS – 15 Whitewater Ranch Site Topography and Elevation



Drainage issues of note include the Cottonwood Canyon Wash, which bisects and drains into the Northwest quadrant of the site, running from Northwest to Southeast. This drainage area reduces potential site development size. Drainage from the wash will tend to collect in the Southeast quadrant of the site due to both the site slope, and elevated railroad track. The site is out of the defined boundary of the FEMA Q3 Flood Zone area of inundation by 100 year flooding. Although the site is not within the defined zone, it is close enough to mention for future planning purposes. FEMA Flood Zones are found immediately north and south of the site at the San Geronio River and the Whitewater River.

#### **Interconnection/Transmission Access**

Access to transmission lines is available at the site, and several substations are within 1¼ miles of the site as shown in Figures PPS - 16 and PPS - 17.



Figure PPS – 16 Whitewater Ranch Electrical Interconnection Options

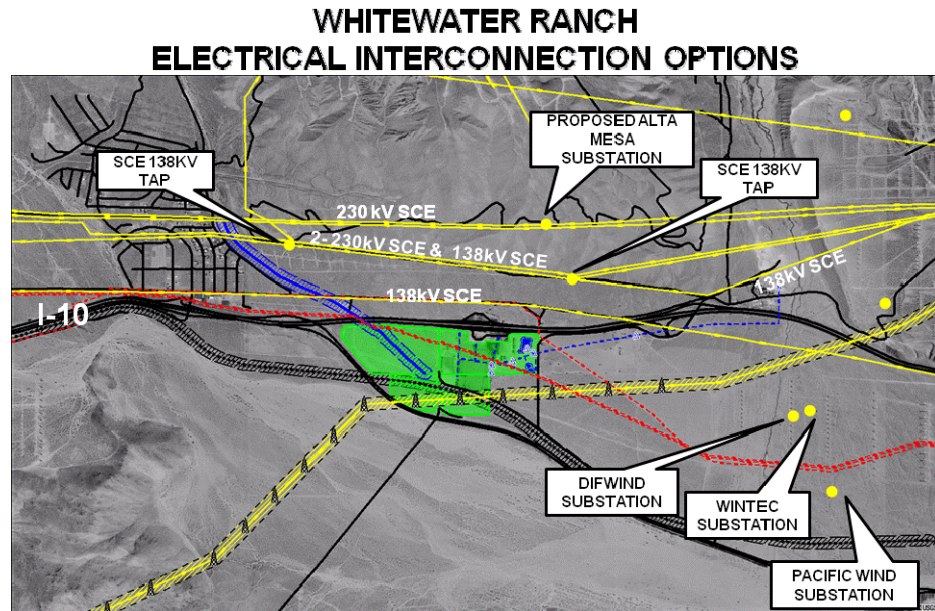
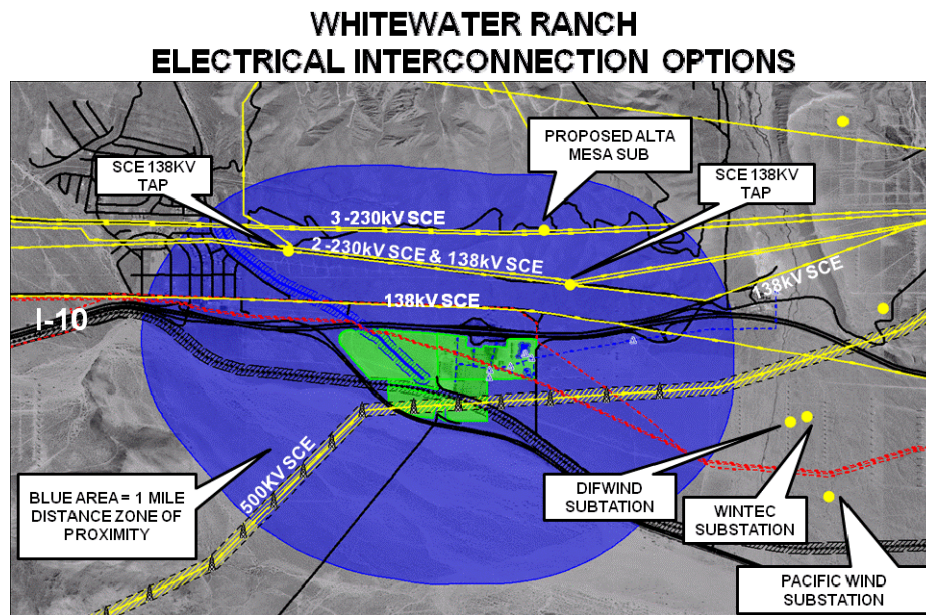


Figure PPS – 17 Proximity of Whitewater Ranch Interconnection Options



## Site Suitability and Constraints

Site selection screening criteria for tribal communities was applied to the site suitability analysis, including location, land, water, air and permitting.

Physical constraints and regulatory requirements exist for the Whitewater Ranch site. Physical constraints are summarized in Figure PPS - 18 below:

Figure PPS – 18 Summary of Whitewater Ranch Physical Constraints

<b>Constraint</b>	<b>Description</b>	<b>Impact</b>
Cottonwood Canyon Wash	Wash prevents flood and drainage problems in Northwest corner of the site	Wash creates a disconnect between useable development areas
Site Drainage	Significant drainage in Northwest corner of site due to Cottonwood Canyon Wash and elevated Union Pacific Railroad track	Drainage issues further limit the developable land
Site Slope and Grade	Slope in some areas is greater than 2%; contributes to drainage issues	May limit equipment installation in developable areas
Wind	Known high wind speed corridor; dust problems	May limit certain equipment types; may increase maintenance issues for solar equipment

Regulatory requirements and considerations are summarized in Figure PPS - 19 below:

Figure PPS – 19 Summary of Whitewater Ranch Regulatory Requirements/Considerations

<b>Category</b>	<b>Regulatory Agency</b>	<b>Requirement</b>
Tribal	ACBCI	Tribal Environmental Planning Act
		Tribal Habitat Conservation Plan
Local Non-Tribal	City of Palm Springs	City of Palm Springs General Plan
	Riverside County	Riverside County Integrated Plan
State	CPUC	Approval for activities re: Union Pacific Railroad Easement
		Approval for activities re: SCE Easements
Federal	U.S. Army Corp of Engineers	404 Clean Water Act – Permit to alter a protected stream
	U.S. Fish and Wildlife Service	Endangered Species Act – Permit to protect species and habitat

Figure PPS - 20 below summarizes the primary constraint issues and impacts.

Figure PPS – 20 Whitewater Ranch Physical and Regulatory Constraints/Regulations and Impacts

ISSUE	IMPACT	COMMENT
DRAINAGE	LOW	Although there is an active stream on the trust land parcels, the drainage issue appears to be a problem in the southeast part of Whitewater only.
PROTECTED STREAM OR RIVER	HIGH	Cottonwood Canyon Wash has the potential to lay within the jurisdiction of the USACE and EPA. A formal jurisdictional delineation may be required to determine the extent and potential impact of this issue. Also, any alteration to a protected stream would require a Federal Clean Water Act 404 Permit.
TOPOGRAPHY	MODERATE	The general topography of the trust land parcels is conducive to solar technology installation, but the elevated UPRR could present some slope problems.
ABOVE GROUND EASEMENTS	MODERATE	The SCE and UPRR easements are both regulated by the CPUC and are "no structure" easements. This is likely to present setback limitations for new construction.
UNDERGROUND EASEMENTS	LOW	This issue requires further review to understand any restrictions associated with these utilities.
LOCAL LAND USE REGULATORY POLICIES	LOW	The City of Palm Springs and Riverside County zoning and permit issues do not impact tribal trust land parcels, but these parties are allowed review and comment.
STATE REGULATORY POLICIES	MODERATE	The CPUC regulates both the SCE and UPRR above-ground easements. A more detailed review needs to be performed to understand how this could limit new land use and construction on the trust land parcels.
FEDERAL REGULATORY POLICIES	HIGH	Cottonwood Canyon Wash could be under federal jurisdiction (USEPA). Also, the Endangered Species Act (USFW) will apply to any threatened and endangered species present.
WITHIN FLOODPLAIN	LOW	Not within a FEMA Flood Zone.
THREATENED & ENDANGERED SPECIES	MODERATE	There are 4 endangered animal and plant species that have the potential to be on site. A more focused study must be performed to determine the extent of this issue.
CULTURAL RESOURCES	LOW	A Phase 1 study was performed and found that cultural and historical sites have the potential to be on site on the fee land parcels. The Phase 1 study recommends that a more focused study be performed in the future.

## Overall Site Assessment

Figure PPS - 21 below summarizes the overall site assessment.

Figure PPS – 21 Whitewater Ranch Site Assessment Summary

### WHITewater RANCH SITE ASSESSMENT

#### SITE DESCRIPTION

##### GENERAL DESCRIPTION

This site is located within APN 518-070-022 of Section 8 Township 3S and Range 3E. The recorded lot size for APN 518-070-022 is 79.86 acres.

##### TOPOGRAPHY & TERRAIN

This site is at approximately 1200 feet above sea level. Flat desert terrain. Minimal to moderate brush scrub vegetation. Uneven wash areas cross this site. Active drainage streams exist onsite.

##### CURRENT LAND USE

No current use.

##### EXISTING UTILITIES

This site is located within the DWA water and the City of Palm Springs sewer service area. Currently there are no potable water or sewer lines located onsite.

##### CULTURAL RESOURCES

Phase 1 Cultural Resource Assessment completed. No significant cultural or historical site immediately identified but a Phase 2 Assessment was recommended.

##### WATER CONSTRAINTS

The Whitewater Master Plan (LSA Associates, 2008) cited the need to clarify the groundwater rights associated with Whitewater ranch.

##### PLANNING & PERMITTING ISSUES

This site is located within the Riverside County Integrated Project (RCIP) Western Coachella Valley planning area. This site is located within the city boundary of Palm Springs.

##### DEVELOPMENT FEES

This site is located within the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP) fee area. This site is located within the Eastern TUMF (Transportation Uniform Mitigation Fee) area. This site is located within the Western Coachella Valley Development Impact Fee (DIF) area.

##### ENVIRONMENTAL IMPACTS & ISSUES

##### SENSITIVE HABITAT & SPECIES

Suitable habitat occurs for the Flat-Tailed Horned Lizard (*Phrynosoma mcalli*) and the Coachella Valley Fringed Toed Lizard (*Uma inornata*). Also, the Coachella Valley Milk-Vetch (*Astragalus lentiginosus* var. *cochelliae*), a sensitive plant species, occurs onsite.

##### DRAINAGE & WATER QUALITY

Stormwater runoff and drainage flows to the Whitewater River. Construction and operation activities will impact any receiving waters making mitigation measures necessary. The Whitewater Ranch Master Plan (LSA Associates, 2008) cited that there is concern for future development to align with the Clean Water Act regarding surface waters. Also, the Master Plan cited the need to complete a GIS survey to clarify whether or not there are USEPA/ACOE jurisdictional waters onsite.

##### VISUAL IMPACT

Visual impact would be highly dependent on specific solar technology. Glare and light reflection would occur at this site during operation and may be an issue because of the site's proximity to I-10.

##### AIR QUALITY

This site is located within the Salton Sea Air Basin (SSAB). Project construction would be the primary contributor of air pollutants at the project site.

##### NOISE GENERATION

Project construction would be the primary contributor of noise nuisance and pollution at the project site.

##### EXISTING GEOLOGICAL HAZARDS

This site is not located within a fault zone or within 0.5 miles of a fault zone. Minimal liquefaction potential exists. This site has a moderate risk level for subsidence.

##### CONTAMINATED OR IMPAIRED SITES

None identified.

##### OTHER SITE IMPACTS & CONCERNS

##### SITE ACCESS

Regional access is provided by Interstate 10. Local site access is provided by SR 111/Tipton Road and Wendy Road.

##### INTERCONNECTION ISSUES

##### TRAFFIC & CIRCULATION

Project construction would be the primary contributor to traffic congestion.

##### HEALTH/HUMAN SAFETY

None.

##### OTHER

The Whitewater Master Plan (LSA Associates, 2008) cited the need to clarify and re-examine the existing right-of-ways and easement for the natural gas lines, roadway centerlines and the rail lines.



## Relevant Incentives

Applicable incentives are critical to evaluating renewable project feasibility, as they directly impact potential economic viability of projects. The primary determinant of project economics is often the ability of the project owner to combine all available incentives to produce the lowest possible cost of power production. While Federal incentives are the same throughout the entire United States, state incentives are typically set by the utility regulators and/or legislators in each state, and utilities within each state set incentives that apply only to their customers, often driven by direction provided by their respective regulators. Within states, it is common for incentives to vary between the types of utilities, i.e., investor-owned utility incentives are usually different than cooperative or municipal incentives.

The primary Federal incentives available to support potential ACBCI solar energy projects include incentives, grants and financing support. Incentives considered in this study include those for both taxpaying entities, as ACBCI would likely be developing the project with a taxable partner unless applicable tax laws change. The material below summarizes each of the incentives in terms of applicability, limits and process.

### Federal Incentives

#### Federal Investment Tax Credit:

Applicability: 30% credit for wind and solar energy (and other renewable technologies) that is available to public utilities, energy producers, and financial investments; no maximum exists at this time

Limits: The property must be placed in service by September 1, 2017. A portion of the facility cost (site fencing, for example) may be excluded from the credit process. The original use of the equipment must begin with the taxpayer. The equipment must meet performance and quality standards and must be operational in the year in which the credit is taken

Credit Process: Tax-paying entities may claim the credit on their tax results, or they may apply for a grant to reimburse a portion of the project expense

Tax Grant: Section 1603 of the American Recovery and Reinvestment Tax Act, appropriates funds for payments to persons who place in service specified energy property. Treasury will make Section 1603 payments to qualified applicants in an amount equal to 10% or 30% of the basis of the property, depending on the type of property. Applications will be reviewed and payments made within 60 days from the later of the date of the complete application or the date the property is placed in service. Grants are not available for projects where Tribes have an ownership position.

ACBCI Applicability: An ACBCI joint venture with a taxable partner would likely allow utilization of the 30% Investment Tax Credit.

### **New Market Tax Credits (NMTCs)**

Applicability: Projects must qualify for use of NMTCs based on location in a distressed census tract; Community Development Entities (CDEs) make investments in projects; taxpayers receive a federal income tax credit for investments in CDEs

Limits: Total tax credit is 39% over seven years; amount of NMTCs available is subject to CDE allocations, and precise project structure. CDE investments must be in an indicated area of need and in a qualified project

Process: Identify a CDE and lender with NMTC allocations, ensure that the project is in a qualifying area, and work with the lender and CDE to qualify the project for funding

ACBCI Applicability: The ACCRS and TAP locations are not NMTC eligible. WWR is NMTC eligible, and would require ACBCI to partner with a taxable entity to utilize NMTCs.

### **DOE Loan Guarantees**

Applicability: Projects eligible for Section 1703 program is for projects utilizing early commercial technologies

Limits: Approved borrowers are expected to pay the long-term liability

Process: DOE periodically issues a request for applications by issuing technology-specific solicitations; applicants must respond within a specified time frame

ACBCI Applicability: Possibly applicable, depending on technology selected

### **DOI Loan Guarantees**

Applicability: Qualified borrower under the Indian Financing Act of 1974

Limits: A Native borrower must be on or near a federally recognized reservation or service area and contribute to the economy; borrower must not be delinquent on any federal obligation, and have at least 20% equity in the project; guaranty may not exceed 90% of principal and interest on the loan

Process: Lender submits applications to the DOI Regional Office

ACBCI Applicability: Possibly applicable, if Investment Tax Credit, or NMTC investor is a Native-owned entity

### **Section 168 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 features 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 -- lowering the after-tax net

present value 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.

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. 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 financial benefit to the project. The accelerated depreciation allowance has been reauthorized several times and was most recently reauthorized again in late 2010 for equipment placed into service before December 31, 2012.

### **Indian Employment Tax Credit**

The Indian employment credit was also created in the Revenue Reconciliation Act and reauthorized effective until December 31, 2011 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

### **Relevant California Incentives**

#### **Property Tax Exclusion for Solar Energy Systems**

Section 73 of the California Revenue and Taxation Code allows a property tax exclusion for certain types of solar energy systems installed between January 1, 1999, and December 31, 2016. This section was amended by AB 1451 in September 2008 to include the construction of an active solar energy system incorporated by an owner-builder in the initial construction of a new building that the owner-builder does not intend to occupy or use. This only applies if the owner-builder did not already receive an exclusion for the same active solar energy system and only if the initial purchaser purchased the new building prior to that building becoming subject to reassessment to the owner-builder.

Qualifying active solar energy systems are defined as those that "are thermally isolated from living space or any other area where the energy is used, to provide for the collection, storage, or distribution of solar energy." These include solar space conditioning systems, solar water heating systems, active solar energy systems, solar process heating systems, photovoltaic (PV) systems, and solar thermal electric systems, and solar mechanical energy. Solar pool heating systems and solar hot-tub-heating systems are not eligible.

Components included under the exclusion include storage devices, power conditioning equipment, transfer equipment, and parts. Pipes and ducts that are used to carry both solar energy and energy derived from other sources qualify for the exemption only to the extent of 75% of their full cash value. Likewise, dual-use equipment for solar-electric systems qualifies for the exclusion only to the extent of 75% of its value.

**Assumptions**

All incentives described above applicable to ACBCI have been included in financial models developed for the solar projects.

## **Project Structure Options: Development and Ownership Implications**

This portion of the final report will provide ACBCI with background and high-level strategic discussion regarding development and financing issues, recognizing the challenges and opportunities in the current economic environment. Understanding the various phases that lead to financing, construction and operation is useful in strategically planning ACBCI investments necessary to establish a joint venture with outside parties, or undertaking a debt and/or equity position in planned renewable energy projects. Timing and level of work undertaken by ACBCI can set the stage for negotiations with third parties when it comes time to take a Tribal project to the next level of development.

### **Pre-Development and Development Phase: Large Commercial Solar Projects**

In this phase, generally a project developer (this could be ACBCI on its own or in conjunction with a development partner) will begin initial project siting activities such as those undertaken in this study: infrastructure analysis, renewable resource assessments, and other pre-feasibility and feasibility analyses.

ACBCI can leverage the work already completed, regardless of the ultimate position the Tribe and developer choose to take in project development. Another consideration at this phase is the importance of a set of protocols for pursuing the project in question as well as achieving a level of project site control that conveys exclusivity that allows the project's developers to deploy capital with a degree of enforceability to secure their investment.

For a large scale project, it is very common at this phase, before a final development partner is brought in, for development costs for a 100MW+ plant to run into the millions – financing and legal work, negotiations, in-depth engineering, and other time and financially intensive work. Significant at-risk capital commitments may need to be made at this juncture, even before a power purchase agreement is finalized or project financing is secured – no party will have any guarantees that the project will ultimately succeed.

This high level of initial risk is the reason that project developers that have in-house expertise take on the technical lead role, such as performing engineering and transmission analysis as well as securing all the key equipment (a potentially very large-up front outlay of cash or credit to order equipment in advance to secure construction financing).

The initial developer, whether ACBCI, or a solar project developer, will need to have the financial strength to finance development and deposits. Also power purchase negotiations and structuring project financing requires a level of experience and technical expertise that is a critical factor for banks and power purchasers. Assurance that the solar technology works, there is an experienced management team, and equipment guarantees are in place, is very important. Solar technologies that do not yet have other commercial installations will have a much more difficult challenge attracting financing,



performance guarantees and knowledgeable operations and maintenance personnel.

### **Distributed Solar Financing Structures**

In the distributed solar energy industry, current options have typically included a power purchase agreement (PPA) for the sale of energy to a retail (facility) customer by an investment corporation owning the solar energy facility (where a tax investor can participate). The power purchase agreement in this scenario would require that a sufficiently creditworthy customer commits to an agreement that parallels the financing term – which can be a challenge for customers without a formal or stand-alone credit rating. There are several ways to structure these based on the customer's current tariff rates, but most likely includes a base floor price that allows the project to attract sufficient financing.

Several basic corporate financing models exist in the market currently: project flip partnerships, buyouts and leases. In a project flip or buyout structure, the solar facility is owned by a partnership or limited liability company in which the developer and the investor are partners. Here, the investor makes an equity investment and receives a proportionate allocation of the income and loss (including tax benefits) until a target rate of return is achieved, after which the income and loss allocations "flip" to a ratio more favorable to the developer (or host-developer). The sponsor/developer may also have an option to buy out the investor's interest for fair market value, determined when the option is exercised. One disadvantage of the flip structure is that 3-year accelerated depreciation (MACRS) for Tribes is not available if the Tribe is an owner at any point in the project life. One option to avoid this is to structure the project with a buyout by the Tribe, and no ownership during the initial years.

In the lease structure the solar energy facility is sold by the developer to an investment vehicle that either leases the facility directly to the ultimate customer or to a lessee entity; the lessee in turn has a power purchase agreement with the customer. The lessee makes lease payments for the use of the facility, and either keeps the benefits of the electricity or sells the electricity under a power purchase agreement to a third party. The lease is typically a net lease where the lessee pays a fixed rent for the term of the lease. Leases generally need for the lease term to not exceed a specified portion of the useful life of the project assets, and allow for a residual value in the range of 20 percent or greater. At the end of the lease term, the lessor (host) can become the sole owner of the facility pursuant to the tax credit rules set out and/or used.

Because distributed generation projects are small and transaction costs tend to be relatively high on a per-project basis, these projects are more difficult to complete on an individual basis and many municipalities and companies are approaching these projects by bundling numerous facility or smaller projects in one financing package – clean renewable energy bond allottees and others have taken this approach successfully as financing costs can be spread out over a larger asset base.

### **Leveraging an ACBCI Position as Initial Developer**

Initial project developers, whether a Tribe or other party, play an important role – they speculate on interesting areas or projects that might not necessarily attract the initial interest of large developers. Project hosts and/or developers can move quickly to secure sites and begin technical evaluations; and they can provide very valuable local intelligence and gain community consensus.

It is the role of initial developers to establish site control, begin specific site resource data collection and analysis, initiate permitting activities, begin transmission analysis and secure interconnection and/or transmission positions. All of these are quantifiable and assignable in some fashion. That quantification generally occurs when agreements with third parties are completed that take the project into the next phase of development. The way that is done is highly dependent on the third party and the short- or long-term interests of the initial developer, and there are numerous ways to structure these types of agreements.

### **Assessing & Managing Financing Risk**

#### **Technology Risk**

Technology risk is assessed during construction and start up, but also at other points in time – as it affects project operational capacity, as well as conversion and efficiencies that can be defined well into the project. Technology risk is also associated with respect to certain component parts and the engineering associated with each component. Essentially, technology risk relates to whether the developer can illustrate in real terms how well the particular project and technology utilized will work over time. All this affects how and whether the investor(s) and financial institutions involved in the project, as well as its power purchasers, will view and value the energy generated. Technology risk can affect the cost of capital as well as the price the power purchaser is willing to commit to – all of which may drive up the costs of the project.

A key component of financing a commercial-scale solar project is the project's ability to secure a power purchase agreement (PPA) with a creditworthy entity. The terms and conditions in any PPA are largely based on the projections of power that will be produced by the plant and/or the capacity available for base load and/or peaking. That projection is the cornerstone for nearly all of these critical decisions – decisions by banks, decisions by power offtakers, and decisions by transmission operators. Project finance is a process by which risk is assessed and apportioned to the participating parties, which is an important concept to consider as project structure decisions are made.

The project's ability to control risk will be assessed by third parties, and is an issue for ACBCI to take seriously as it considers potential development partners. The project proponents' ability to provide guarantees and to articulate a compelling strategy to ensure that engineering, construction and operations success will mitigate risk factors, is critically important.

## **Regulatory Risk**

One critical issue for large renewable projects dependent on tax credits is the risk associated with regulatory changes or changes in the law that affect the project's ability to utilize the associated tax credits. Today, three drivers for solar development include:

- Federal investment tax credits of 30%, and Section 1603 grants
- Variability of electricity rates; the cost of oil and natural gas caused consumers and utilities to rethink how best to manage fuel volatility, which made wind and solar power more attractive
- State incentives and requirements for utilities to have a portion of their overall generation mix as renewable energy, in some cases, specifically solar

## **Considerations for Potential Partnerships for Large Commercial Solar Development and Financing**

### **Large Balance Sheet Partner**

In the past, selecting a development partner with a strong and large balance sheet was compelling on many levels. Today, many of the largest and formerly strongest renewable development companies and investors are now scaling back investments, or are seeking third-party financial participation in order to shore up sufficient capital investments. Since utilities are now allowed to invest in projects, utilities are moving into this space and to a degree, replacing large players who have retreated.

The following large development partner considerations can have a significant impact on a large scale commercial solar project:

- Ability to fund the full development cycle (which could easily be in the millions if an environmental impact statement is required; and the transactional and legal costs involved are very high)
- Expertise, largely in-house, including engineering, transmission and financing
- A clear path to solar equipment, either via balance sheet-backed equipment orders or backlogged equipment availability
- Experienced knowledge of, market visibility to, and current agreements with the large utilities (target power purchasers for the project)
- Ability to replicate other projects based on a successful first project or potential willingness to carve out ancillary business opportunities (siting manufacturing facilities, engaging in part manufacturing businesses) as part of the partnership
- Ability to move faster due to a strong track record, access to equipment, adequate capital, and presence in the market

One challenge is that large development partners tend to have successful models which they are reluctant to change in order to accommodate a project that may not fit the traditional mold. These developers have not had to accommodate much flexibility in the market previously, and it may be a

challenge for the Tribe to successfully negotiate what it needs in the partnership.

Another challenge in the current financial environment, is having a full understanding, during the due diligence process, of the potential partner's financial standing. Today, many of the larger developers are European companies, which makes this even more complicated. Another consideration is whether the developer is positioning itself as an acquisition target, and is more interested in adding projects to its balance sheet than in actually completing projects. Tribes should anticipate that this may be the case, and ensure that assignment language and clauses relating to terminations are carefully reviewed.

### **“Start Up” Development Partners**

A partnership with a relatively new development entity has the potential to provide some creativity to partnership negotiations. “Start-up” entities may bring:

- Willingness to be creative with respect to partnering with Tribes
- Willingness to rely more on outside expertise and firms for all aspects of the project's development; this has interesting potential if the Tribe wishes to be more involved in the actual development work of the project, sharing the risks and rewards
- An ability to share in the growth profile of a solar company that could exponentially grow in the next decade, whether experientially or as a potential optioned shareholder, if and when that makes sense, or as a potential partner on other energy project development businesses

### **Tribal Project Development & Ownership Structuring**

#### **Tribal Corporate Forms: Tribally-Chartered Corporation or Section 17 Corporations**

Some Tribes have adopted tribal comprehensive codes and laws that govern the formation of tribally-chartered corporations and in some cases limited liability corporations specifically. The courts have consistently held that sovereign immunity applies to activities of a tribally-chartered corporation owned by a Tribe and the IRS has acknowledged this structure as tax exempt. Issues around taxability of off-reservation business activities by a tribally-chartered corporation continue to be under review, but for the purposes of the contemplated solar projects on the ACBCI reservation, that is not anticipated to be an issue.

#### **25 U.S.C. Section 17 Incorporation**

Many Tribes conduct their commercial activities through federally-chartered corporations formed under Section 17 of the Indian Reorganization Act (IRA). 25 U.S.C. § 477. Section 17 Corporations provide a framework by which a Tribe can segregate tribal business assets and liabilities from the tribal government. Several courts have held that tribal sovereign immunity applies to the business activities conducted by a Section 17 Corporation; other courts have found a limited waiver of sovereign immunity in the "sue and be sued"



clause of the corporate charter. Tribal corporations formed under Section 17 of the IRA have the same tax status as the Tribe and are not subject to federal income taxes for income derived from on- or off- reservation activities.

Although Section 17 Corporations share the same privileges and immunities as the tribal government, they must be delegated rights and authorities and often specifically convey the following which would be relevant to a Tribal solar project development and/or financing:

- The authority to buy and sell real and personal property; including the power to purchase restricted Indian lands
- To authority to enter into leases or mortgages of tribal land for a term of 25 years without approval by the Secretary of the Interior. 25 C.F.R. 25 U.S.C. §84.004(b).
- To enter into contracts or agreements without Section 81 approval by the Secretary of the Interior. 25 C.F.R. 25 U.S.C. §84.004(f). See also, The Section 81 approval requirement does not apply to contracts with a Section 17 tribal corporation. See *Opinion of the Solicitor of the Department of the Interior M-36119, February 14, 1952.*
- Further powers "as may be necessary to the conduct of corporate business."

A federal corporate charter often permits the corporation to establish and manage subsidiary corporations. Tribes have operated construction, manufacturing, gaming, and government contracting companies through Section 17 Corporations. From a Tribal standpoint, one of the major advantages of a Section 17 Corporation is it can arrange for financing without subjecting the tribal governmental assets to the risks and liability associated with borrowing money, and can *limit financial disclosure of records to those of the corporation and not the tribe*. Additionally, in a 1998 Private Letter Ruling, the IRS held that a Section 17 Corporation can be both the borrower and the issuer in a tax-exempt financing if other requirements for tax exempt financing are met.

### **Tribal LLC Incorporation**

The limited liability company (LLC) is a corporate structure option that many Tribes have turned to in recent years and has been a particularly attractive alternative. Because the LLC is disregarded by the IRS for tax purposes, it acts as an effective pass-through vehicle which allows Tribes to own a portion of the project, but be non-taxable. Because of its structural nature, this has been a tool that has been growing in utilization in Indian Country as it is a way to preserve the tax status of a Tribal corporate member.

### **Anticipating a Project-Ownning Limited Liability Corporation**

Some Tribal projects have initially been developed and have placed development assets (studies, initial investments, equipment, etc.) in a tribal corporation until the project itself gets financed. At that juncture, a special purpose tribal project limited liability corporation gets established which is comprised of the parties contributing tax equity, equity, debt and/or other contributions and serves as the operations company for the term of the project.

## Tribal Jurisdictional Primacy

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, and have established, statutory and regulatory regimes to regulate water, air, waste, telecommunications, energy and other activities occurring within their exterior boundaries and 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, the 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 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.

## Project Structures

The rationale for PPAs includes the fact that the developer/financier absorb project risks while reducing risk for the Tribe. Figures RI - 1 and RI - 2 below summarize the various benefits, risks and issues associated with tribal, 3<sup>rd</sup> party and combined ownership of facility-scale and commercial-scale solar projects.

Figure RI – 1 Facility-Scale Project Structure Options for ACBCI

## Project Structure Options: Facility- Scale

<b>Tribe as Facility Owner: 3rd Party Develops/Owns/ Invests and Sells Power to Tribe</b>	<b>Tribal Developer: 3rd Party Investor/Ownership Flips to Tribe Following Tax Benefits</b>	<b>Tribal Developer/ Investor/Owner</b>
<ul style="list-style-type: none"><li>• <b>Benefits to Tribe:</b><ul style="list-style-type: none"><li>– Reduces risk of rising energy costs depending on PPA terms</li><li>– Project benefits from use of tax incentives</li><li>– Speed of development</li><li>– No upfront capital outlay</li></ul></li><li>• <b>Considerations:</b><ul style="list-style-type: none"><li>– Limits capacity building opportunity</li><li>– Tribe may pay more for power than necessary</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Benefits to Tribe:</b><ul style="list-style-type: none"><li>– Reduces risk of rising energy costs depending on PPA terms</li><li>– Project benefits from use of tax incentives</li><li>– Speed of development</li><li>– No upfront capital outlay</li><li>– Provides Tribe operating experience</li></ul></li><li>• <b>Considerations:</b><ul style="list-style-type: none"><li>– Majority of project life is under Tribe's control</li><li>– Lower power costs than with PPA</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <b>Benefits to Tribe:</b><ul style="list-style-type: none"><li>– Full control of project</li><li>– Provides Tribe operating experience</li></ul></li><li>• <b>Considerations:</b><ul style="list-style-type: none"><li>– Limited incentives available without a tax partner</li><li>– Time consuming</li><li>– Highest cost of power</li></ul></li></ul>

Figure RI – 2 Commercial-Scale Project Structure Options for ACBCI

## Project Structure Options: Commercial- Scale

Tribal Developer: 3rd Party Investor/Ownership Flips to Tribe Following Tax Benefits	Tribal Developer: 3rd Party Investor/Ownership Flips to Tribe Following Tax Benefits	Tribal Developer/ Investor/Owner
<b>Tribe as Landowner: 3rd Party Develops/Owns/ Invests</b>	<b>Tribal Developer: 3rd Party Investor/Ownership Flips to Tribe Following Tax Benefits</b>	<b>Tribal Developer/ Investor/Owner</b>
<ul style="list-style-type: none"> <li>• <b>Benefits to Tribe:</b> <ul style="list-style-type: none"> <li>- Least risk</li> <li>- Fixed annual lease/royalty payments</li> <li>- Federal tax benefits to project</li> <li>- Speed of development</li> <li>- External funding sources</li> </ul> </li> <li>• <b>Considerations:</b> <ul style="list-style-type: none"> <li>- Limits revenues</li> <li>- Limits capacity building opportunity</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Benefits to Tribe:</b> <ul style="list-style-type: none"> <li>- Fees + lease revenues</li> <li>- Capacity building</li> <li>- Initial operating risk borne by others</li> <li>- Limited capital outlay</li> <li>- Federal tax benefits to project</li> </ul> </li> <li>• <b>Considerations:</b> <ul style="list-style-type: none"> <li>- Majority of project life is under Tribe's control</li> <li>- Lower power costs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Benefits to Tribe:</b> <ul style="list-style-type: none"> <li>- Allows Tribe to invest significant capital</li> <li>- Greatest economic development opportunity</li> <li>- Full control</li> </ul> </li> <li>• <b>Considerations:</b> <ul style="list-style-type: none"> <li>- Time consuming</li> <li>- Highest cost/highest risk</li> <li>- Limited incentives available without a tax partner</li> <li>- Highest cost of power</li> </ul> </li> </ul>

A comparison of the primary options: tribally-owned and partnership with tax investor, is summarized in Figure RI - 3 below.

Figure RI - 3 – Project Ownership Option Implications

	Tribal Ownership	3rd Party Ownership	Joint Venture
Technology Risk	High	Low	Moderate
Operations & Maintenance Risk	High	Low	Moderate
Performance Risk	High	Low	Moderate
Financing Risk	High	Low	Moderate
Environmental Control	Retained	Relinquished	Combination
Tax Credit Benefits	Not Available	Available	Utilized
Contracting Issues	Limited	Significant	Combination
Return on Investment	Low	Immediate	Adequate over Project Life

## ACCRS Solar Project Feasibility

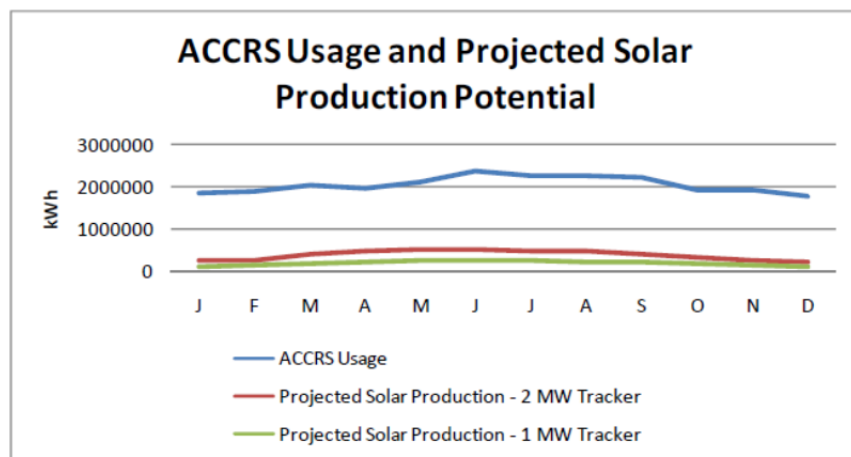
### Project Concepts Considered

The primary projects considered at ACCRS were to offset ACCRS electric usage. Although both 1 MW and 2 MW systems were considered, the majority of effort was focused on a 1 MW installation, due to the fact that the maximum project size eligible for California Solar Initiative production incentives is a 1 MW system.

Figure ASPF - 1 below provides data on ACCRS monthly electric usage, and illustrates how much energy both a 1 MW and 2 MW single-axis tracking PV system would offset. A 1 MW system would offset roughly 8% of ACCRS electric use, and a 2 MW system would offset roughly 16% of ACCRS electric use. During 2009, the actual average per kWh cost of electricity for ACCRS reported by SCE was \$.108.

Figure ASPF – 1 ACCRS Usage vs. Potential Solar Project Production

### ACCRS Solar Production @ 1 MW and 2 MW vs. Electric Usage



Figures ASPF - 2 and ASPF - 3 below illustrate proposed system designs for a 1 MW and 2 MW system to offset ACCRS use.



Figure ASPF – 2 ACBCI 1 MW PV System Layout

## ACCRS Solar PV Layout 1

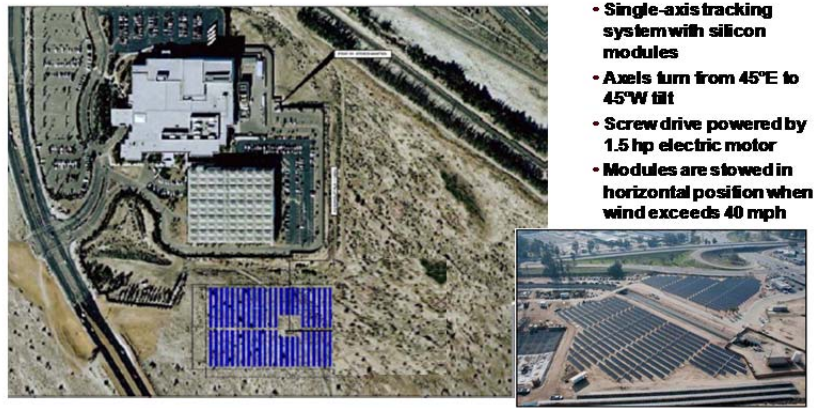
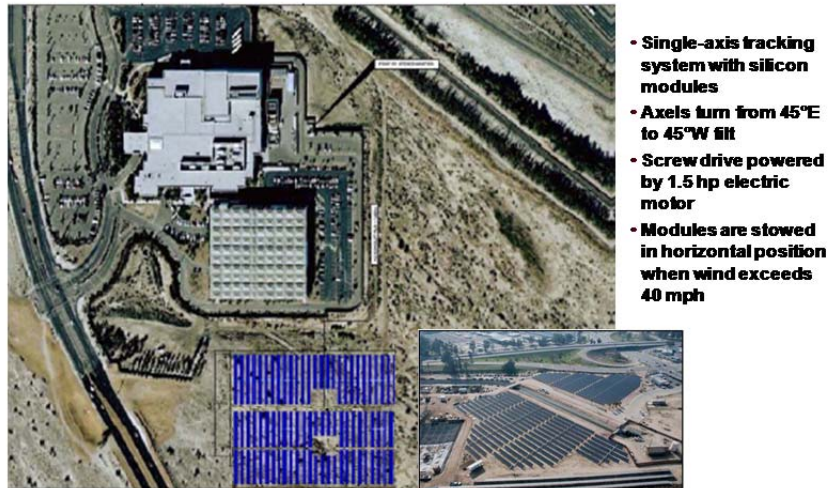


Figure ASPF – 3 ACBCI 2 MW PV System Layout

## ACCRS Solar PV Layout 2



Based on the site, and historical wind speeds in the area, proposals for various system configurations were requested. Alternatives for fixed flat plate, adjustable flat plate and single axis tracking PV systems were provided by several responding firms. A summary of power production comparisons is shown below in Figure ASPF - 4.

Figure ASPF – 4 ACBCI 1 MW Project Production Projections

Fixed Flat Plate	Single Axis Tracking	Adjustable Fixed Plate
1,979,482	2,136,378	
1,916,529	2,205,370	1,989,250
1,902,153		
2,058,500*	2,472,500	

### Recommended Solar Technology

Due to the relatively high winds at the site, and history of significant wind gusts, as illustrated previously, single-axis tracking equipment was ruled out for this site. Based on the costs and production projections provided in the proposals, adjustable fixed tilt equipment was selected for further study at ACCRS.

### Applicable Incentives

The primary incentives considered in ACCRS analyses were California Solar Initiative production-based incentives, as well as Federal Investment Tax Credit incentives, applicable for an ACBCI joint venture with tax investor partners.

CSI incentives were discussed previously, and are indicated to have a significant bearing on the economics of any ACCRS project. Due to the high level of interest in CA solar projects in SCE territory, the step-based incentives have been declining consistently throughout the period since ACBCI's DOE award was announced in August 2009. In April 2009, indicated CSI incentives were \$.50 and \$.39 for tribal and nontribal projects, and would have contributed roughly \$3.9 to \$5 million to the project. In late May 2010 when funding was awarded to ACBCI to pursue this feasibility study, CSI incentives were \$.32 and \$.22 for tribal and nontribal projects, and would have contributed roughly \$2.2 to \$3.2 million to the project. In September 2010, when final evaluation of ACCRS projects took place, CSI incentives were \$.09 and \$.05 for tribal and nontribal projects, essentially rendering the project uneconomic.

### ACCRS Project Economics and Ownership Structures

As a facility-scale project, offsetting ACCRS load, economics were evaluated in two ways. Based on current power prices, and projected price increases, estimated savings were projected, under two different SCE pricing scenarios, in addition to investment returns, calculated at the lowest price possible, while still meeting debt service requirements.

Three project ownership structures were considered in evaluation of a 1 MW adjustable flat plate system – a joint venture with tax investor structure, a tribal ownership structure, and a PPA structure. These were evaluated twice, based on two sets of vendor pricing. The summary information below in Figures ASPF – 5 to ASPF - 7 represent the latest ACCRS analysis, completed in fall 2010.

Figure ASPF – 5 ACCRS September 2010 Analysis – Joint Venture

## JV w/Tax Partner Case

(conservatively assumes \$.05 per kWh Incentive for first 5 years)

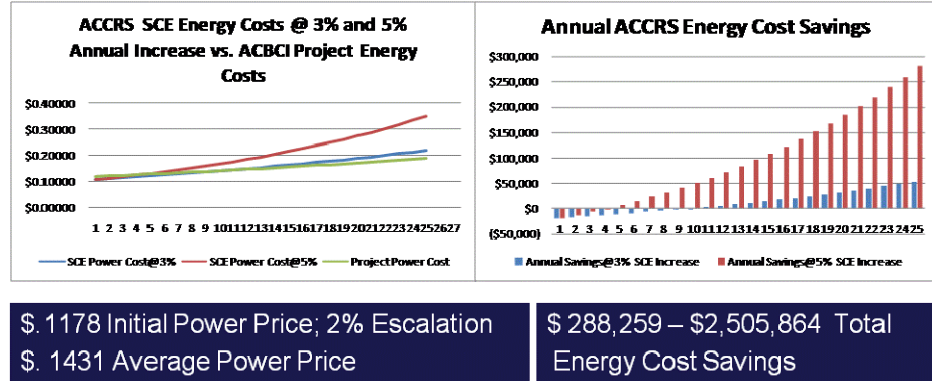


Figure ASPF – 6 ACCRS September 2010 Analysis – Tribal Ownership

## Tribal Ownership Case

(conservatively assumes \$.15 per kWh Incentive for first 5 years)

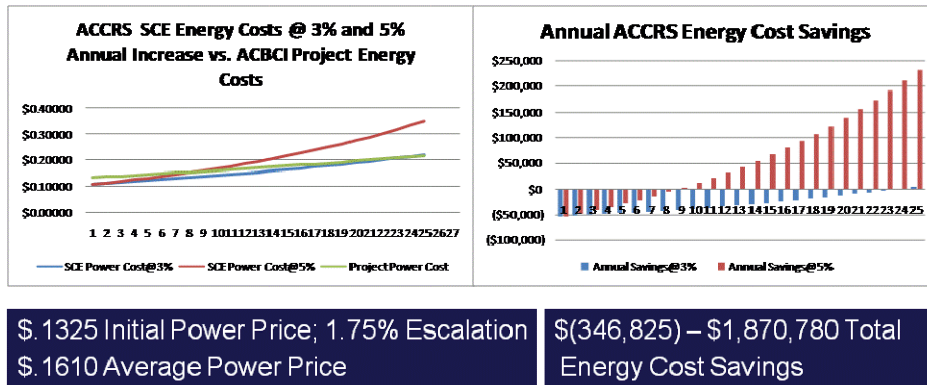


Figure ASPF – 7 ACCRS September 2010 Analysis – PPA Agreement

## PPA Agreement Case

(Assumes successful negotiation to 2% escalation; no significant change in incentives)

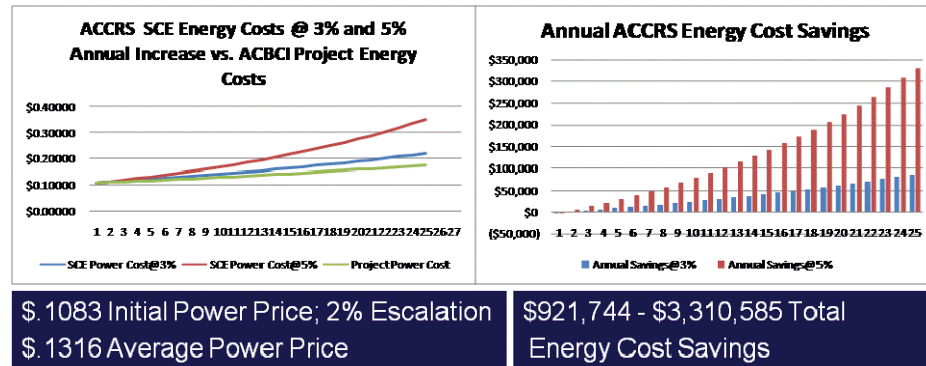


Figure ASPF - 8 below summarizes the critical economic considerations for an ACCRS project under the three project ownership structures illustrated above:

Figure ASPF – 8 ACCRS Project Economic Considerations

Project Structure	Average ACCRS Power Cost*	Total Projected ACCRS Savings @ 3% and 5% SCE Escalation*	Key Considerations
JV w/Tax Investor	\$.1336 - \$.1431	\$288,259 – \$2,971,740	-Assumes a tax flip model relatively untested for Tribes; minimal investment for ACBCI (\$5,000 - \$50,000) - Native-owned tax investor group interested in the project - BIA loan guarantee/interest subsidy available
Tribal Purchase	\$.1325 - \$.1343	\$(346,825) – \$3,138,168	- Requires ACBCI to provide equity @ 20% (~\$1 million) and finance entire project - BIA loan guarantee/interest subsidy available
PPA	\$.1316	\$921,744 - \$3,310,585	- Assumes proposal could be effectively negotiated @ 2% escalation rate - Developer builds, finances and owns - ACBCI could establish a more comprehensive relationship w/developer for Energy Efficiency improvements

### Conclusion

Key considerations for ACBCI project decisions included the level of project capital costs, long-term cost savings for ACCRS, and selection of a strong, stable, capable solar equipment provider with significant experience on similar installations, should ACBCI not wish to develop a project on its own. Based on these considerations and the comparisons above, ACBCI Tribal Council determined that it would be most interested in PPA options for an ACCRS project. Further discussions with firms offering PPAs were completed, but in the face of changing financial market conditions, and continued reductions in incentives, no PPA providers offering terms acceptable to ACBCI were available.



## TAP Solar Project Feasibility

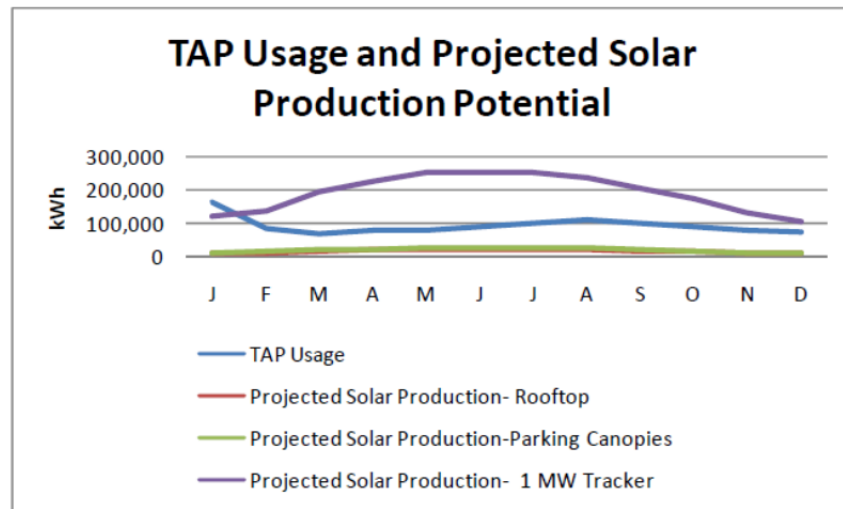
### Project Concepts Considered

The primary projects considered at TAP were small facility-scale efforts to offset TAP electric usage, and a range of larger projects for economic development purposes. As described previously, multiple facility-scale project options were considered although the cost of these projects, and declining CSI incentive levels resulted in minimal effort on these options. As a result, the primary focus of TAP evaluation was on considering larger commercial-scale projects and the various SCE programs these projects could be eligible for.

Figure TSPF - 1 below provides data on TAP monthly electric usage, indicating annual usage of 1.1 million kWh at an average cost of \$.153 per kWh and illustrates how much energy facility-scale TAP project options on available ACBCI – leased land would offset.

Figure TSPF – 1 TAP Usage vs. Potential Solar Project Production

## TAP Solar Production vs. Electric Usage



Figures TSPF – 2 to TSPF - 4 below are project designs developed for the facility-scale TAP projects initially evaluated.

Figure TSPF – 2 TAP Rooftop System Layout

## TAP Rooftop 93 kWac-cec System Layout

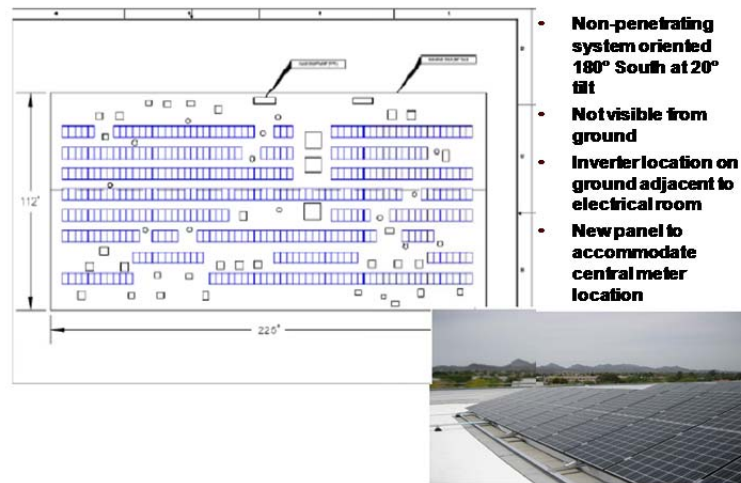


Figure TSPF – 3 TAP Parking Canopies System Layout

## TAP Parking Canopies 121 kWac-cec System Layout

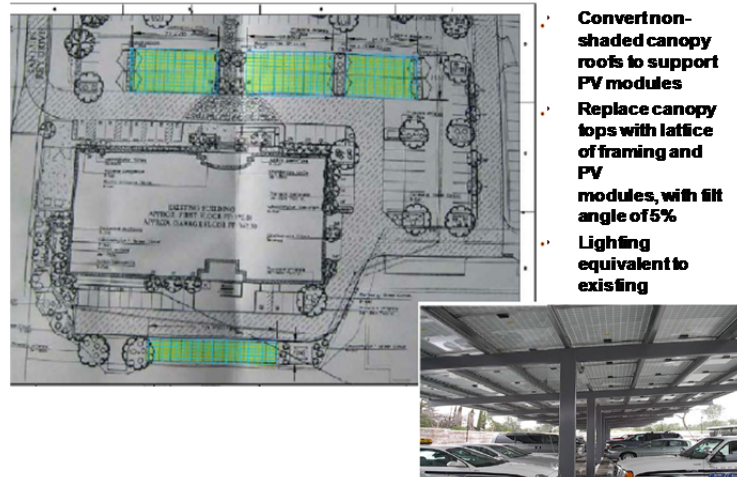
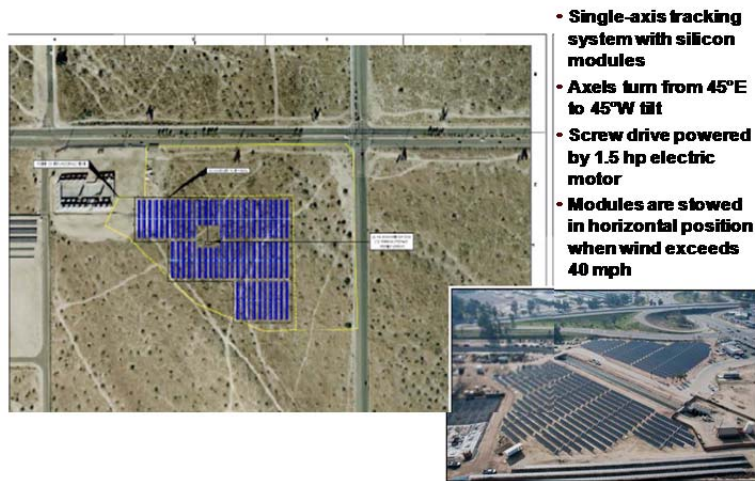


Figure TSPF – 4 TAP Ground Mount Layout

## TAP PV Tracking System Layout



### Leased/Allottee Land

Designs for commercial-scale products at TAP are included below in Figures TSPF – 5 to TSPF - 8. These include projects considered on ACBCI-leased lands, and on allottee lands which ACBCI has not leased.

Figure TSPF – 5 ACBCI Leased Land Ground Mount Solar Project Design



## Commercial-Scale: 5.1 MW DC/4.5 MW AC Fixed Tilt System



## Commercial-Scale: 4 MW DC/3.5 MW AC Adjustable Tilt System





Figure TSPF – 8 ACBCI Allottee Land Ground Mount Solar Project Design - Tracking

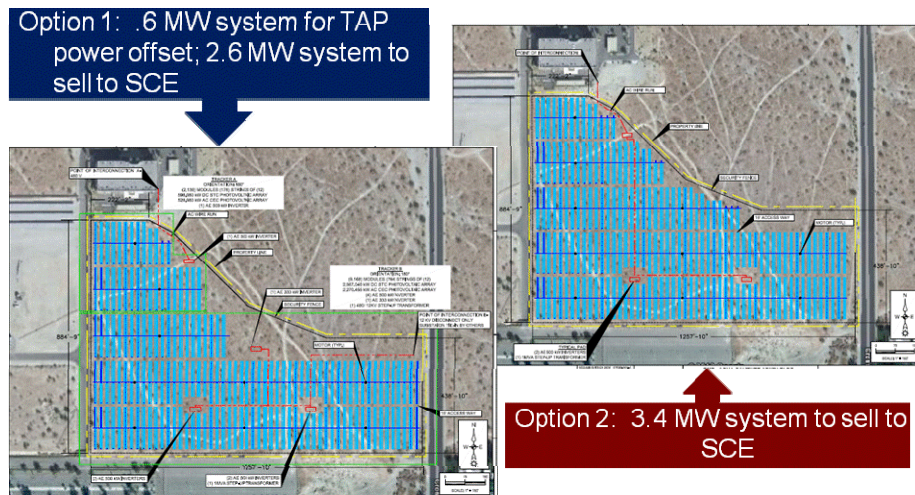
## Commercial-Scale: 3.4 MW DC/3.0 MW AC Single-Axis Tracking System



- **\$14.2 million equipment costs**
- **7.1 million production annually**
- **Highest O&M costs**
- **Usually best value if conditions permit**

The last two commercial-scale solar projects evaluated at TAP included two primary configurations, designed to potentially utilize existing SCE feed-in tariff programs. The two options are illustrated in Figure TSPF - 9 below and explained in further detail below.

Figure TSPF -9 Commercial-scale TAP Project Options Evaluated



### Relevant Incentives and Assumptions

Federal incentives considered for the project included use of Investment Tax Credit and Accelerated Depreciation (3 years). In addition, the state of California Property Tax Exclusion was also assumed.

Two SCE programs described previously were relevant to this analysis – the SPVP and the CREST programs.

The SPVP program is summarized below in Figure TSPF - 10.

*Figure TSPF – 10 Solar Photovoltaic Program Summary*

## **SPVP-IPP**

- Goal to develop 250 MW of solar PV
- 500 kW to 10 MW
- 20 agreement limit
- SCE owns RECs
- Requires experienced developer (2 projects completed)
- Solar PV Areas identified (TAP falls in Area 4) suggest minimal upgrades required for interconnection
- Price LCOE caps of \$.1925 and \$.26 per kWh prior to TOD factors; fixed escalators allowed; lower priced projects selected first
- SCE RFP for 50 MW in July 2010
- Rooftop projects preferred; non rooftop projects limited to 10%

The SCE's CREST program is summarized below in Figure TSPF - 11.

*Figure TSPF – 11 California Renewable Energy Small Tariff Program Summary*

## **California Renewable Energy Small Tariff (CREST)**

- Limit of 1.5 MW project size
- Two purchase options
  - Full Buy/Sell covers all generation
  - Excess Energy covers generation in excess of facility usage
- Contract limit of 20 years

Critical to understanding CREST programs options is analysis of the renewable energy pricing available under the program. Pricing is based on adopted Market Price Referents, which are summarized below in Figure TSPF - 12, which do not allow, and therefore assume, no escalation.

Figure TSPF - 12 CPUC Market Price Referents

**Adopted 2009 Market Price Referents  
(Nominal – dollars/kWh)**

On-Line Year	10 Term Years	15 Term Years	20 Term Years
2010	0.08448	0.09066	0.09674
2011	0.08843	0.09465	0.10098
2012	0.09208	0.09852	0.10507
2013	0.09543	0.10223	0.10898
2014	0.09872	0.10593	0.11286

Most relevant for an ACBCI solar project is the time-of-delivery factor, which has a significant bearing on project revenue projections, showing in table form in Figure TSPF - 13 below.

Figure TSPF – 13 CPUC Time-of-Delivery Periods and Factors

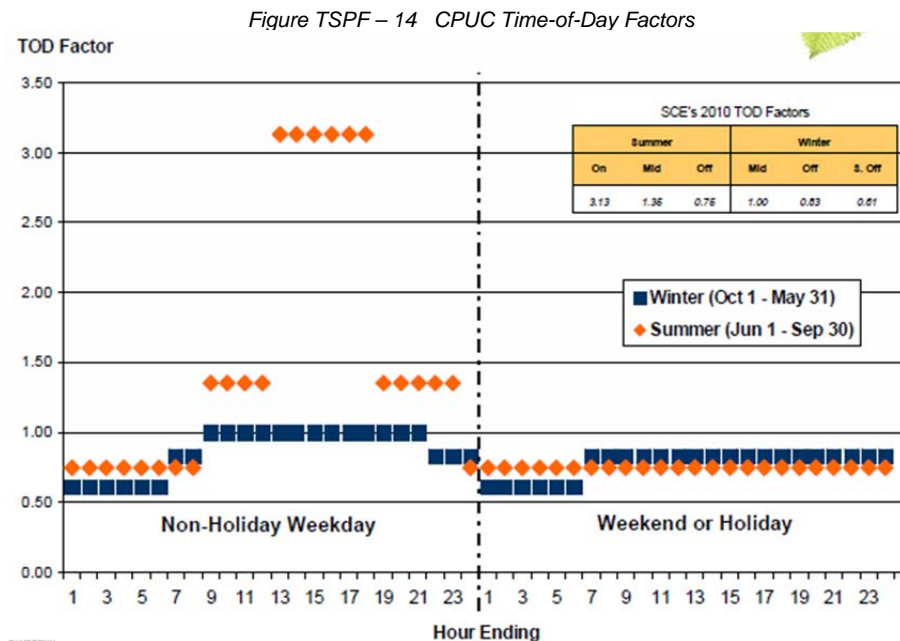
**2008 Time-of-Delivery (TOD) Periods and Factors**

Season	Period	Definition	Factor
Summer June - September	On-Peak	WDxH <sup>1</sup> , noon-6 pm	3.13
	Mid-Peak	WDxH, 8-noon, 6 - 11 pm	1.35
	Off-Peak	All other times	0.75
Winter October - May	Mid-Peak	WDxH, 8 am-9 pm	1.00
	Off-Peak	WDxH, 6-8 am, 9 pm -midnight; WE/H <sup>2</sup> 6 am - midnight	0.83
	Super-Off-Peak	Midnight-6 am	0.61

1/ WDxH is defined as weekdays except holidays

2/ WE/H is defined as weekends and holidays

These factors are illustrated graphically in Figure TSPF - 14 below.



The two SCE program options most relevant for a commercial-scale TAP solar project are compared below. These conclusions were drawn based on information available from SCE at the time of analysis.

*Figure TSPF – 15 SCE Program Option Comparison*

## SCE Program Options

### SPVP + CSI Program

- 2.6 MW limit on size of ground mount systems
- PPA pricing is competitive
- Standard interconnection study process (deposit; study time can be considerable)
- CSI incentives (\$.05) will apply to TAP production for five years

### CREST Program

- 1.5 MW AC limit on each CREST project
- Feed-in tariff prices for PPA based on time-of-day production, but no escalation in pricing
- Projects fall within fast-track interconnection study process
- No incentives apply

## TAP Economic Comparisons

Economic comparisons for both options are summarized below in Figures TSPF - 16 and TSPF - 17. In Option 1, the pricing for the .6 MW portion of the project to offset TAP electric costs was minimized in order for ACBCI to realize savings for the building system. The larger portion of the project for non-TAP use, reflected a projected initial price of \$.14 per kWh for energy and RECs, and 1.5% annual escalation rate. In Option 2, power production timing



assumed pricing of \$.15 per kWh, based on Market Price Referent and Time-of-Delivery factors.

Figure TSPF – 16 Option 1: TAP SPVP + CSI Program Economics

## Option 1: 2.6 MW DC + .6 MW DC Tracking PV TAP Project Economics

- Assumes \$500,000 grant for development costs
- Assumes \$.14 power/REC costs; 1.5% escalation
- Assumes tax equity is 95% of ITC + years 1-6 tax benefit/liability
- Insurance costs estimated at \$80,000 annually
- No O&M costs per proposal
- Average cash flow in years 1-20 of \$212,929

Measure	Units	Value
<b>Plant Characteristics</b>		
Plant Capacity	MW AC(CEC)	2.8
Total AC electricity production	kWh/yr	6,684,438
<b>Plant Costs</b>		
Total Project Costs	\$	\$ 13,706,952
Total Overnight Capital Costs	\$	\$ 12,702,811
\$/kW	\$	\$ 4,538
Project and Financing Related Expenses	\$	\$ 1,004,141
Total Project Costs net of Grant	\$	\$ 13,206,952
<b>Funding Sources</b> (Working Capital and Initial Operating Expenses excluded in % calculation)		
ITC Equity (@99.99%)	\$	\$ 4,120,877
ACBCI Contribution	\$	\$ 13,207
Senior Debt - Direct to Project	\$	\$ 8,932,868
<b>Finance</b>		
ACBCI Debt interest rate	%	5.0%
Equity + ACBCI Contribution + Govt. Grant	\$	\$ 4,634,084
Total investment	\$	\$ 13,706,952
Minimum Debt Payment Coverage		116%
Inflation Rate	%	2%
<b>Incentives</b>		
Investment Tax Credit Rate	%	30%
CSI Incentive	\$/kWh	\$ 0.050
<b>Project Returns</b>		
Project Net Cash Flow	\$	\$3,632,984
Project NPV	\$	\$ 1,519,594

Figure TSPF – 17 Option 2: TAP CREST Program Economics

## Option 2: 3.4 MW DC Tracking PV TAP Project Economics

- Assumes \$500,000 grant for development costs
- Assumes \$.15 power/REC prices per CREST for 2012 contract for projected time-of-delivery pricing; no escalation
- Assumes tax equity is 95% of ITC + years 1-6 tax benefit/liability
- Insurance costs estimated at \$80,000 annually
- No O&M costs, per proposal
- Average cash flow in years 1-20 of \$127,951

Measure	Units	Value
<b>Plant Characteristics</b>		
Plant Capacity	MW AC(CEC)	3.4
Total AC electricity production	kWh/yr	7,171,184
<b>Plant Costs</b>		
Total Project Costs	\$	\$ 15,762,491
Total Overnight Capital Costs	\$	\$ 14,774,150
\$/kW	\$	\$ 4,345
Project Related Expenses	\$	\$ 988,341
Total Project Costs net of Grant	\$	\$ 15,262,491
<b>Funding Sources</b> (Working Capital excluded in % calculation)		
ITC Equity (@99.99%)	\$	\$ 5,006,749
ACBCI Contribution	\$	\$ 15,262
Senior Debt - Direct to Project	\$	\$ 10,100,480
<b>Finance</b>		
ACBCI Debt interest rate	%	5.0%
Equity + ACBCI Contribution + Govt. Grant	\$	\$ 5,522,011
Total investment	\$	\$ 15,762,491
Minimum Debt Payment Coverage		108%
Inflation Rate	%	2%
<b>Incentives</b>		
Investment Tax Credit	%	30%
CSI Incentive	\$/kWh	\$ -
<b>Project Returns</b>		
Project Net Cash Flow	\$	\$1,571,714
Project NPV	\$	\$ 418,674

A comparison of economics under both Option 1 and Option 2 is shown below in Figure TSPF - 18.

Figure TSPF – 18 Comparison of Option 1 and Option 2 Economics

Project Parameter	Option 1: 2.6 MW SPVP +.6 TAP	Option 2: 3.4 MW CREST
Total Project Costs	\$13,706,952	\$15,762,491
Initial Project Production	6,684,438 kWh	7,171,184 kWh
Grant Funding Assumed	\$500,000	\$500,000
Total TAP Energy Cost Savings	Average annual savings of \$109,704 if SCE escalation is 3%	0
Average Project Cash Flow	\$212,929	\$127,951
Project Net Cash Flow	\$3,632,984	\$1,571,714
Project Net Present Value	\$1,519,594	\$418,674

### Considered Project Ownership Structures

Several ownership structures were considered for the TAP project options. These are summarized and compared below in Figure TSPF - 19.

Figure TSPF – 19 TAP Ownership Project Options and Impacts

Ownership	Developer	Available Funding/Incentives	ACBCI Returns/Financial Impacts
ACBCI	ACBCI Team	- Potential grant funding - No tax incentives - Tribal Economic Development Bonds	- Greatest ACBCI control - ACBCI risk re: out-of-pocket development costs unless grant-funded - Higher debt/interest costs without tax incentives
ACBCI/Tax Investor	ACBCI Team	- Potential grant funding - Tax incentives available - Traditional financing; possible BIA loan guarantee	- Greatest ACBCI control - ACBCI risk re: out-of-pocket development costs unless grant-funded - Lower debt/interest costs with tax incentives
ACBCI/Tax Investor	ACBCI/ Development Partner	- Potential grant funding - Tax incentives available - Traditional financing; possible BIA loan guarantee	- Less ACBCI control - Lower risk depending on agreement w/developer; grant funding - ACBCI would likely pay development fee upon completion
ACBCI/ Tax Investor/ Landowner	ACBCI/ Landowner	- Potential grant funding - Tax incentives may be available - Traditional financing; possible BIA loan guarantee	- ACBCI/Landowner risk of losing development costs - Loss of ACBCI control - Lower ACBCI returns if ownership is shared

Despite SCE incentives and pricing, based on the existing situation with the allottee owner, and likely profit-sharing requirements, ACBCI Council determined that neither TAP project should be considered for further study.

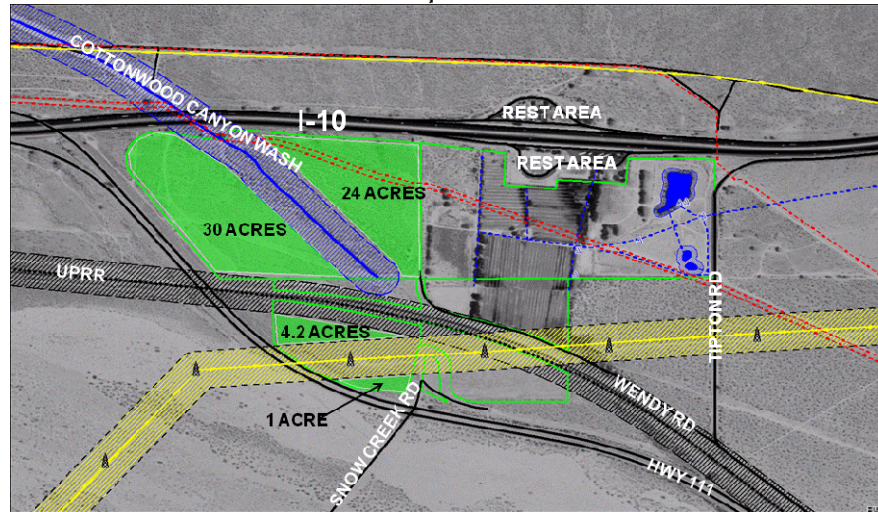
## Whitewater Ranch Solar Project Feasibility

### Project Concepts Considered

A total of 125 acres was identified for possible WWR development. With other opportunities available for development on I-10 adjacent acreage, initial studies focused on solar project concepts on the southern portion of the WWR trust land only as shown in Figure WRSPF - 1.

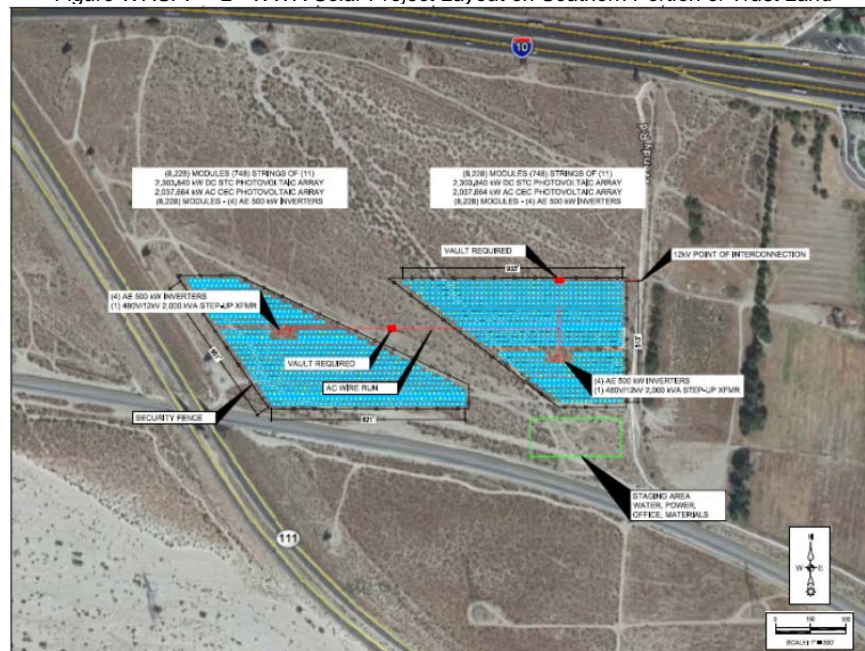
Figure WRSPF – 1 Whitewater Ranch Trust Land

### WHITEWATER RANCH PROJECT AREAS, TRUST LAND ONLY



An assumed project layout for a 4.6 MW layout, utilizing only the southern portions of the WWR trust land would be comparable in size to that shown below in Figure WRSPF - 2.

Figure WRSPF – 2 WWR Solar Project Layout on Southern Portion of Trust Land



This configuration would result in production per the table in Figure WRSPF - 3 below.

*Figure WRSPF – 3 WWR Solar Project Production Projection*

Size		kWh	
kWac-cc	kW-DC	Yr-1	kWh/kW-DC*
4,075.33	4,607.68	8,006,437	1,737

Upon further discussion, it was determined that a larger project of 10 MW should be analyzed for the WWR site, and was extrapolated from initial pricing and production projections. Under this scenario, initial solar production is projected to be 20.2 million kWh initially, averaging 19.2 million kWh over a 20-year project life.

### **Relevant Incentives and Assumptions**

Federal incentives considered for the project included use of Investment Tax Credit and Accelerated Depreciation (3 years), and use of New Market Tax Credits. In addition, the state of California Property Tax Exclusion was also assumed. No state incentive programs were assumed for this analysis other than the new California Reverse Auction Mechanism (RAM), described previously. Pricing is competitive in the RAM program, and the pricing assumed in this financial model is lower than what would be assumed using the Market Price Referent.

Ownership assumed in this case is an ACBCI partnership with a tax investor. ACBCI is assumed to buy out the investor in year 8 for the principal balance (less sinking fund payments during years 1-7) plus \$1 million. Depending on tax investor requirements and development agreements, this may or may not represent an accurate indicator of project value.

### **WWR Economic Comparisons**

Project economics and results are summarized below in Figure WRSPF - 4.



Figure WRSPF – 4 WWR 10 MW Solar Project Economics

Measure	Units	Value
<b>Plant Characteristics</b>		
Plant Capacity	MW AC(CEC)	10.0
Initial AC electricity production	kWh/yr	20,157,258
Average annual electricity production	kWh/yr	19,227,911
Levelized Cost of Energy (LCOE)	\$	0.0890
<b>Plant Costs</b>		
Solar Project Costs (incl. expenses)	\$	45,222,356
Total Overnight Capital Costs	\$	\$ 40,495,883
Project Related Expenses	\$	\$ 4,726,473
Total Project Costs	\$	\$ 45,222,356
<b>Funding Sources</b>		
Tax Equity (@99.99%)	\$	\$ 13,966,632
Managing Member Contribution (.01%)	\$	\$ 4,522
Senior Debt - Direct to Project	\$	\$ -
NMTC Investor - (NMTC Loan B)	\$	\$ 8,125,313
Leverage Loan from Lender (NMTC Loan A)	\$	\$ 22,625,890
Govt grant	\$	\$ 500,000
Total Funding including Grant	\$	\$ 45,222,356
<b>Finance</b>		
Tax Equity	%	32.0%
Project Debt+NMTCs	%	68.0%
Working Capital Debt Rate	%	5.875%
NMTC Loan A Rate		4.875%
Senior Debt - Direct to Project Rate	%	5.875%
ACBCI Debt interest rate	%	5.9%
Total Debt (includes working capital)	\$	\$ 22,625,890
Equity + Govt. Grant + NMTC Equity	\$	\$ 22,591,944
Total investment including grant	\$	\$ 45,222,356
Tribal Buyout percentage	%	33%
Minimum Debt Coverage		140%
<b>Incentives</b>		
Production Tax Credit (\$/kWh) (10 yrs)	\$	\$ -
Investment Tax Credit	%	30%
New Market Tax Credit	%	39%
<b>Electricity Selling Price</b>		
First year solar selling price	\$/kWh	\$ 0.14250
Solar Price Escalation Rate	%	0.00%
<b>ACBCI Returns</b>		
ACBCI Equity Cash Flow	\$	\$ 8,648,367
ACBCI Equity NPV	\$	\$ 4,332,509
ACBCI Total Cash Flow	\$	\$ 9,539,717
ACBCI Total Cash Flow NPV	\$	\$ 5,034,920
ACBCI Lease Payments (included in total cash flow)	\$	\$891,349

Project economics for this scenario appear positive and should be analyzed further. However, since a project of this magnitude would like require a development partner for ACBCI, the economics would be subject to development partner ownership requirements.

One important option to consider for WWR is possible development of a joint wind/solar project at the site. Given the extraordinary wind resources in the San Gorgonio Pass, where WWR is located, ACBCI Staff and Council intend to evaluate this option's impacts on levelized costs and energy, and returns to ACBCI as compared to the solar-only project considered in this study. However, DOE was unwilling to allow ACBCI to consider wind in this feasibility study, likely necessitating a separate wind/solar feasibility study to evaluate that option.

## Conclusions

This study evaluated a broad range of solar project opportunities for ACBCI, including Facility- Scale and Commercial-Scale solar projects. Numerous locations were evaluated as potential solar project sites. The high-level review of all of the possible alternatives identified potentially feasible projects. Review of ACBCI solar resources, and available solar technologies suggested different equipment configurations for ACBCI solar projects depending on the site and anticipated wind conditions. Assuming partnership with a tax investor, numerous incentives, grants and financing tools are available to ACBCI, depending on the project structure selected.

ACBCI has multiple opportunities available as it determines how best to leverage its resources. Its land base is small, and competing uses for land resources may be ACBCI's most significant challenge as its leadership considers its communities needs.

Commercial-Scale solar projects require significant land, depending on project size, and a more complex financial structure that can utilize all available tax benefits, including New Market Tax Credits. Trusted partners will be essential to ACBCI, and the effort to identify partners can be done well in advance of project development activities. A smaller project effort with a partner could allow leadership to become comfortable with its potential partners, while providing sustainable benefits to the ACBCI community.

A critical option to consider for WWR is development of a joint wind/solar project at the site. Given the extraordinary wind resources in the San Gorgonio Pass, where WWR is located, a joint wind/solar option should be evaluated. Initial comparisons of a wind/solar project at WWR vs. a solar-only project suggest, for the limited trust land available, ACBCI would benefit from, at a minimum:

- Greater production, and extended hours of power production
- Lower project costs
- Lower levelized costs of energy
- Stronger financial options
- Potentially lower PPA prices
- Greater project returns

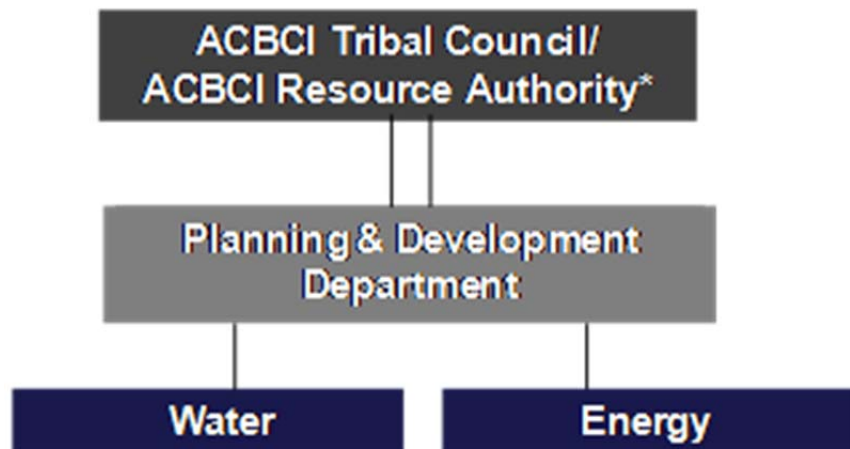
However, DOE was unwilling to allow ACBCI to consider wind in this feasibility study, likely necessitating a separate wind/solar feasibility study effort. At this time, ACBCI intends to pursue funding from DOE for such a study, which would include funding requests for installation of a meteorological tower to collect wind data, further environmental studies, and development partner identification and negotiations.

## Project Team

### ACBCI

The project was managed by ACBCI Economic Development Project Manager Mark Dansby, on behalf of the ACBCI Water and Resource Authority (WERA). Organizationally, the ACBCI Council has direct oversight over WERA as indicated in Figure PT - 1 below.

Figure PT – 1 ACBCI Water and Energy Resource Authority Organization



\*ACBCI Water and Resource Authority oversight is provided by the ACBCI Tribal Council

ACBCI WERA representatives include Todd Hooks, Economic Development Director; Mark Dansby, Economic Development Project Manager, Margaret Park, Director of Planning and Natural Resources, and Michelle Carr, In-House Counsel. ACBCI retained the services of Red Mountain Energy Partners to perform the majority of study tasks.

**Todd Hooks, Economic Development Director**, came to the Tribal Planning and Development Office from the City of San Diego where he spent 5 years as the Redevelopment Deputy Director. His job with the Tribe involves pursuing business and real estate development opportunities that benefit the Tribe and Tribal members. He has directed all energy-related efforts for ACBCI, and represented ACBCI on the SWTEC Board of Advisors. Mr. Hooks earned a B.A. from Harvard University and a Masters in Educational Administration from UCLA.

**Mark Dansby, Economic Development Project Manager**, has been with ACBCI for 6 years. He is responsible for the ongoing project management of various economic development activities for the Tribe under the direction of the Tribe's Economic Development Director. Development activities include such project areas as real estate acquisition and development, energy program development and for sale housing development. Mark has managed ACBCI energy-related activities for 5 years, leading efforts on utility study and

implementation, and WAPA allocation studies. Mr. Dansby earned a BS from the University of California, Los Angeles.

**Margaret Park, Director of Planning and Natural Resources**, is responsible for management of a 40-person team of professionals involved in land use issues across the Reservation encompassing planning, water resources, habitat conservation, geospatial information services as well as management of the Tribe's parks including the Indian Canyons Heritage Park and Tahquitz Canyon. Margaret has been involved in all energy implementation activities, and directed efforts on implementation of the Indian Canyons Trading Post solar PV system. She received her BA in Social Ecology from the University of California, Irvine and her MBA from Claremont Graduate University.

**Michelle Carr, In-House Counsel**, coordinates all legal matters of the Tribe, working with outside specialized counsel. She represent the Tribe on Indian Child Welfare matters in state court, and revises and drafts Tribal law, including Resolutions, Ordinances, and Codes. Ms. Carr has been involved in all utility formation activities. Prior to joining ACBCI, she was with Monteau & Peebles, and with the US State of Court of Appeals for the Eleventh Circuit. Ms. Carr earned a BA from Gonzaga University, and a JD from the University of Oklahoma College of Law.

## **Red Mountain Tribal Energy LLC DBA Red Mountain Energy Partners**

### **Co-Founders**

Carolyn Stewart, Managing Partner  
Tracey LeBeau<sup>1</sup>, Partner

*Red Mountain* is a mission-driven technical consultancy and focuses on providing energy advisory, energy strategy development, energy project implementation, and energy planning services in support of tribal renewable energy projects from its offices in Santa Fe, NM and Phoenix, AZ. *Red Mountain* has considerable experience in working on Tribal energy projects across the U.S., including the Southwest, Great Plains, Northeast, Midwest, and California and brings over 40 years of experience in energy strategy development, energy project origination and development, energy operations, finance and economic development planning.

Having built a reputation for being dependable and resourceful energy experts, *Red Mountain* is focused and committed to its clients' energy priorities while being highly sensitive to tribal cultures and traditions. *Red Mountain* works hard to build teams that both respect community concerns and priorities, and have the technical capabilities needed to analyze opportunities and potential impediments.

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<sup>1</sup> Tracey A. LeBeau (Cheyenne River Sioux) initially held majority ownership of Red Mountain Energy Partners. On December 16, 2010, it was announced at the White House Tribal Nations Summit that Red Mountain Energy Partners' co-founder Tracey A. LeBeau would be joining the Obama Administration. Tracey accepted an appointment to lead a newly created Office of Indian Energy Policy and Programs, which is housed in the Undersecretary's Office in the Department of Energy. Pursuant to federal rules, Tracey divested her interests in Red Mountain. She began her position at DOE in January 2011.



*Red Mountain* has no ties to a particular technology or vendor, and provides recommendations based solely on the basis of its research, analysis and understanding of community culture and traditions. ***Red Mountain is unique in its approach in that it functions as an independent, objective advisor for Tribes, and does not represent equipment providers or have a financial interest in energy equipment sales.***

Red Mountain is committed to Indian Energy and its role in Tribal economic development, diversification and self-sufficiency, and focuses not just on the delivery of technical services, but also places a high priority on building Tribal knowledge and confidence in energy matters throughout its work with Tribes.

**Carolyn Stewart, Managing Partner, Owner - Project Manager.** Carolyn Stewart brings more than thirty years of energy industry and consulting experience in conventional and renewable energy development, and gas distribution and electric distribution operations. Today, Carolyn focuses primarily on energy planning, renewable energy feasibility studies and development support, Tribal energy operations, utility formation, and energy strategy development for Tribes. Carolyn has served as the project officer or project manager for all Red Mountain renewable analysis projects since its inception. Prior to co-founding Red Mountain in 2005, Carolyn headed Navigant Consulting, Inc.'s energy office in Phoenix, and its tribal energy activities. Prior to joining Navigant Consulting, she held various financial, management and operating positions at Nicor Gas over a 20+ year career. She has worked with numerous Tribes and has considerable knowledge of Southwest utilities, Federal, State and utility incentives, renewable technologies, transmission systems, and generation resources, as well as financing strategies for tribal energy projects. *B.S., Finance, University of Illinois; M.B.A., University of Chicago, Graduate School of Business*

## Glossary

**Electric Demand** – The rate at which electricity is delivered to a system at a given instant or averaged over a specified period of time

**Development Equity** – Capital (cash and other capital investment) in the ownership of property, in which the investor shares in gains or losses on the property

**Irradiance** – The direct, diffuse, and reflected solar radiation that strikes a surface

**Kilowatt (kW)** – A standard unit of electrical power equal to 1000 watts

**Kilowatt Hour (kWh)** – A unit or measure of electricity supply or consumption of 1000 Watts over the period of one hour

**Megawatt (MW)** - One thousand kilowatts, or one million watts; standard measure of electric power plant generating capacity

**Megawatt Hour (MWh)** – One thousand kilowatt-hours or one million watt-hours

**New Market Tax Credits (NMTCs)** – Equity investments in a specified Community Development Entity that receives tax credits over a seven-year period

**Project Debt** – Long-term financing mechanism requiring regular interest and principal payments

**Renewable Energy Credits (RECs)** – Premium paid for “green” or renewable energy; can be sold in advance of operations

**Solar Radiation** – General term for the visible and near visible electromagnetic radiation that is emitted by the sun

**Tax Equity** – Capital investment in the ownership of property, in which the investor shares in gains or losses on the property, but primarily receives tax benefits