



Renewable Auction Mechanism (RAM) Request for Offers Solicitation

Bidders' Forum

May 16, 2012

Agenda

- **Introduction – Adam Schultz CPUC; Sandy Burns**
- **Solicitation Results – Sandy Burns**
 - **Offers**
 - **Eligibility Criteria**
 - **Selection Process**
 - **Results**
- **IE Report – Charles Adkins, Ventyx**
- **Unilateral Termination Rights – Sandy Burns**
- **Valuation of Resource Adequacy – Ron Helgens**
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- **Survey Results – Sandy Burns**
- **Participant Feedback**
- **Next Steps and Closing Remarks – Sandy Burns**

Solicitation Results

RFO Timeline

Date/Time	Event
September 23	PG&E launched the initial RAM RFO
October 28	Bidders' Conference
November 1	PG&E began accepting offers
November 15	Deadline for Participants to submit Offers
January 31,	PG&E notified Participants and Waitlisted Participants of Offer Selection
February 9	PG&E notified Waitlisted Participants they had been selected
February 10	Deadline for selected Participants to submit signed PPAs and required documentation
February 21	Deadline for selected Waitlisted Participants to submit signed PPAs and required documentation
February 27	PG&E executed RAM PPAs
March 30	Advice Letter Filing for executed RAM PPAs

Market Response

PG&E received 122 offers from 52 counterparties for 1,539 MW or 3,986 GWh annually

Bucket	Number of Offers	Capacity (MW)	Annual GWh
Baseload	5	65	514
As-Available non-peaking	3	18	43
As-Available peaking	114	1,456	3,429
Total	122	1,539	3,986

Eligibility Criteria: First RAM Solicitation

The first RAM RFO used the following eligibility requirements:

- Any RPS eligible-renewable resource with a contract or nameplate capacity of at least 1 to 20 MW in size
- Aggregation of facilities to achieve the 1 MW minimum threshold was allowed providing each facility was at least 500 kW and all facilities interconnect within a single PNode¹
- Must be interconnected within the electric distribution or transmission system of PG&E, SCE or SDG&E
- Interconnection study required: System Impact Study, Phase 1 Study, or documentation that the Project had passed the WDT or CAISO Fast Track screens at time of offer submission
 - Study could be for a full capacity deliverability resource, or energy-only

*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 is calculated and used for financial settlements.”

Eligibility Criteria: First RAM Solicitation (continued)

- **Demonstration of Site control for the entire delivery term of the PPA**
- **Commercial operation scheduled within 18 months following Commission approval of the PPA; 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**

Selection Process

The selection process was largely formulaic:

- The offer price was the primary determinant
 - PG&E levelized all bid prices after applying the applicable Time of Delivery (“TOD”) factors
 - Costs were taken from the applicable interconnection studies associated with the reliability network upgrades and were applied to the offer price
- Supplier Diversity was a secondary criterion. We took into account the Participant’s status as a WMDVBE and/or an intent or policy of subcontracting with WMDVBEs
- We did not take offers from any one counterparty that totaled more than 20 MW

PG&E selected a group of:

- The most competitively priced offers in each of the product categories
- The next best competitively priced offers as “Waitlisted Offer” in the event that the selected offers chose not to continue to participate in the RFO

Resulting PPAs

- RFO target was 105 MW
 - Baseload: 35 MW
 - As-Available Off-Peak: 35 MW
 - As-Available On-Peak: 35 MW
- PG&E executed PPAs for 63 MW
 - Baseload: Ormat Mammoth G3 project (14 MW)
 - As-Available Off-Peak: CalWind Resources Wind Resource I (9MW)
 - As-Available On-Peak:
 - Silverado Power: Western Antelope Blue Sky Ranch A (20 MW)
 - TUUSSO West Antelope project (20 MW)

Independent Evaluator Report

Charles Adkins
Ventyx

Role of the IE

- **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**

Observations from the first RAM RFO

- Mr. Adkins finds that PG&E's bid solicitation and evaluation process has resulted in the identification and negotiation of the best overall offers received in its first RAM RFO
- PG&E was successfully lowered transaction costs and promoted the development of supply-side renewable distributed generation
- PG&E conducted a thorough solicitation and evaluation process consistent with the rules identified in Resolution E-4414

Unilateral Termination Rights

- Draft Resolution E-4489 included IOU termination right if interconnection costs exceeded assumed costs used for project selection by 10%
- Objective of proposal was to ensure that customers did not end up paying significantly more in transmission rates than anticipated during project selections
- Key stakeholder concern was potential for long-term changes in transmission costs that could result in termination after construction start/financing
- Potential clarifications to address concerns:
 - IOU termination would happen *before construction*. IOU termination would be based on Phase II or Interconnection Agreement estimates, not actual costs of construction
 - IOU would have a finite period of time to exercise termination right (e.g. 90 days after receipt of updated study or interconnection agreement).
 - Termination would be “no-fault”, with return of project development security to Seller

How PG&E values Resource Adequacy Benefits For Its 2012 RAM RFO

Ron Helgens

How PG&E values Resource Adequacy Benefits For Its 2012 RAM RFO

- Full Capacity Deliverability Status allows PG&E to count capacity under the PPA for its Resource Adequacy Requirements
- Capacity valuation begins with the calculation of a price and quantity associated with each resource
- Price is developed from the calculation of an avoided capacity forward curve (ACC)
- Quantity is determined from the amount of capacity contributing to meeting peak demand “Net Qualifying Capacity” (NQC) as per CPUC D.10-06-036.
- RA value \$/MWh = ACC (\$/MW) *NQC (MW) /MWh
- Additional calculations that may be applied to account for any resource constraints that may affect PG&E’s portfolio

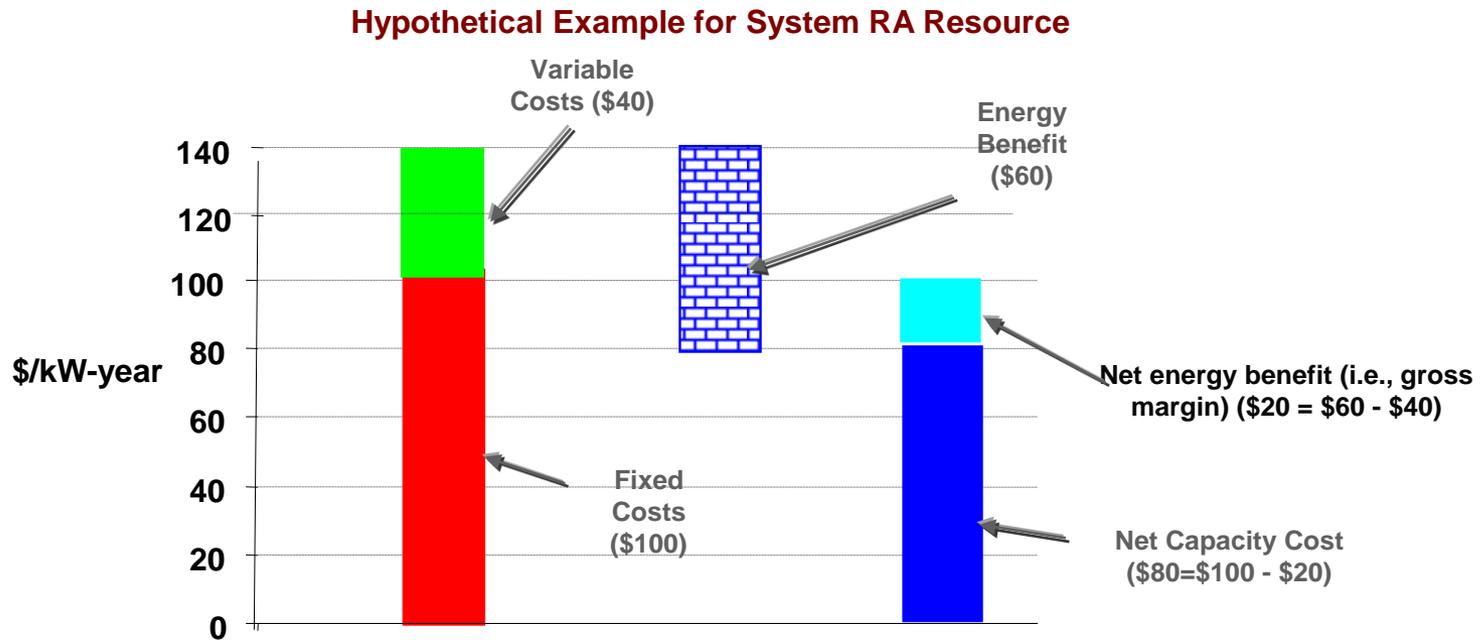
Note: The methodology being described is specific to this RFO, and that RA valuation methodology (including curve construction) in future RFOs may be different, reflecting changing market conditions.

Avoided Capacity Cost (ACC) Analytics

- Calculates the ACC (\$/kW-yr) for existing units (i.e. steam, combined cycle and combustion turbine) and for new units needed to meet peak demand (i.e. combined cycle and combustion turbine)
- Calculates the gross margin (expected net energy revenues derived from energy sales) using plant operating characteristics, energy forwards and volatilities
- The ACC of a new unit represents the levelized payments sufficient for investor to recover the return on investment that are not recovered from participation in the energy and ancillary services market over the operating life of the unit
- The ACC of an existing unit is the going forward fixed cost (e.g. insurance, property tax, fixed O&M) less gross margin
- The balance year is the year in which there are insufficient existing resources to satisfy PG&E's capacity requirements
- Prior to the balance year, existing units are at the margin and set the ACC
- After the balance year, new units are at the margin and set the ACC

Illustrative ACC Calculation Graphic

- Graphic to illustrate ACC calculation – values are purely illustrative



Net Qualifying Capacity (NQC)

- For RPS projects, the NQC is developed on a monthly basis following the directive of CPUC D.10-06-036
- Using the monthly generation profile, the 70th percentile of hourly MWh values from the set of hours of the peak period definition corresponds to the NQC value of the project
- Typical summer month NQC values¹ for resources are listed in the table on slide 15

¹ Values from CPUC 33% RPS Calculator used in developing RPS portfolios in the 2010 Long Term Plan Proceeding (R. 10-05-006)

Resource Constraint Adjustments to RA values

- Due to the RA capacity constraint that currently exists on projects that are located in SP15, PG&E discounts the capacity value of SP15 resources as reflected in the comparative table provided in the following slide

Comparison Table of Relative RA Impacts For PG&E's 2012 RAM RFO

	NP15	SP15
Avoided capacity cost—marginal unit	<u>Near-term:</u> Existing resource <u>Long-term:</u> New resource	<u>Near-term:</u> Existing resource <u>Long-term:</u> Existing resource
NQC relative to nameplate	<u>Solar:</u> 51% - 65% <u>Baseload:</u> 72% - 80% <u>Wind:</u> 16%	<u>Solar:</u> 51% - 65% <u>Baseload:</u> 72% - 80% <u>Wind:</u> 16%
RA Value (\$/MWh)	<u>Solar:</u> high <u>Baseload:</u> moderate <u>Wind:</u> low to moderate	<u>Solar:</u> moderate <u>Baseload:</u> low <u>Wind:</u> low

Q&A Break

Survey Results

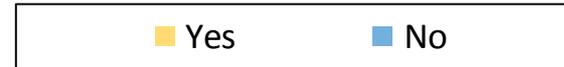
Survey Results

- Survey was sent to all PG&E's RFO distribution list
- Very small response rate

RFO Participation

Numbers are shown as a %

1. Did you participate in the first RAM RFO?



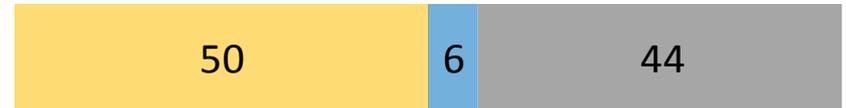
2. If you did not participate in the first RAM RFO please indicate why.



RFO Program: Structure, Guidelines and Elements

Numbers are shown as a %

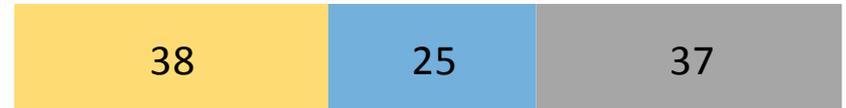
3. RFO Protocol instructions were clear and straightforward



4. PG&E clearly identified the criteria it would use to evaluate the offers.



5. The PPA is commercially reasonable.



6. The map contained useful information.



2nd RAM Program

Numbers are shown as a %

7. I intend to participate in the 2nd RAM program solicitation.



Summarization of Survey Comments

- **RFO Results – Interest in seeing more public information about winning bid prices**
- **Viability – Sellers expressed concern that cost is the primary selection criterion and that viability does not influence the selection process**
- **Viability – Seller perception that the winning prices are not viable and contract failures will occur**
- **Administration - Suggestions to improve offer submittal process**

Participant Feedback

Next Steps

- Incorporate bidder feedback where possible; RFOs every six month result in lag in incorporating lessons learned/feedback
- Technical improvements (e.g. offer form, possible platform that is not email)
- Potential change in eligibility requirements to comply with FIT decision
 - FIT increased to 3 MW
 - RAM limited to 3 MW and above
 - PPA modifications to address 3 MW minimum
 - Potential elimination of aggregation option
 - Potential elimination of separate PPA terms for projects 3-5 MW
- Third RAM RFO expected in November, 2012