Pacific Gas and Electric Company®

Combined Heat and Power ("CHP") Request for Offers

Participants' Conference

January 12, 2012

Agenda

Topics:	***Presenter:***
• Introduction	- Rich Miram/Roy Kuga
• CHP Settlement Overview	- Rich Miram
• Solicitation Overview	- Rich Miram
• Offer Submittal Process	- Rich Miram
• Offer Form Highlights	- Kelvin Yip
• Evaluation Methodology	- Rich Miram
• Gas Interconnection	- Jeff Ryan
• Electric Interconnection	- Roger Pettey
• Overview of PPAs	- Hugh Merriam
• Break	
• Q & A	- Rich Miram and Team

Q&A Questions Instructions

- 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 CHPRFO mailbox at CHPRFO@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
  - Responses will be posted, at PG&E's discretion, on PG&E's website along with the recorded presentation

Document Conflicts

- 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

CHP Settlement Overview

CHP Program Settlement Agreement

- **Initial Program Period**
  - 4 years from Settlement Effective Date (November 23, 2011)
  - Each IOU to conduct RFOs exclusively for CHP Resources to achieve MW targets and GHG Emissions Reduction Targets
  - 3 CHP RFOs to meet CHP MW targets during Initial Program Period
  - PG&E's total CHP MW Target is 1,387 MWs; first target of 630 MW
  - RFOs are a key component and venue for meeting CHP MW Targets; other alternatives also available
  - First CHP RFO initiated no later than 90 days after CHP Settlement Effective Date

PG&E's CHP MW Targets

CHP MW Targets	
MW Target A:	630 MW
MW Target B:	376 MW
MW Target C:	381 MW
Total	1,387 MW

Framework and Approach for PG&E's CHP RFO

- Similar to PG&E's other Solicitations
- Resource Types:
  - Existing CHP
  - New CHP
  - Repowered CHP
  - Expanded CHP
  - Utility Prescheduled Facility (Utility Tolling)

CHP Solicitation Overview

RFO Schedule

Date/Time 2012	Event
December 7, 2011	PG&E's CHP RFO issued
January 12	General Participants' Conference
January 20	Participants' Conference call to review and answer questions on Offer Form
February 10	Deadline for PG&E to receive binding Offers by Friday, 1:00 P.M. Pacific Prevailing Time (PPT) Participants submit request for confirming gas service for Existing CHP and Existing CHP converting to Utility Tolling Facility Participants for New and Increased Demand Gas Service submit baseline Offer
February 17	PG&E Gas Operations completes and returns Preliminary Application for New and Increased Demand Gas Service
February 24	Participants for New and Increased Demand Gas Service submit refreshed Offer (changes limited to pricing and schedule only)
April 2 - 6	Participants accept shortlist position, execute Exclusivity Agreement and post Offer Deposit (as applicable)
As - available	Date for filing CPUC approval for executed PPAs without material changes to pro-forma PPAs
September 28	RFO Negotiations Concluded

Independent Evaluator (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 performs an independent review of all proposals
- The IE may review all proposal data and monitor communications with Participants
- PG&E's CHP RFO IE: Wayne Oliver (Merrimack Energy)

Eligibility Requirements

- Nameplate larger than 5 MW that meets definition of:
  - Cogeneration per CPUC Code 216.6
  - EPS per CPUC Code 8341
  - Cogeneration facility under CFR 292.205
- CHP Facility as of September 2007 converting to Utility Tolling Facility
- CHP Facility must be located in California
- Term
  - Up to 7 years for Existing CHP Facilities and Utility Tolling Facilities
  - Up to 12 years for Repowered, Expanded, and New Facilities meeting credit and collateral requirements

Eligibility Requirements (continued)

- Term start dates
  - within 24 months of PPA execution (Existing and Utility Tolling CHP Facilities)
  - within 36 months of CPUC approval (Expanded CHP Facility)
  - within 60 months of CPUC approval (New and Repowered CHP Facilities)
- Pricing negotiated by the parties and stated in the executed PPA
- Bids with and without GHG Compliance Costs
- Credit and Collateral
  - Will apply to New, Repowered, Expanded and Utility Tolling Facilities
  - Not required for Existing CHP Facilities, but may be requested by an IOU
- Efficiency Performance and Obligations
  - For CHP Facilities, Seller must meet throughout term of PPA for combined heat and power facilities.
  - Failure to meet may result in “Event of Default” if deficiency is not cured

Eligibility Requirements (continued)

- **Curtailment**
  - **Reliability**
  - **Economic (optional)**
  - **PG&E also interested in Offers that provide firm curtailments rights that PG&E can exercise at its discretion**

- **Participant accepting a position on PG&E's shortlist must execute an exclusivity and confidentiality agreement**

Offer Variation

- One Offer for each Project, one variation per Offer. Offers may vary by:
  - Term
  - Price
  - Term Start Date
  - PPA Terms and Conditions

- Pricing Variations
  - Capacity Price ($/kW-year)
  - Energy: $/MWh or guaranteed heat rate (BTU/kWh) applied to PG&E City Gate or SoCal Gas gas price index
  - VOM: fixed or escalating

CHP Offer Submittal Process

Offer Submittal

- Offers must be received by February 10, 2012 at 1:00 P.M. (PPT)
- Refreshed Offer Form limited to results of Preliminary Application for Gas Service for New and Increased Demand Gas Service must be received by PG&E by February 24, 2012 at 1:00 P. M. (PPT)
- Participant must include two (2) hard copies of the introductory letter and two (2) duplicate, labeled flash drives
- Hand-delivery or mail delivery to:

  Combined Heat and Power RFO
  Attention: Energy Procurement, Rich Miram
  77 Beale Street, Mail Code B25J
  San Francisco, CA 94105

- Electronic Documents must be in a format as specified in the Protocol Document
- By submitting an Offer in this RFO, each participant is required to abide by the terms, conditions and other provisions specified in Section V of the protocol document

Offer Submittal: Due on February 10, 2012

- **Offer package must contain the information in the requested format. Each tab should be a separate folder on the flash drive in the order described.**
  - Introductory letter
  - Tab 1: Fully Completed Offer Form: Appendix A — Format: MS Excel *Separate offer form is required for a project variation*
  - Tab 2: Project Description: Appendix B — Format: MS Word
  - Tab 3: Electrical Interconnection Information & Waiver Appendix C1 and C2 PDF or Digital signature — Format: MS Word
  - Tab 4: Gas Interconnection Information & Waiver Appendix D1 and D2 — Format: MS Word, PDF or Digital signature
  - Tab 5: Credit Finance Information: Appendix E1 — Format: MS Word
  - Tab 6: Supplier Diversity Information: Appendix F1 — Format: MS Word
  - Tab 7: PPA Redline – Indicate no changes (if applicable) Appendix G1 or G2 — Format: MS Word
  - Tab 8: Clean, executed PPA: Appendix G1 or G2 — Format: MS Word, PDF signature page or Digital signature

Offer Submittal (continued)

- PG&E will only consider submitted Offers that, as of the submittal deadline, are complete, conforming and contain all material terms
  - PG&E will notify Participants of material deficiencies (e.g. incomplete or incorrect documents) and will allow limited time to correct.
- Offers are binding. If Participant accepts shortlisting:
  - PG&E can accept as proposed and execute PPA
  - PG&E can propose changes and if accepted by Participant, parties can execute PPA

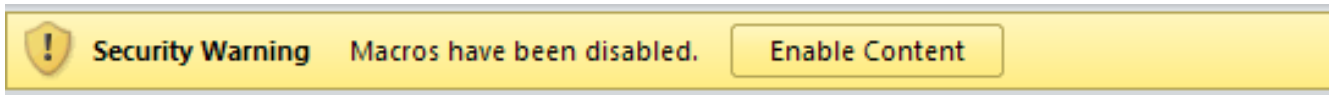
Offer Submittal: Additional information due if shortlisted

- Executed, Unmodified Confidentiality Agreement (Appendix H)
- Evidence of Site Control (if not already provided)
- Additional Transmission or Distribution Information (if applicable)
- Offer Deposit (as applicable)

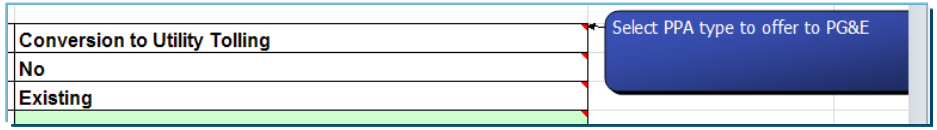
Offer Form Highlights

Offer Form – Instructions

- Be sure to **enable macros** when opening the form.



- Start with the Project_Information tab. The selection of PPA Type determines whether the CHP or Tolling PPA tabs are visible.
- Please refer to the Instructions tab which contains instructions and a description of the workbook structure.
- Color-coded data conventions (green for text boxes to fill, orange for drop-downs, white for optional)
- Help captions are available when you place your cursor over a cell.



- Please make sure to fill out the Electronic Signatures tab prior to submitting offer to PG&E.
- Save the offer form workbook with a unique file name.

Offer Form – Version History

- **PG&E will post revised versions of the Offer Form on the website for corrections / modifications as needed. New version posted as 1.1.**

- **The Version_History tab shows the current version number and describes the associated changes. This will be helpful if you are using an older version and would like to track which parts of your offer form are affected.**

Release Version	Range Name or Cell Reference	Changes	Date
1		N/A	
1.1	Hist_Efficiency_GHG_Emit!J8:J30	Corrected equation for efficiency	1/3/2012
	Hist_Efficiency_GHG_Emit!A38	Grammer correction	1/4/2012
	Instructions!B14:B15	Added instruction for line breaks.	1/5/2012
	Proforma_OpChange_Text	Increased size of input area	1/6/2012
	proforma_Seller_GHG_Allocation_Proposal	Increased size of input area	1/7/2012
	Curtailment_Option_Other	Increased size of input area	1/8/2012
	GasFuel_Average_HeatContent	Changed units to MMBTU/MCF	1/5/2012

- **Please use the most current offer form for your submission.**

Workbook – Organized by Color

- Green tabs are general to both CHP Proforma and Conversion to Utility Toll
  - Electronic Signatures
  - Project Information
  - Historical Efficiency for existing facilities
  - Optional information
- Orange tabs are specific to CHP Proforma PPAs
  - PPA details
  - Generation Profile
  - Pricing
  - Term Efficiency
- Blue tabs are specific to Utility Toll PPAs
  - Maintenance schedule
  - Pricing
  - Operational characteristics
  - Operating Constraints

Electronic Signatures

Acknowledgement of Non-Disclosure Terms and Conditions			
By selecting "Yes", Participant hereby acknowledges that it will abide by the confidentiality terms and conditions of this RFO.			
Electronic Signature:	J. Smith	Select "Yes" to certify that typed name acts as electronic signatuare:	Yes

Print Workbook

Generate missing data list

Clear missing data list

Please note that the missing data list is only suggestive and may not be exhaustive.

List of range names not filled and location in workbook

Sig2	=Electronic_Signature!$B$1
Sig3	=Electronic_Signature!$B$1
Sig2Y_N	=Electronic_Signature!$D$1
Sig3Y_N	=Electronic_Signature!$D$1
Hist_Perform_Year	=Hist_Efficiency_GHG_Emit
Hist_Perform_Month	=Hist_Efficiency_GHG_Emit
Hist_Monthly_Op_Hours	=Hist_Efficiency_GHG_Emit
Hist_Percent_Hours_Cooling	=Hist_Efficiency_GHG_Emit
Hist_Perform_Thermal_Input	=Hist_Efficiency_GHG_Emit
Hist_Perform_ElecOutput_Utility	=Hist_Efficiency_GHG_Emit
Hist_Perform_ElecOutput_Host	=Hist_Efficiency_GHG_Emit
Hist_Perform_UTO	=Hist_Efficiency_GHG_Emit
Hist_GHG_Emissions	=Hist_Efficiency_GHG_Emit
DeliveryPoint	=Project_Information!$B$107
CAISO_Resource_ID_Existing	=Project_Information!$B$110
Interconnect_Agree_Date_Existing	=Project_Information!$B$111

Menu Comman...

Curtailment_Option

Hist_Perform_Month
Hist_Perform_Thermal_Input
Hist_Perform_UTO
Hist_Perform_Year
Hist_UTO_Cooling
Host_Same_as_Cert_YN

Project Information Tab

Bid ID (assigned automatically)	CHP___Ori_2011
	Enter Project Company Legal Name below
	Enter project name below
General Terms for PPA	
PPA Type Offered ↕	**CHP Proforma**
Is this Offer Form for a variation on your original offer? ↕	CHP Proforma Conversion to Utility Tolling
Facility Status ↕	
Term Start Date	
PPA Term Offered in number of months	
Delivery Point (i.e. nearest substation)	
Bus Bar name if known.	
CAISO Delivery Market ↕	
Pre-Existing Contractual Obligations for Existing Facilities	
Pre-existing Contract? Y/N ↕	
If yes, which Utility? ↕	
If under contract, expiration date?	
Enter log number for PG&E-contracted facility	

Remaining data fields necessary to generate unique Bid ID.

Drop-Down selection determines whether CHP RFO or Tolling tabs are visible

Project Information Tab (continued)

- Project / Facility Information
- Configuration (type of generating technology)
- Fuel (type)
- Emissions
- Steam host description and efficiency
- Electrical Interconnection
- Gas Interconnection (as applicable)

Historical Efficiency & GHG Emissions for Two Calendar Years

This tab is visible if you have chosen Existing, Repowered, or Expanding Facilities on the Project_Information Tab.

Calendar Year	Month	Number of Operating Hours	% of Hours used for Cooling	Thermal Input (million BTU)	Electrical Energy delivered to grid (MWh)	Electrical Energy delivered to host load (MWh)	Total Useful Thermal Output (million BTU)	Useful Thermal Output (MMBTU) for cooling purposes (if applicable).

Offer Form – Optional Information

PG&E prefers offers to conform to the PPA/Offer Form structure. However, if there are any modifications, please state in this section.

Item #	Cell Reference	Comment/Clarification
1		Line 1 Line 2 Line 3
2		
3		
4		
5		
6		
7		
8		
9		

Use <alt><enter> to create line breaks

CHP Proforma PPA

Data format aligned closely with Attachment A, Exhibit 5: CHP Request For Offers Pro-Forma PPA for CHP Facilities Participating in Solicitations from the Settlement Agreement.

Pricing

Firm Capacity Price ($/kW-year) (Buyer assumes GHG Compliance Costs)	
Firm Capacity Price ($/kW-year) (Seller assumes GHG Compliance Costs)	
Firm Capacity Price ($/kW-year) (Buyer and Seller allocate GHG Compliance Costs)	
If applicable, please describe the proposed GHG allocation method.	
As-Available Capacity Price ($/kW-year) (Buyer assumes GHG Compliance Costs)	
As-Available Capacity Price ($/kW-year) (Seller assumes GHG Compliance Costs)	
Variable Charge ($/MWh)	
Expected term year production (MWh)	
Fixed Energy Price if applicable ($/MWh)	
Select gas index for service area.	

The Capacity Payment shall be calculated pursuant to Exhibit D, Section 3 (TOD Period Capacity Calculation) of the Proforma CHP PPA.

Proforma Agreement - Exhibit D - Table 1 Contract Heat Rate

Contract Heat Rate, BTU/kWh		
Season	TOD Period	Heat Rate
Summer	Peak	
	Partial Peak	
	Off Peak	
	Super Off Peak	
Winter	Partial Peak	
	Off Peak	
	Super Off Peak	

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CHP Proforma PPA (continued)

Offer form includes the standard curtailment option of the CHP Form PPA and a proposed PG&E curtailment option

52	At your option, you may offer PG&E curtailment rights under the PPA. PG&E will include the market value of these curtailment options in evaluating offers.	
53	Seller may optionally provide a curtailment option. Please select from list.	Standard PG&E Alternate Other Proposal None
54	If Seller proposes alternate curtailment option, describe.	

PG&E Alternate Curtailment Proposal - Firm Curtailment at Buyer's Discretion	
Total number of curtailable hours offered per Contract Year	
	Maximum MW curtailment per hour
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

PG&E Alternate Curtailment Proposal Notes:

Curtailments shall not result in any environmental permit violations

Seller's availability calculation for capacity payments shall not be affected by buyer curtailments unless Seller does not comply with curtail orders.

Curtailment hours are exclusive of CAISO or Transmission system curtailments.

PG&E will pay the variable charge (non energy) as proposed above for curtailed energy.

CHP Proforma PPA – Expected Generation Profile over PPA term

Profile used to evaluate market value

Weekday Generation Profile Hour Ending

Month	Maximum MW	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600
1	-																
2	-																
3	-																
4	-																
5	-																
6	-																
7	-																
8	-																
9	-																
10	-																
11	-																
12	-																

Enter an expected MW level between 0 and Net Contract Capacity for the month.

Weekend/Holiday Generation Profile Hour Ending

Month	Maximum MW	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600
1	-																
2	-																
3	-																
4	-																
5	-																
6	-																
7	-																
8	-																
9	-																
10	-																
11	-																
12	-																

Tolling PPA – Pricing (Toll_Compensation_Credit)

Compensation

Please enter offered pricing below.

	Capacity Payment Rate ($/kw-yr)			Fixed O&M ($/kw-Year)	Fired Hour Charg Per Hour per Unit ($fired hour/Unit)
	Part A: when PG&E takes CO2 risk only (with PPA section 9.3)	Part B: when the Seller takes all GHG risk (without PPA section 9.3)	Part C: when Seller proposes to allocate GHG risk		
Amount					

If Seller proposes an allocation mechanism for GHG risk, please describe.	

Seller Credit Requirements

Project Development Security $ (as applicable)	
Project Development Security Type	
Pre-Delivery Term Security ($)	
PreDelivery Security Type	
Delivery Term Security Offered ($)	
Delivery Term Security Type	

For existing facilities

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Tolling PPA – Operations (Operational_Limitations)

- Contract Capacity at ISO, Peak July, and typical monthly conditions
- Ancillary Services Capability
- Heat rates by generation level and temperature conditions
- Degradation schedules as functin of Equivalent Operating Hours for Capacity and Heat Rate
- Forced Outage Rates, Starting and Shutdown characteristics

Tolling PPA – Operational Constraints (Op_Constraints)

Enter constraints from pre-defined list or other

5	Operating Constraints (for Entire Facility)	
6	Operating Constraint 1	CO (lbs)
7	Operating Constraint 1 Other	
8	Operating Constraint 1 Value	7,000,000.00
9	Constraint 1 Period of Limitation	Each Quarter
10		
11	Operating Constraint 2	
12	Operating Constraint 2 Other	
13	Operating Constraint 2 Value	
14	Constraint 2 Period of Limitation	
15		
16	Operating Constraint 3	
17	Operating Constraint 3 Other	
18	Operating Constraint 3 Value	
19	Constraint 3 Period of Limitation	

Energy (GWh)
NOX (lbs)
SO2 (lbs)
CO (lbs)
CO2 (million lbs)
PM10 (lbs)
Fired Hours (hours)
Starts (Number)

Evaluation Methodology

Steps for Shortlisting

- Evaluate all valid offers
- Transmission Cost
  - No transmission costs added for Existing CHP and Existing CHP converting to Utility Tolling
  - Transmission costs for New, Expanded and Repowered CHP using proxies from Transmission Ranking Cost Report (TRCR) or electric interconnection studies, if available
- Ranking for Shortlisting
  - Shortlist rankings are relative
  - No fixed cut-off price
  - Based on quantitative and qualitative factors
  - Shortlisting is no guarantee that PPA will be executed

Evaluation Criteria

- Ranking based on combination of quantitative and qualitative factors
- Quantitative Evaluation
  - Market Valuation including GHG costs
  - GHG Emissions Reductions
  - Transmission Adders (where applicable)
- Qualitative Evaluation
  - Project Viability
  - Credit
  - Portfolio Fit
  - Technical Reliability
  - Supplier Diversity
  - Adherence to form PPA terms and conditions

Market Valuation

Market Value = Energy benefit + Capacity benefit + Curtailment Value – Offer's cost, where

- **Energy benefit** is based on
  - market prices, Locational Marginal Pricing (LMPs) multipliers, volatilities, and correlations as necessary
- **Capacity benefit** is based on
  - PG&E's internal estimate of net capacity cost of marginal resource, and
  - offer's contribution to PG&E's Resource Adequacy requirements
- **Curtailment Value** is based on
  - the market price of energy
  - amount of curtailment offered.
- **Offer's cost** is based on
  - the offer energy pricing (such as heat rate, Variable O&M, startup cost) and capacity pricing
  - GHG cost

Transmission Adders (New, Repowered, Expanded CHP)

- Generator Cost responsibility – Include in bid price
  - Direct Assignment Facilities (e.g. Gen-tie)
  - Wheeling Charges to Delivery Point
- Customer Cost Responsibility – Considered in bid evaluation
  - Distribution and Network Upgrades
  - Costs estimates from
    - Interconnection Process (Phase 1/Phase 2 Studies or SIS/FAS Studies)
    - Transmission Ranking Cost Report

Portfolio Fit

Measured by Flexibility and Effective CHP MW

- **Flexibility:**
  - A measure an Offer's flexibility and energy delivery patterns
  - Dispatchability and predictable delivery patterns are valued higher

- **Effective CHP MW:**
  - A measure of an Offer's capacity in meeting PG&E's CHP MW obligation

GHG Emissions

GHG Emission Reduction is determined by each offers' contribution to the PG&E's GHG Emissions Reductions Goal as calculated in Section 7.3.1 of the Settlement Agreement

- **New CHP Facilities**: evaluated compared to the Double Benchmark(8,300 BTU/kWh heat rate and 80% thermal efficiency)
- **Physical Change from a Repowered CHP Facility**: measured by the GHG emissions difference between
  - The average of the previous two calendar years of operational data compared to the Double Benchmark, and
  - Anticipated changes in operations compared to the Double Benchmark
- **CHP Facility Change in Operations or a conversion to a Tolling Facility**: based on:
  - The average of the previous two calendar years of operational data, less
  - the PPA emissions and emissions associated with replacing 100 % of the decreased electric generation at a time-differentiated Market Heat Rate.

Project Viability

- **Company/Development Team**
  - Project development experience, EPC experience, Ownership and O&M experience
- **Technology**
  - Technical feasibility, Resource quality, Manufacturing supply chain
- **Development Milestones**
  - Site control, Permitting status
  - Project financing status
  - Interconnection progress, Transmission requirements
  - Reasonableness of COD (Commercial Operation Date)

Technical Reliability

- **Assess likelihood that Project will meet:**
  - Performance requirements
  - Efficiency requirements
  - CHP Facility maintains steam host requirements and obligations
- **Emissions characteristics**
- **Retained Engineering Consultant**

Credit

- **Willingness to comply with the Settlement Agreement requirements**

- **Evaluated on:**
  - Total amount of Development Security
  - Performance Assurance
  - Form and quality of Security offered

Consultation with PRG/CAM and IE

- PRG: Procurement Review Group
- CAM: Cost Allocation Mechanism Group
- Discuss proposed shortlist and evaluation methodology
- Solicit feedback on whether certain offers should be included and whether certain offers should be excluded
- Incorporate feedback and finalize shortlist

Gas Interconnection

Gas Interconnection

- **Preliminary Application for Gas Service for New or Expanded CHP Facilities**
- **Confirming Gas Service for Existing CHP and Utility Tolling facilities**

New or Expanded Gas Interconnections with PG&E

- **If Participant missed the December 16, 2011 deadline to request for New or Increased Demand with PG&E, Participant may not participate in this CHP RFO. Participant is encouraged to submit application for new gas service when ready and prepare to submit offer in a subsequent CHP RFO.**

- **For projects that have already obtained a response for a Preliminary Application for Gas Service within the past 12 months, the Participant shall submit copies of the completed studies and a completed Appendix D3 with the Offer.**

Existing Gas Interconnections With PG&E

- **Participants who have an existing gas interconnection with PG&E and do not require increased gas service must provide the following information with their Offer:**
  - Map showing PG&E service interconnection point and meterset location
  - Meterset number
  - Start date, term and end date of gas service agreement
  - PG&E billing number
  - The additional information described in Appendix D1

- **If an Offer involves an existing CHP Facility or Utility Tolling Facility with an existing interconnection and does not require additional gas service, Participant must also provide the following information with its Offer submission:**
  - Copy of existing Natural Gas Service Agreement or equivalent if not connected to PG&E's gas transmission system
  - Rate Schedule pursuant to which existing CHP facility receives gas service
  - A list of transportation charges applicable to the existing CHP facility

Gas Interconnections Outside PG&E's Gas Transmission System

- Participants who do not take service from PG&E's California Gas Transmission ("CGT") must demonstrate comparable initiation with their local gas service provider.

- The Participant is responsible for the cost of each interconnection study or application and for obtaining all required information from the gas service provider, including all related documents and studies with the Offer.

- Participant's failure to provide the information necessary to complete its application for gas interconnection service may result in its Offer disqualification.

Gas Interconnection Information

Electronic copies of the Application for Gas Transmission Service and Agreement to Perform Tariff Schedule Related Work are available online at:
http://www.pge.com/b2b/newgenerator/wholesalegeneratorinterconnection/gasinterconnections/

The Application including the initial cash advance made out to PG&E should be delivered to:

Pacific Gas and Electric Company
Attn: Roger Graham
Wholesale Marketing and Business Development,
245 Market Street, Rm. 1553
San Francisco, CA 94105

Electronic copies should also be sent to Jeff Ryan, at jgr4@pge.com.

Electric Interconnection

Interconnection Agreements (IA)

New and Existing Producers

Interconnection Agreement establishes the costs, milestones, and terms and conditions for providing interconnection facilities and network upgrades connecting a generating facility with the PG&E system.

Power Purchase Agreements (PPA) and Interconnection Agreements (IA) are two separate agreements

- **Separate PG&E functions: The PPA and IA will be negotiated separately by different departments.**

Existing Producers

Generally, a separate, new IA must be initiated 6 months in advance of PPA expiration to avoid a disruption of service.

CAISO Requirements for All PPAs

Seller Obligations:
Prior to the commencement of energy deliveries, Sellers must provide PG&E with copies of the following:

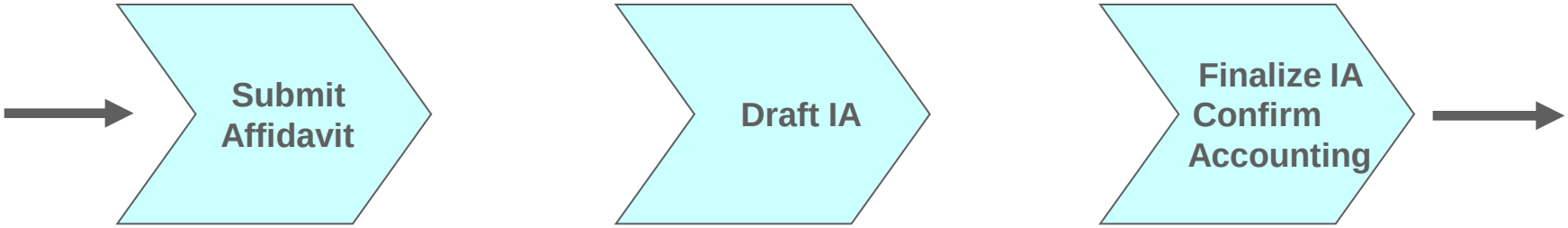
- New **Interconnection Agreement** between PG&E, Seller, and potentially the CAISO
- **Participating Generator Agreement** (PGA) between Seller & the CAISO
- **Meter Service Agreement** (MSA) between Seller & the CAISO

Interconnection Agreement Governing Tariffs

Obligation: To remain interconnected or to interconnect new generators, an applicable IA must be executed:

Distribution Generators	**Wholesale Distribution Tariff (WDT)**
Transmission Generators	**CAISO**

Interconnection Agreement: Process for Existing CHP and Utility Tolling Arrangements



Affidavit-like Process

- Confirm no material modification
- Research As-Is
  - SFAs
  - Job Estimates
  - Accounting
- Submit to CAISO for transmission and PG&E for distribution

Draft IA

- Ensure new IA includes all existing facilities required to facilitate interconnection
- Ensure new IA accurately reflects accounting

Finalize IA

- Ensure all parties agree (PG&E, Customer, and CAISO if transmission)
- Make adjustments to accounting

This process may be lengthy. Please plan for ~6 months and begin process soon

Interconnection Agreement: Materials Needed for Existing CHP and Utility Tolling

Information to expedite the IA process for PG&E and to ensure accuracy

- Affidavit attesting to same output as original agreement
- Original and any subsequent Special Facilities Agreements (SFAs):
  - "Agreement for Installation or Allocation of Special Facilities for Parallel Operation of Non-utility-owned Generation and/or Electric Standby Service (Electric Rules No. 2 and 21)"
- Job Estimate for existing interconnection provided by PG&E
- The latest bill for the Monthly Cost of Ownership Charge (the monthly Operation & Maintenance costs)
- Any project name or ownership changes after execution of Original SFA

Interconnection Process – *New Producers*

New Producers or Expanding Facilities or Repowered Facilities	New Application SIS Study or Cluster Study	New Interconnection Agreement

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 Wholesale Distribution Tariff (WDT)
  - PG&E's distribution voltage level is defined as facilities operating below 60 kV
  - All applications must be submitted to PG&E.

Wholesale Interconnection Study Processes - *New*

IOU processes vary slightly

System Impact and Facilities Study

Independent Study Process

- Electrical Independence Screens
- Commercial Operation Date Screen (CAISO)
- No MW limit
- Financial security requirements

Default Process

Phase I and II Studies

Cluster Study

- Default process, no MW limit
- One annual study
- Financial security requirements

- 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.

Independent Study Schedule – Application through Final Study

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

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

BD - Business Days
SIS – System Impact Study
FAS – Facilities Study

Note*: Subject to CAISO Tariff.

Post-Interconnection Agreement – Next Steps

- With an Interconnection Agreement, PG&E and Interconnection Customer will be engineering and designing, procuring, and constructing (*EPC*) 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)
- With EPC complete, 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

Interconnection Agreement Process: New, Repowered and Expanded CHP Facilities

For new facilities or facilities that make material modifications, please follow & complete the Generator Interconnection Procedure.

For assistance in determining what is considered a material modification, please consult PG&E for distribution interconnections and the CAISO for transmission interconnections.

For new generators or generators determined to be material modification, please refer to the Generator Interconnection Procedures overview:

http://www.pge.com/includes/docs/pdfs/b2b/newgenerator/wholesalegeneratorinterconnection/Generator_Interconnection_Procedures_Overview.pdf

Interconnection Agreement: Contact Information

Contacts for Interconnection Information or to Begin the QF Conversion Process

- **CAISO-controlled Grid Interconnections:**
  - **Leslie Feusi – Lead Interconnection Specialist, CAISO** (***After January 23, 2012***)
    - **(916) 351-2330, email: lfeusi@caiso.com**
  - **Brij Basho, CAISO**
    - **(916) 608-7136, email: bbasho@caiso.com**

  CAISO's Wholesale Interconnection Website

  – ***http://www1.caiso.com/docs/2002/06/11/20020611103004272 14.html***

- **Non-CAISO Controlled Grid (distribution) Interconnections:**

  PG&E - Generation Interconnection Services

    - **gen@pge.com**

  PG&E's Wholesale Interconnection Website

  – *http://www.pge.com/b2b/newgenerator/wholesalegeneratorinterconnection/index.shtml*

Overview of PPAs

Overview of CHP RFO Proforma PPA

- Proforma Power Purchase Agreement
- Negotiated through a multiparty stakeholder process and approved by the CPUC through the QF/CHP Settlement
  - Material changes to the PPA may result in offer rejection
- Expedited CPUC Approval - IOUs will utilize a Tier 2 Advice Letter for Existing CHP Facilities that executed a CHP RFO Proforma PPA without material modification
- For CHP greater than 5 MW, structured for baseload CHP product
  - If converting to a Utility Prescheduled Facility, use the Utility Tolling PPA

Overview of CHP RFO PPA (continued)

- Term: Up to 7 years for existing or expanded capacity; Up to 12 years for new or repowered capacity; expanded facilities electing to satisfy credit/ collateral terms may also get a 12 year contract

- Pricing: According to offer prices agreed to by the parties

- Project Development Security:
  - $20/kW, 30 days after Effective Date of contract
  - $60/kW, 18 months after Effective Date of contract

- Performance Assurance for new or repowered facilities
  - 12 months capacity payments; 5% of revenues

- Curtailment for system emergencies or limited economic conditions

Overview of Utility Tolling PPA

- Form is structured as natural gas fired tolling
  - Alternative structures should adjust form accordingly
  - Minimize edits to reflect operational characteristics
- Key Features:
  - Delivery Term: Up to 7 years for existing CHP Facility converting to tolling
  - Gas Supply: PG&E provides all fuel for facility
  - Exclusivity: PG&E has exclusive rights to all capacity, output and dispatch, including participation in all CAISO markets
  - Scheduling and Balancing: PG&E is Scheduling Coordinator (SC) for facility. Costs for schedule deviations passed through to Seller.
  - Guaranteed Heat Rate: To be provided by Seller
  - Compensation: Capacity, Fixed O&M, Variable O&M, Fired Hour and Start-Up
  - Carbon Emissions: PG&E is responsible for emissions associated with scheduled operations
  - Credit: Collateral due at PPA execution.

Appendix

Other CHP Program Information

See Other Options for CHP:

Website: http://www.pge.com/b2b/energysupply/qualifyingfacilities/welcome/
or http://www.pge.com/b2b/energysupply/qualifyingfacilities/

Email: QFSettlementInquiries@pge.com

CHP Proforma PPA (continued)

Major Overhaul Schedule

Start date of major overhaul 1 (nonbinding)	
Enter estimated number of days for the overhaul.	
Start date of major overhaul 1 (nonbinding)	
Enter estimated number of days for the overhaul.	

Maintenance Outage Schedule (not including major overhaul)

Enter hours by Month	Peak Hours	Non-Peak Hours	Total
January			0
February			0
March			0
April			0
May			0
June	No Maintenance Outages during this period		0
July			0
August			0
September			0
October			0
November			0
December			0
Totals	0.00	0	0

Notes:

Maximum of 550 Maintenance Outage hours per year

Maximum of 12 Offpeak maintenance hours per Peak Month where peak months are from June through September.

CHP Proforma PPA – Efficiency and GHG Emissions over PPA Term

Month	Expected Operating Hours	% of Hours used for Cooling	Thermal Input (million BTU)	Electrical Energy delivered to grid (MWh)	Electrical Energy delivered to host load (MWh)	Total Useful Thermal Output (million BTU)	Useful Thermal Output used for cooling purposes (million BTU) (if applicable)
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							
Total			0	0	0	0	

Tolling PPA– Maintenance Schedule (Toll_PPA)

	The Maximum Number of Maintenance Hours Allowed in any consecutive 12 month period when major maintenance is not needed. PPA 3.10(e)	Hours required for major maintenance
Enter hours by Month		
January		
February		
March		
April		
May	**No scheduled maintenance or overhauls allowed**	
June		
July		
August		
September		
October		
November		
December		
Totals	0	0

Notes:

No scheduled maintenance permitted from May through September.

For December and January, Scheduled Maintence Outages are not permitted for HE 0700-2200 Monday through Sunday.

Tolling PPA– Operational Constraints (Op_Constraints) (continued)

Enter emission rates as a function of operating hours

Please enter the below emission rates. This information will be used to determine whether any operating constraints will affect your facility's

Equivalent Operating Hours (EOH)	Emissions at Max.Operational Capacity with Duct Firing (lbs./hour)					Emissions at Maximum (lbs./h		
	NOX	SO_2	CO	PM10	VOC	NOX	SO_2	C
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								
0								

Note: PG&E will calculate your CO2 emission rates from other information provided by Seller (9.3 of the PPA)

Break

Q & A

END