

**ATERWYNNE LLP**  
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**Tribal Business Development**  
**Renewable Energy Case Study**

*Shandiin Solar PV Project – New Mexico*

**Douglas C. MacCourt**  
**Ater Wynne LLP**

*Tribal Tax & Business Development*  
*November 10, 2011 – Portland, Oregon*  
*The Seminar Group*

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**Project Team**



RBC Capital Markets®

- To'Hajiilee Economic Development Inc. (TEDI), Lead Developer and Landholder
- SunPower Corporation, Co-Developer & Technology Provider
- RBC Capital Markets, Project Financing Agent
- Rural Community Innovations
- First American Financial Advisors
- Ater Wynne LLP, Project Legal Counsel
- Janov Law Offices, Legal Council for TEDI

JANOV LAW OFFICES, P.C.

## **Cañoncito Band of Navajo Trust Lands**

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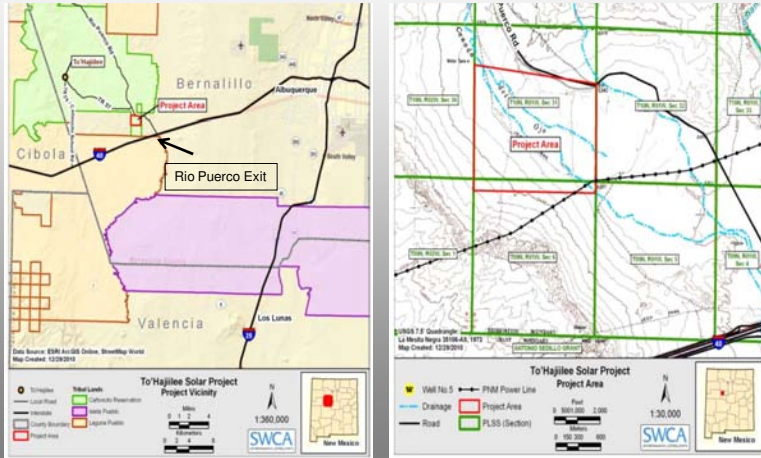


## **Project Details**

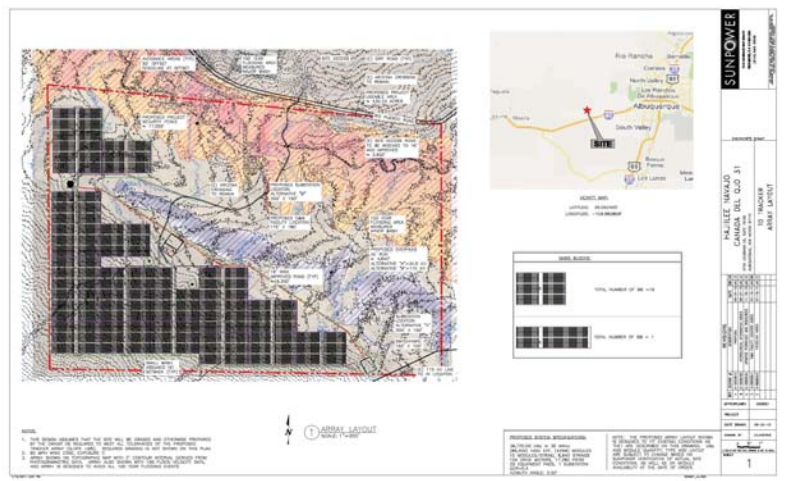
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- **30 MW project located on 195 acres in western Bernalillo County – 1.8 miles NW of the intersection of Interstate 40 and Rio Puerco Road on CBN trust land**
- **Twenty 1.5 MW blocks, each approximately 7.2 acres. Each block consists of 18 rows of forty 425 watt solar panels**
- **Each block includes inverters and transformers stepping up to 34.5 kV are located on concrete pads with a 12'X 24' footprint**
- **The medium voltage circuits carry power underground to a proposed substation located next to the PNM 115-kV Bluewater transmission line**
- **A 30,000 square foot substation will include a switchyard, main transformer and a control room to house communication and equipment necessary to interconnect to the PNM system**

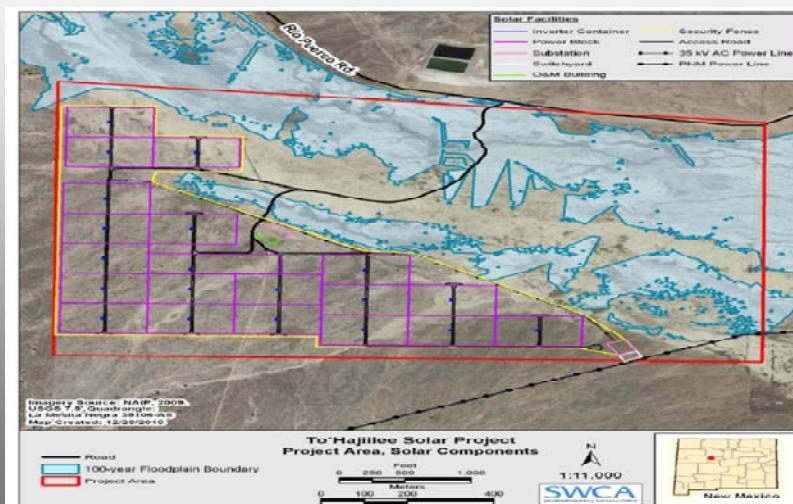
## Shandiin Solar Project Location



## Shandiin Solar Project Layout



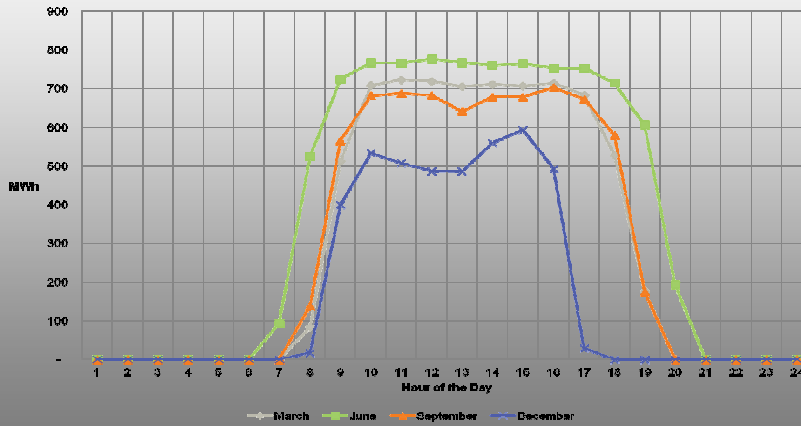
## Shandiin Solar Components Layout



## Shandiin Project Development Schedule

Date	Milestones
• 5/27/2011	• Finding of No Significant Impact
• 5/19/2011	• Interconnection Application
• 9/21/2011	• System Impact Report
• 1/24/2012	• Facilities Study
• 3/24/2012	• Large Generator Interconnection Agreement
• 6/22/2012	• Complete Financing
• 6/30/2012	• Register Project with WREGIS
• 8/21/2012	• Begin Construction
• 12/19/2012	• Required Network Upgrades
• 4/18/2013	• Begin Final Project Commissioning
• 5/18/2013	• Commercial Operation Date

### Average Daily Output of Shandiin Facility



### First Year Output of Shandiin Solar

Time Range	Daylight Hours	Gh (kWh/m <sup>2</sup> /day)	AC Energy (kWh)
Jan	308.0	3.13	4,697,983
Feb	301.1	4.17	5,360,671
Mar	366.1	5.32	7,199,677
Apr	387.2	6.73	8,167,512
May	428.9	7.55	8,893,741
Jun	429.5	8.19	9,175,338
Jul	437.5	7.61	8,710,780
Aug	413.3	6.67	8,031,983
Sep	368.8	5.80	7,211,531
Oct	347.0	4.48	6,077,404
Nov	306.5	3.56	4,959,542
Dec	300.5	3.07	4,700,477
<b>Year 1</b>	<b>4,394.3</b>	<b>5.53</b>	<b>83,186,639</b>
<b>Shandiin Simulation</b>	<b>4,394.3</b>	<b>5.53</b>	<b>83,186,639</b>

Itemized Annual Energy Losses	%
Shading Loss	0.00
Soiling Loss	-1.00
Angle-of-Incidence Loss	-0.72
Air Mass Adjustment	-0.13
Operating Temperature Adjustment	-5.01
Efficiency vs. Irradiance Adjustment	-0.75
Module Flash Adjustment	0.23
Module Mismatch Loss	-1.00
DC Wiring Loss	-1.50
Inverter DC Limit Loss	0.00
Inverter Efficiency Adjustment	-1.83
Inverter AC-Capacity Clipping Loss	-1.99
Transformer Efficiency Loss (Day)	-1.40
Transformer Efficiency Loss (Night)	-0.30
AC Wiring Loss	-0.90
Site Shading Loss	0.00
Auxiliary Load Loss	-0.30
<b>Annual Availability</b>	<b>98.00</b>

## **Shandiin Project Pricing Options Model**

- **Three alternative offerings available**
  - **Direct purchase of project upon commercial operation.**
  - **25 year PPA based on utility credit rating**
  - **25 year PPA based on credit enhancement through a federal government 20 year direct loan or loan guarantees**
- **Turnkey project sale/100% utility ownership**
  - **Sale price upon commercial operation - \$129,000,000.**
  - **Annual O&M at \$800,000 for first year escalating at 3% annually**
- **25 year PPA based on utility's existing credit rating.**
  - **First year PPA rate of \$91.00/MWh, escalating at \$1.00/MWh per year**
- **Pricing does not include seller's costs associated with any required transmission upgrades**

## **Options – Hybrid PPA & Tax Exempt Bond**

- **Economics of transaction may be enhanced by the prepayment of the PPA by the load serving municipality utility selling tax exempt bonds to prepay its obligations**
  - **2005 Energy Act permits load serving municipal utilities to sell tax exempt bonds to prepay an electricity PPA or a natural gas delivery contract**
  - **Ownership would have to reside in a private entity. Pre-pay bonds would not invalidate ITCs or depreciation**
    - **Structure will permit 30% to 40% of project costs to be offset by Section 1603 Cash Grant or ITC and monetization of depreciation to a tax equity investor**



## **PPA and Tax Exempt Bond, cont.**

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- **Municipal utility sells tax exempt bonds to prepay PPA with private energy company**
  - **Prepayment amount is calculated by present valuing the cash flows of the PPA using a discount factor somewhere between the private company's borrowing rate and the Municipal Utility's tax exempt borrowing rate**
- **Since there is a tangible asset (renewable energy project), the prepayment of the PPA may be secured by a first lien position on the asset and the power produced**

## **SunPower Utility-Scale Projects Around the World**

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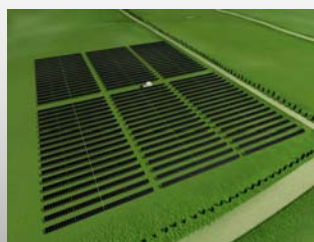


## SunPower Tracking Technology



- Significant global applications allow for performance verification
- Horizontal single-axis tracking follows the sun east to west
- Tracking produces approx. 25% more energy than fixed-tilt
- Software eliminates row-to-row shading in morning and evening
- Linked rows minimizes moving parts and power requirements

## SunPower Oasis Power Block



- The SunPower Oasis 1.5 MW power block delivers a high capacity factor in a small amount of land
- Pre-manufactured components install quickly
- Track record of reliable performance



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## **For More Information**

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