



# Renewable Auction Mechanism Request for Offers

## 2011 Solicitation

Bidders' Conference

October 28, 2011

# Objective

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- The purpose of this conference is to assist participants who may submit Offers to PG&E's 2011 Renewable Auction Mechanism (RAM) RFO or future RAM RFOs
- We will not discuss other procurement programs such as:
  - 2011 RPS Solicitation
  - PG&E's Solar Photovoltaic PPA RFO
  - Utility Owned PV Program RFO
  - Feed-in-Tariff (FIT)
  - Net Metering
  - California Solar Initiative (CSI) program

# Agenda

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## Topics

- Introduction
- Eligibility Requirements
- PPA Overview
- Evaluation Methodology
- Offer Submittal Process
- Map and Interconnection Process
- Q & A

## Presenter

Sandy Burns

Sandy Burns

Sandy Burns

Sandy Burns

Sandy Burns & Kelvin Yip

John Carruthers & William Chung

Team

# Q&A Questions Instructions

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- Questions will be answered at the end of the conference
- Use the index cards, one card per topic, for questions
- Cards should be passed over to the ends of each row. Participants on the web or on the phone should email their questions to the RAMRFO mailbox at [RAMRFO@pge.com](mailto:RAMRFO@pge.com)
- After the Conference, PG&E will compile and post a Q&A document on PG&E's website at: [www.pge.com/rfo/RAM](http://www.pge.com/rfo/RAM)
  - Any question that was not answered during the conference will be posted on PG&E's website along with the recorded presentation

# Document Conflicts

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- This presentation is intended to be a summary level discussion of the information and requirements established in the RFO materials (it does not include all of the detailed information in the RFO materials)
- To the extent that there are any inconsistencies between the information provided in this presentation and the requirements in the RFO materials, the RFO materials shall govern

# Public Disclosure of Information

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- By participating in the RAM RFO, each Participant acknowledges and expressly authorizes PG&E to publicly disclose the following information as required by the Commission RAM Decision:
  - names of the companies that submitted Offers into PG&E’s RAM RFO
  - number of Offers received by each company
  - number of Offers received and shortlisted by PG&E
  - project size
  - participating technologies
  - the number of Projects which passed the project viability screen
  - location of bids by county level shown in a map format; and
  - the progression of each executed contract’s project development milestones
- Every six months PG&E will provide the CPUC an update on a project’s progress toward the achievement of project development milestones

# Procurement Targets for RAM RFO Solicitation

- PG&E's overall procurement target is 420.9 MW, to be procured in 4 RFOs, to be conducted every six months
- 2011 RFO procurement target is 105.2 MW

Bucket	Example	Total MW
Baseload	Biomass, Geothermal	35
As-Available non-peaking	Wind	35
As-Available peaking	Solar	35
Total		105

- PG&E may procure up to 20 MW or less in each product category, but no more than 125.2 MW in total
- If the 2011 RFO results in the execution of less or greater than 105.2 MW of PPAs, the MW target will be adjusted in the next solicitation

# RFO Schedule

<b>Date/Time</b>	<b>Event</b>
October 28	Bidders' Conference
November 1	PG&E starts accepting Offers
November 15 by 12:00 P.M. PPT	Deadline for Participants to submit Offers
January 31, 2012	PG&E notifies Selected Participants and any Waitlisted Participants
February 10	Submittal of signed PPA and required documentation by Selected Participants. Waitlisted Participants notify PG&E of their intent to remain on waitlist
February 15	PG&E notifies Waitlisted Participants if they have been selected
February 27 no later than 1:00 P.M. PPT	Selected Participants wishing to continue participating in RAM RFO submit signed PPA and required documentation
March 12	PG&E executes RAM PPAs
April 27	PG&E files Advice Letter for CPUC approval of RAM PPAs



# Independent Evaluator (IE)

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- **Primary role of the IE is to:**
  - Monitor RFO processes to ensure fair and equal treatment of all potential counterparties
  - Monitor evaluation processes to ensure PG&E has implemented methodology as described and that Offers are treated consistently
  - Report on RFO process and proposed transactions to CPUC when filed for CPUC approval
- The IE may review all proposal data and communications with Participants
- 2011 RAM RFO IE is Charles Adkins of Ventyx

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# Eligibility Requirements

# Eligibility Requirements

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- Open to all RPS-eligible resources with a contract or nameplate capacity that is at least 1 MW and not greater than 20 MW
- Aggregation of facilities to achieve the 1 MW minimum threshold is allowed providing each facility is at least 500 kW and all facilities interconnect within a single PNode<sup>1</sup>
- Interconnection must be within the electric distribution or transmission system of PG&E, SCE or SDG&E
- Must have an interconnection study: System Impact Study, Phase 1 Study, or documentation that the Project has passed the WDT or CAISO Fast Track screens at time of offer submission
  - Study may be for a full capacity deliverability resource, or energy-only

<sup>1</sup>The CAISO Tariff defines Pricing Node (“PNode”) as “[a] single network Node or subset of network Nodes where a physical injection or withdrawal is modeled and for which a Locational Marginal Price (“LMP”) is calculated and used for financial settlements.”

# Eligibility Requirements (continued)

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- Site control must be demonstrated for entire delivery term of PPA
- Commercial operation must be scheduled within 18 months following Commission approval of the PPA; assuming April, 2012 Advice Filing and May 2012 CPUC approval, commercial operation must occur by November 2013, with 6 month delay allowed until May 2014
- Developer must have previously completed or begun construction of at least one other project of similar technology and capacity
- Project must employ technology currently in use at a minimum of two operating facilities of similar capacity worldwide
- Must not have received funds in the California Solar Initiative (CSI) or Net Energy Metering programs
- Sellers that have previously bid projects into other solicitations may bid into RAM as long as they meet RAM eligibility requirements

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# PPA Overview

# Power Purchase Agreements – Terms and Conditions

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- One form PPA. Terms and conditions are non-negotiable
- Contract terms based on Participant's Offer:
  - Price (All-in, \$/MWh)
  - Contract Term (10, 15, or 20 year)
  - Product Type (baseload, as-available non-peaking, or as-available peaking)
  - Full Buy/Sell or Excess Sale
  - Guaranteed Commercial Operation Date
  - Contract Capacity (MW)
  - Contract Quantity (GWh)
- Seller offers all “Product” to PG&E. “Product” means:
  - All electric energy produced by or associated with the Generating Facility net of Station Use (and Site Host Load)
  - All renewable attributes, Renewable Energy Credits, Capacity Attributes and Green Attributes produced by or associated with the generating facility

# Power Purchase Agreements – Terms and Conditions

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- Commercial operation must be within 18 months of contract approval, with potential 6 month regulatory delay
- PPA requires counterparty to provide progress updates every six months
- Project Development Security, due within five business days following CPUC approval, is required to ensure seller completes its project by the Guaranteed Commercial Operation Date:
  - 1 – <= 5 MW: \$20/kW
  - > 5 – 20 MW: \$60/\$90 per kW for intermittent/baseload resources, respectively
- Failure to meet commercial operation date, after excused delays is an event of default which may result in PPA termination and loss of project development security (“PDS”)

# Power Purchase Agreements – Terms and Conditions

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- For each hour of energy generated seller is paid contract price multiplied by applicable TOD factor
- Energy deliveries:
  - Surplus deliveries – We will pay for energy deliveries up to 120% of the Contract Quantity in a given year
  - Delivery shortfalls – You will be held to the Guaranteed Energy Production which is based on the Contract Quantity, so provide a realistic estimate of Contract Quantity; Damages may apply if there are delivery shortfalls
- Guaranteed Energy Production is set at 140% of annual Contract Quantity over a 2 year period
- Delivery Term Security, due on the Commercial Operation Date, is required to ensure the seller meets its obligations throughout Delivery Term:
  - 1 –  $\leq$  5 MW: \$20/kW
  - $>$  5 – 20 MW: 5% of expected total Project revenues



# Power Purchase Agreements – Terms and Conditions

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- **PG&E is Scheduling Coordinator**
  - Sellers provide weather (as-available only) and availability data
  - PG&E does forecast and bears imbalance risk
  - Forecasting penalty applies if Sellers do not provide required data
- **Seller must curtail in response to curtailment called by CAISO, Participating Transmission Owner or Reliability Coordinator and is not paid for those curtailments**
- **PG&E has economic curtailment rights for up to 100 hours per year and pays contract price for energy deemed delivered**

# Power Purchase Agreements – Terms and Conditions

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- Full capacity deliverability status allows PG&E to count capacity under the PPA for its Resource Adequacy requirement
- Seller is required to apply full capacity deliverability status
- If Seller's original application was for energy-only status, Seller must request a deliverability assessment at the first available opportunity after contract execution
- If the study results show that Seller can obtain Full Capacity Deliverability status without any additional costs to Seller, Seller must obtain that status.

# Time of Delivery (TOD) Factors

Monthly Period	Super-Peak	Shoulder	Night
Jun – Sep	2.37533	1.11825	0.59239
Oct- Dec, Jan & Feb	1.09773	0.94493	0.66147
Mar. – May	1.21965	0.89580	0.60634

Payment : Contract Price \* TOD Factor \* MWh

Super-Peak : Noon – 8:00 PM, Monday – Friday, except NERC Holidays<sup>1</sup>

Shoulder : 6:00 AM – noon and 8:00 PM – 10:00 PM, Monday – Friday, except NERC Holidays; and 6:00 AM – 10:00 PM Saturday, Sunday and all NERC Holidays

Night : 10:00 PM – 6:00 AM, all days

<sup>1</sup> NERC Holidays are New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day

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# Evaluation Methodology

# Evaluation Methodology

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- PG&E will screen conforming Offers on a “pass-fail” basis against the eligibility criteria discussed on pages 10-11, which are project size, location, interconnection, site control, experience, commercialized technology, commercial operation date
- **Cost:** Offers will be ranked in order of cost, which will include, where applicable, estimated transmission network upgrade costs. Objective is to select 35 MW of the lowest-cost Offers per product category.
  - PPA Pricing (\$/MWh): escalation allowed, but no indexing. Best and final price must be submitted with the offer. PG&E will evaluate based on TOD-adjusted prices; no price refresh
  - Transmission (\$/MWh): costs will be taken from applicable study. PG&E will use only the costs associated with reliability network upgrades required for energy-only status, and not additional costs required for full capacity deliverability
  - Costs will be levelized using PG&E’s CPUC authorized after tax weighted average cost of capital of 7.6 percent

# Evaluation Methodology (continued)

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- Supplier diversity
  - PG&E will consider a Participant's status as a WMDVBE and/or an intent or policy of subcontracting with WMDVBEs as a secondary project selection criterion
- Seller Concentration
  - The number of offers submitted by a single Participant is not limited. However, Participants may only submit one offer per project
  - The total MW awarded in the RAM RFO to any single Participant is capped at 20 MW

# Offer Selection

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## Selection and PPA Execution

- By January 31, 2012 PG&E will notify each Participant regarding the selection status of its Offer(s)
- PG&E may place some Participants on a wait list
- By February 10, 2012, selected Participants must return signed RAM PPA along with the required documents shown in Appendix IX of the PPA. Waitlisted Participants that wish to continue participation in PG&E's RFO must notify PG&E that they want to remain on the waitlist
  - February 15, 2012, PG&E notifies waitlisted Participants that they have been selected
  - February 27, 2012, waitlisted Participants must return signed PPA with required documents show in Appendix IX of the PPA
- By March 12, 2012, PG&E will execute final RAM PPAs and return one fully executed RAM PPA to Participant
- On April 27, 2012, PG&E will submit a Tier 2 advice letter filing to the CPUC seeking approval of the RAM PPAs entered into pursuant to the RAM RFO

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# Offer Submittal Process and Offer Form



# Keys to a Successful Proposal

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- Expect a robust solicitation response
- PG&E received approximately 1,000 offers in its 2011 RPS Solicitation
- Submit a competitively priced offer
- Submit a complete offer

# Offer Price Assumptions

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The Offer Price submitted must assume the following:

- **Grid Interconnection Costs**
  - **Direct Assignment Costs** – Sellers bears the Direct Assignment Costs because there is no reimbursement of these costs to seller
  - **Network upgrades** – Seller bears the cost of financing the Reliability Network Upgrades<sup>1</sup>
- **Awards** – Production Tax Credits, Investment Tax Credits and all other awards that Seller reasonably expects to apply
- **Offer Price** will be adjusted in each Time of Delivery (“TOD”) factor for each period by the energy payment allocation set forth in the RAM PPA

<sup>1</sup> Developer is entitled to repayment with interest over a 5-year period following initial operation.

# Offer Price Assumptions (continued)

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- Generation Profile – Participant must provide hourly generation forecast
- Collateral requirements – (i.e. Development Security and Performance Assurance)
- PG&E's Revenue Calculator is provided as informational only
  - Calculates revenue from the energy generation profile
  - Takes into account the TOD factors

# Offer Submittal

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- Offers must be received by PG&E in electronic form by Tuesday, November 15, 2011 noon (PPT)
- E-mail all Offers to PG&E at [RAMRFO@pge.com](mailto:RAMRFO@pge.com) and to the I.E. at [Charles.Adkins@abb.ventyx.com](mailto:Charles.Adkins@abb.ventyx.com)
- Electronic documents must be in a format as specified in the Solicitation Protocol
- PG&E will only consider submitted Offers that, as of the submittal deadline, are complete and conforming Offers
  - PG&E will notify Sellers of error (e.g. incomplete or incorrect documents) and will allow 2 Business days to correct
  - If you provide multiple submissions for each offer, PG&E will consider your most current submission as the intended offer. An offer is defined by each distinct facility site.
- Hardcopy or facsimile transmission of Offers is not acceptable
- By submitting an Offer in this RFO, each participant is required to abide by the confidentiality obligations specified in the Section IX of protocol document

# Required Offer Submission Forms

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- Fully Completed Offer Form and Developer Experience Offer Form (Appendix A). Format: MS Excel
- Completed RAM PPA Cover Sheet (Appendix B). Format: MS Word
- Site Control Questionnaire and Attestation (Appendix C). Format: PDF or applicable GIS data file format
- Acknowledgement and Commitment of Site Owner (Appendix D). Format: PDF
- Supplier Diversity Questionnaire (Appendix E). Format: MS Word
- Interconnection Studies

# Communications and Website

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- All RFO documents are available on PG&E's website at [www.pge.com/rfo](http://www.pge.com/rfo). Click on Renewable Auction Mechanism RFO
- Announcements, updates and Q&As will also be posted on the website
- Communications should be directed to: [RAMRFO@pge.com](mailto:RAMRFO@pge.com) with a copy to the I.E. at [Charles.Adkins@abb.ventyx.com](mailto:Charles.Adkins@abb.ventyx.com)

# Offer Form Structure

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- **Instructions**
- **Appendix A1: Developer Form**
- **Appendix A2: Product Description**
- **Appendix A3: Aggregated Facilities**
- **Appendix A4: Energy Pricing**
- **Appendix A5: Generation Profile and Revenue Calculator**

# Offer Form – Instructions

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- Be sure to **enable macros** when opening the Offer Form
- The instructions tab contains a list of detailed directions and useful references/definitions
- **Orange** cells contain drop-down menu selection that needs to be completed
- **Green** cells are regular text field
- Help captions are available when you position your mouse over each field
- Grayed out cells are auto-calculated cells
- Fill out all orange and green cells in each tab of the Offer Form to reduce need for forms to be returned for completion. Once completed all the cells will turn white



# Offer Form – Developer Form



## Appendix A1: Developer Experience

Developer Name: **ABC Solar**

Address: **777 PV Way**

City: **Merced** State: **CA** Zip Code: **94100**

Authorized Contact # 1: **Sally** Authorized Contact #2: \_\_\_\_\_

Title of Contact # 1: **Developer** Title of Contact #2: \_\_\_\_\_

Phone Number # 1: **(415) 888-8888** Phone Number #2: \_\_\_\_\_

Alt. Number (Cell) # 1: \_\_\_\_\_ Alt. Number (Cell) #2: \_\_\_\_\_

Fax # 1: \_\_\_\_\_ Fax # 2: \_\_\_\_\_

Email Address # 1: **sally@abcsolar.com** Email Address #2: \_\_\_\_\_

Participant must provide evidence that one member of the development team has completed at least one project of similar technology and capacity or have begun construction of a least one similar project.

Developed Projects or Projects Under Construction												
Key Team Members	Title/Role	Full Legal Project Name	Technology Type	Size (MW)	Commercial Operation Date	Address	City	State	Zip Code	Longitude	Latitude	Additional Information
Sally	Developer	ABC Solar I, LLC	Solar Photovoltaic	10.00	1/1/2011					-122.4	37.76	

# Offer Form – Product Description



## Appendix A2: Participant Proposal Project Description

### General Project Information

Full Legal Project Name: **Sunstar I, LLC.**

Project Location:

Street Address:

City: **Merced**  **CA**  Zip Code

Project Description: **5 MW thin film project**

Existing or New Facility:  **Existing**

Longitude: **-122.4**

Latitude: **37.76**

CREZ:  **NonCREZ**

Longitude and Latitude should be in degrees

[http://www.energy.ca.gov/reti/documents/maps2/CREZ\\_Map.pdf](http://www.energy.ca.gov/reti/documents/maps2/CREZ_Map.pdf)

Select the Competitive Renewable Energy Zone in which your project is in or near. The CREZ map is located at the CEC website.

# Offer Form – Product Description

Offer Information			
Offer #	1	Total Number of Offers:	2
Product Type: <b>As Available Peaking</b>		Product Type automatically determined from generation profile and revenue calculator.	
Transaction Type (Excess Energy Sales or Full Energy Sales):	<input type="checkbox"/> Full Buy	Bid ID: <b>ABCSol_Sunstar_SolarP_1_of_2_R</b>	
PPA Term (years):	<input type="checkbox"/> 15	<div style="border: 1px solid black; border-radius: 15px; background-color: #0056b3; color: white; padding: 10px;">                     BID ID is automatically populated and is keyed off of the following elements:                     <ul style="list-style-type: none"> <li>Developers Name</li> <li>Project Name</li> <li>Technology Type</li> <li>Offer number</li> <li>Total number of offers submitted</li> </ul> </div>	
Expected Construction Start Date:	<input type="checkbox"/> 1/1/2013		
Expected Commercial Operation Date:	<input type="checkbox"/> 6/1/2013		
<b>Capacity</b>			
Is this offer from a single facility or aggregated facilities?	<input type="checkbox"/> Single		
	<b>Contract Capacity (MW)</b>	<b>Nameplate Capacity (MW)</b>	
Contract Capacity (Single Facility):	5.00	5.40	
Contract Capacity of Aggregated Facilities:	-	N/A	
Calculated Capacity:	5	5.4	
<b>Security Requirement</b>			
	<b>Price</b>	<b>Quantity</b>	<b>Required</b>
Project Development Security:	\$ -	5,000 kW	\$0.00
Delivery Term Security:	5% of Total Revenues		\$1,518,474.57
			<b>Security Type</b>
			Letter of Credit
			Letter of Credit
Technology			
ERR Type:	<input type="checkbox"/> Solar Photovoltaic	Major Equipment Description: <b>ACME Panels</b>	
Type of Photovoltaic Technology:	<input type="checkbox"/> Polycrystalline	Manufacturer: <b>Acme</b>	

# Offer Form – Product Description

Interconnection	
Expected Interconnection Point:	<input type="text"/>
Closest Substation:	<input type="text"/>
Interconnection Voltage (kv):	<input type="text"/>
Interconnecting Utility: <input type="checkbox"/> PG&E	
Interconnection Level: <input type="checkbox"/> Transmission	
Status of Interconnection Application: <input type="checkbox"/> Phase I Study Complete	
Delivery Market: <input type="checkbox"/> NP15	
Interconnection Queue Position:	<input type="text"/>
Reliability Upgrade Costs (\$):	\$200,000.00
Expected number of months to construct network upgrades identified in studies.	20.0
Expected Interconnection Date	11/1/2012
Deliverability Upgrade Costs (if applicable):	<input type="text"/>

Enter the reliability upgrade costs identified in your interconnection study. These are the costs necessary for interconnection only and may not result in full deliverability.

# Offer Form – Product Description

## Acknowledgement of Non-Disclosure Terms and Conditions

By selecting "Yes", Participant hereby acknowledges that it will abide by the confidentiality terms and conditions stated in Section IX of the RAM RFO Protocol Document.

Electronic Signature:

Select "Yes" to certify that  
typed name acts as  
electronic signature:

Yes

## Acknowledgement of Waiver of Claims and Limitations of Remedies

By selecting "Yes", Participant hereby acknowledges Participant knowingly and voluntarily waives all remedies or damages at law or equity concerning or related in any way to the Solicitation as described in Section XIV of the RAM RFO Protocol Document.

Electronic Signature:

Select "Yes" to certify that  
typed name acts as  
electronic signature:

Yes

## Attestation

By providing the electronic signature, below, Participant hereby attests that all information provided in this Offer Form and in response to this RAM RFO is true and correct to the best of Participant's knowledge as of the date such information is provide

Electronic Signature:

Select "Yes" to certify that  
typed name acts as  
electronic signature:

Yes

## Submission History

Has project been previously offered to  
PG&E?

Yes

If yes, please identify the situation:

# Offer Form – Aggregated Facilities



## Appendix A3: RAM Offer Sheet (use for aggregation of facilities)

Aggregation of facilities to meet the minimum 1 MW size requirement is allowed only if each facility is no less than 500 kw and the project comprised of the aggregated facilities interconnects to a single p-node.

Full Legal Project Name	Address	City	Zip Code	Longitude	Latitude	ERR Technology	Major Equipment Description

Project Information:								
Equipment Manufacturer	Interconnection PNode	Model Number	Number of Units in the Project	Output per Unit	Is the above technology commercially proven? <input type="checkbox"/>	Is this technology standardized? <input type="checkbox"/>	Gross Power Rating, kW AC	Contract Capacity, kW AC

0.00  
The aggregated quantity is less than 1 MW



# Offer Form – Generation Profile

Attachment D



## Appendix A5: Estimated Energy Production Profile

Complete

Full Legal Project Name: Sunstar I, LLC.

Project Location:

PG&E Project ID (for internal use only): ABCSol\_Sunstar\_Solar

### IMPORTANT:

- 1) Please provide a generation profile forecast of each month's average-day net output energy production, stated in MW by hour, by month and by year. Generation entered here should exclude onsite use and should be entered in calendar year format.
- 2) Make sure you have provided Contract Price per year on the Energy Pricing Tab.
- 3) Make sure you have supplied a PPA Capacity, term length, and expected start date on the Product Description Tab.
- 4) Press the Expected Revenues button.

Expected Revenues

Annual Degradation (%) 1.00%

Year 1 2014

Month	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	Monthly Total
Jan													5	5	5	5	5	5	5	5					1,240
Feb													5	5	5	5	5	5	5	5					1,120
Mar													5	5	5	5	5	5	5	5					1,240
Apr													5	5	5	5	5	5	5	5					1,200
May													5	5	5	5	5	5	5	5					1,240
Jun													5	5	5	5	5	5	5	5					1,200
Jul													5	5	5	5	5	5	5	5					1,240
Aug													5	5	5	5	5	5	5	5					1,240
Sep													5	5	5	5	5	5	5	5					1,200
Oct													5	5	5	5	5	5	5	5					1,240
Nov													5	5	5	5	5	5	5	5					1,200
Dec													5	5	5	5	5	5	5	5					1,240
Total	0	0	0	0	0	0	0	0	0	0	0	0	1,825	1,825	1,825	1,825	1,825	1,825	1,825	1,825	0	0	0	0	14,600

PPA Revenues Nominal
\$28,336,952.63
130,618
118,056
138,283
135,995
138,283
239,785
249,286
244,258
239,785
131,229
125,004
130,618

PPA Revenues Nominal	Total MWh	Total Capacity Amount	Average Capacity Factor:	Avg annual Contract Quantity(MWh)	Ratio of Super Peak and Shoulder Peak MWhs to Total MWhs
\$28,336,952.63	204,463	657,480	31.10%		100.00%
130,618					
118,056					
138,283					
135,995					
138,283					
239,785					
249,286					
244,258					
239,785					
131,229					
125,004					
130,618					



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# Interconnection Information

- 
- **For this RFO, Seller must have applied for interconnection and have applicable interconnection study complete**
  - **For future RFOs, Sellers should initiate the interconnection process early, to ensure that eligibility requirements are met**
  - **MAP provides an indication of MW available for interconnection**

# RAM Program Map



## Solar Photovoltaic (PV) and Renewable Auction Mechanism (RAM) Program Map

[Help](#) | [Contact Us](#) | [Log Out](#)

Map Satellite

Google

Imagery ©2011, Data ©2011 SFML, CA GPO, Data ©2005 DigitalGlobe, GeoEye, U.S. Geological Survey, USDA Farm Service Agency - Terms of Use

Enter Address

- Substations
- Distribution Lines (zoom in closer)
- Transmission Lines

Actual interconnection requirements and costs will be determined following detailed studies that consider your specific project location, size and application date compared to other projects in the same vicinity. Additionally, government permitting procedures designed to minimize environmental and land use impacts are independent of our interconnection process and may limit the suitability of a particular site, including sites that are highlighted in this map.

# RAM Program Map

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- **Key features of the interactive map within PG&E Service Territory:**
  - Shows the location and operating voltage of Transmission and Distribution lines
  - Shows the transmission and distribution substation names
  - Ability for developers to relate specific project locations to PG&E facilities
  - Provides basic information regarding the electric distribution system
- **Please note that the map is only a tool. Your actual interconnection application and subsequent study will determine the requirements relating to interconnection and distribution system modifications.**

# RAM Program Map

- In addition to the substation name and number, the table below describes the information presented on the map after clicking on a distribution line:

Item	Comments
Circuit Capacity (MW)	The capacity of the feeder in megawatts, generally at the circuit outlet at the substation.
Circuit Projected Peak Load (MW)	The projected circuit load in megawatts for summer 2011.
Substation Bank	This is the number of the substation transformer (bank) the feeder is connected to. All distribution substations have at least one bank (e.g. 1,2, etc.)
Substation Bank Capacity (MW)	The capacity of the substation bank in megawatts.
Substation Bank Projected Peak Load (MW)	The projected bank load in megawatts for summer 2011.
Existing Distributed Generation (MW)	The amount of existing distributed generation on the feeder.
Queued Distributed Generation (MW)	The amount of queued distributed generation on the circuit.

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# Generation Interconnection Services

# Topics to Cover – Presentation Guideline

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- **Overview of Wholesale Generation Interconnection Processes**
- **Overview of Interconnection Timeline**
  - **Fast Track**
  - **Independent Study**
  - **Cluster I and II**
  - **Cluster III and IV**

# Wholesale Generator Interconnection Study Processes

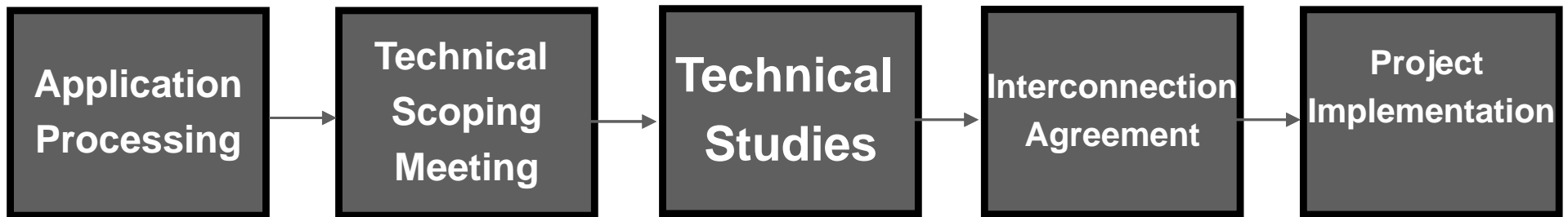
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- Commercial online date is 18 months from CPUC approval. Assuming May 2012 CPUC approval, commercial operation must occur by November 2013, with 6 month delay allowed until May 2014
- Interconnection process must be complete for generator to deliver power to grid and meet obligations of the PPA contract
- Generator is responsible for timely applications and timely completion of applicable process
- All generators must reach commercial operation by the deadline provided for in the RAM PPA. Sellers are responsible for understanding the relevant interconnection procedures and ensuring they can interconnect within the mandated timelines<sup>1</sup>.
- Participants that are selected for a RAM PPA will be required to demonstrate that they have applied for a finding of full capacity deliverability. If Participant has not applied through the Cluster IV process, then Participant is required to apply through the annual deliverability process after the RAM PPA has been executed<sup>1</sup>.

<sup>1</sup> Per page 12 of the RAM protocol document



# Wholesale Generation Interconnection Process



## Transmission Interconnections

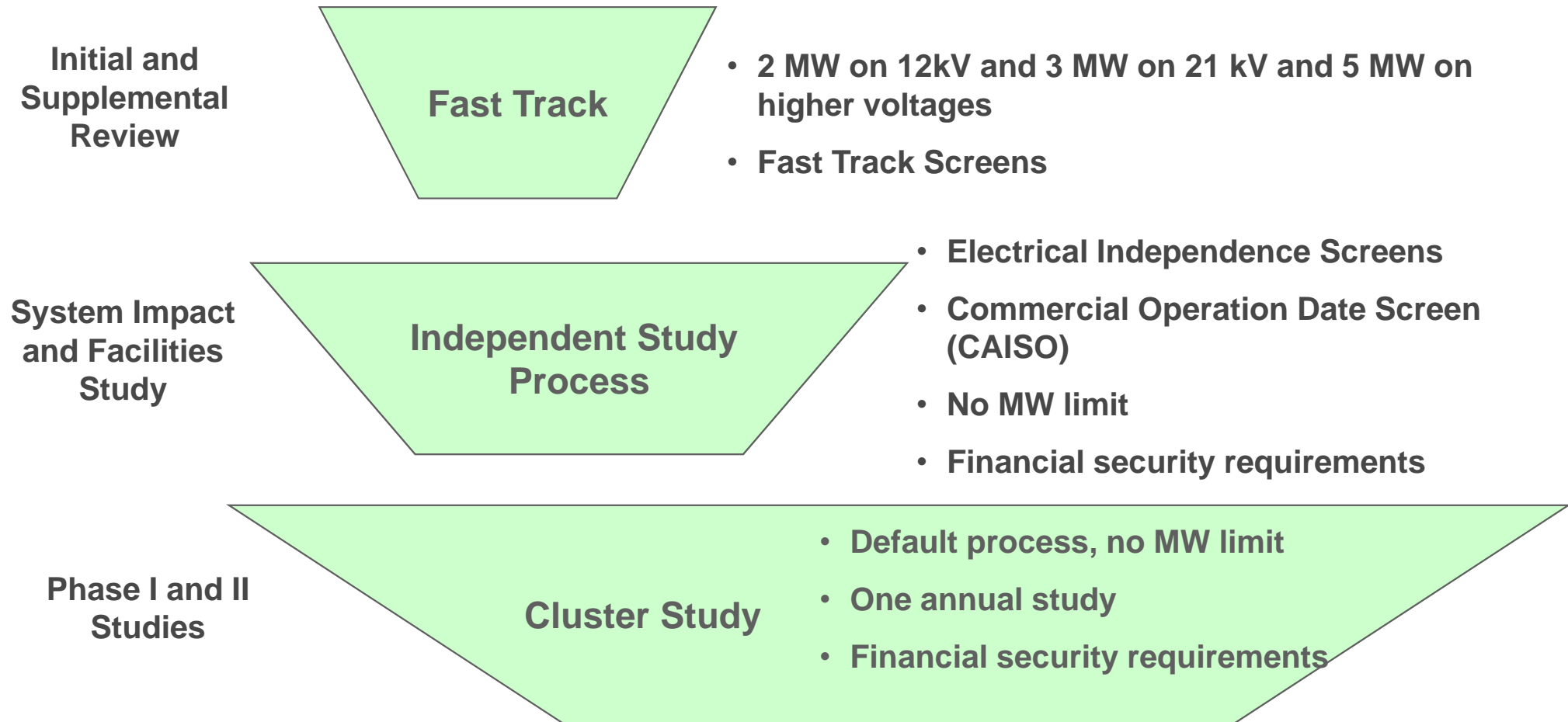
- Governed by California Independent System Operator Corporation (CAISO) Tariff
  - PG&E’s transmission interconnections are for 60 kV and higher
  - All applications must be submitted to the CAISO

## Distribution Interconnections

- Governed by PG&E’s, SCE and SDG&E Wholesale Distribution Tariff (WDT)
  - PG&E’s distribution voltage level is defined as facilities operating below 60 kV
  - All applications must be submitted to the appropriate interconnecting utility.

# Wholesale Interconnection Study Processes

IOU processes vary slightly



- Independent Study Process and Cluster Process Interconnection Requests may apply for full capacity. Deliverability assessment will be conducted by CAISO in CAISO's cluster process.

# Cluster Schedule – Application through Final Study

CAISO Process applies to SCE and SDG&E as well, IOU processes vary slightly

CAISO* Cluster Group	Window	Phase I	Phase II	Interconnection Agreement
1 & 2	Closed	Completed	Completed August 2011	Target December 2011
3	Closed	Completed	Target October 2012	Target February 2013
4	Closed	Target December 2011	Target October 2012	Target February 2013
5	Oct/Nov 2011* and March 2012	Target October 2012	Target July 2013	Target November 2013

PG&E WDT Cluster	Window	Phase I	Phase II	Interconnection Agreement
4D	Closed	Target November 2011	Target October 2012	Target February 2013
5D	Oct/Nov 2011** and March 2012	Target October 2012	Target July 2013	Target November 2013

Note\*: PG&E does not have an October/November 2011 window but will discuss potential applications with developers.

Note\*\*: Subject to CAISO Tariff.

# Fast Track and Independent Schedule – Application through Final Study

CAISO Process applies to SCE and SDG&E as well, IOU processes vary slightly

Fast Track	Window	Initial Review	Supplemental Review	Interconnection Agreement	Timeline
CAISO* connections	No Window	15BD	10BD	4 months	~6 months
PG&E connections	No Window	15BD	10BD	4 months	~6 months

Independent Study	Window	SIS	FAS	Interconnection Agreement	Timeline
CAISO* connections	No Window	90BD	90BD	4 months	~12 months
PG&E connections	No Window	60BD	60BD	4 months	~12 months

Note: BD = business days

# Post- Interconnection Agreement

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- **Post Interconnection Agreement, PG&E and Interconnection Customer will be engineering and designing, procuring, and constructing the electrical interconnection**
  - **PG&E will engineer the Capital Improvements as agreed upon in the Interconnection Agreement**
  - **Interconnection Customer will engineer the electrical system on the Interconnection Customer's side of the meter and any upgrades that will be applicant built and deeded (if required)**
- **Post EPC, PG&E, CAISO (if applicable), and Interconnection Customer will coordinate a pre-parallel inspection and commissioning to achieve Commercial Operation**
- **Timing for implementation is project specific and could take from 6 months to 4 years**

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# Q & A