

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

**Pacific Gas and Electric Company's (PG&E's)  
2014 Energy Storage Request for Offers ("RFO")  
Frequently Asked Questions  
(updated 02-11-2015)**

**ELIGIBILITY**

1. How does PG&E plan to use the energy storage (ES) procured through this RFO?
  - PG&E seeks ES that can be scheduled into the California Independent System Operator ("CAISO") market, or
  - ES capable of enhancing system reliability, such as deferring distribution system upgrades.
2. Is site control required at the time of Offer submission?
  - No. Site control is not initially required but Participants must at least identify a site and demonstrate at the time that Offers are submitted that they are on a path to obtaining site control. PG&E will provide the sites for Purchase and Sale Agreement ("PSA") Offers at its identified PG&E-owned photovoltaic ("PV") sites.
3. What is the minimum size for an ES Project?
  - Distribution-connected ES Projects must have a Design Dmax<sup>1</sup> of at least 1 MW. However:
    - For PG&E-owned distribution deferral assets, see the requirements set forth in the Energy Storage Request for Offers Solicitation Protocol ("Protocol") in Section III.F, PG&E-owned Distribution Deferral Assets.
    - For PG&E-owned ES assets at photovoltaic (PV) generation sites, see the requirements set forth in the Protocol in Section III.G, PG&E-owned Energy Storage at PV Sites.
  - Transmission-connected ES projects must have a Design Dmax of at least 10 MW.
    - Multiple ES resources can be aggregated in order to achieve the minimum project size for transmission interconnected offers, so long as: (1) the aggregate Design Dmax is at least 10 MW, (2) no single facility is less than 1 MW, (3) the aggregate product has a single CAISO Resource ID, (4) the aggregate product can be measured similar to having a single CAISO meter, (5) the aggregate product has one Locational Marginal Price node, (6) the aggregate product complies with the CAISO Tariff, and (7) the aggregate product is capable of being scheduled and dispatched by the CAISO or PG&E and optimized by PG&E as if the aggregated ES

---

<sup>1</sup> Please refer to the "Glossary of Terms" on PG&E's Energy Storage website for definitions.

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

resources were one project, subject to the terms agreed upon by the participant and PG&E. An aggregated project must be able to be charged and discharged to its full design capability.

4. Does PG&E require a minimum discharge duration?

- “Discharge Duration” is defined as the time from 100% State of Charge<sup>1</sup> to 0% State of Charge<sup>1</sup> when discharging at Dmax, understanding that Dmax may curtail as the State of Charge approaches 0%. The Discharge Duration should be interpreted as the fastest discharging time from 100% State of Charge to 0% State of Charge under normal operation.
- ES Projects must have a fifteen (15) minute minimum Discharge Duration.
- PG&E-owned distribution deferral Projects must have a two (2) or four (4) hour minimum discharge duration, depending on the individual site set forth in the Protocol in Table III.1, Distribution Deferral Sites.
- PG&E-owned ES Projects at PV sites must have a four (4) hour minimum discharge duration, as specified by PG&E for individual sites set forth in the Protocol in Table III.2, ES at PV Sites.
- If an Offer includes RA as part of the Product, then the Project must meet the applicable CPUC requirements for duration and CAISO requirements for deliverability as well as any other requirements that will enable PG&E to receive all of the RA benefits associated with the Project. The CPUC currently defines the Project’s Qualifying Capacity for RA as its ability to generate power over a continuous four hour period, for three consecutive days. The CPUC may modify this requirement in the future; if it does, a Project committed to providing RA will need to meet that modified requirement.

5. Is PG&E looking for a particular type of energy storage technology?

- No. Provided that an energy storage offer meets all of the RFO eligibility requirements, PG&E will apply its evaluation methodology to determine the net value of that storage offer to PG&E’s customers. However, technology diversity may be one of the qualitative criteria used to establish the shortlist of offers.

6. Does PG&E have any guidance on how to identify potentially preferred locations?

- For ES Projects submitted as a PG&E-owned Distribution Deferral Assets or ES at PV Sites, locations are identified in the Protocol in Section III.F, PG&E-owned Distribution Deferral Assets and Section III.G, PG&E-owned Energy Storage at PV Sites.
- For all other ES Projects, PG&E has a preference for Projects in its service territory. Offers for Projects in Northern California (north of Path 26 or “NP26”) by the California Independent System Operator (“CAISO”) will have an equal or higher value than comparable Offers from Projects outside of NP 26. Developers may use the map

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

developed for the RAM and PV programs, for more information about PG&E's system.

Link to map:

<http://www.pge.com/b2b/energysupply/wholesaleelectricssuppliersolicitation/PVRFO/pvmap/>

7. What if a project is not ready for this RFO?

- PG&E is required to hold biannual energy storage solicitations. Thus, PG&E expects to issue energy storage RFOs in 2016, 2018 and 2020. However, PG&E cannot confirm the eligibility requirements or targets of future RFOs.

8. Is there a limit to the number of offers or variations a Participant can submit?

- Yes. Participants may submit up to twelve (12) offers. Participants may submit one offer for a specific project at a specific location, using a specific ES technology, and for a specific contract type (e.g., ESA or PSA); varying these attributes are substantial changes and are considered new Offer(s).

Each offer may include up to five (5) variations (i.e., the original base offer and 4 additional variations of that offer). A variation may alter such attributes as delivery term, price, commercial operation date, duration of charge/discharge, capacity, or operational characteristics such as ramp rates.

9. Can ES Projects that include new generation (i.e., conventional or renewable) participate in the RFO?

- No. The ES RFO is not an opportunity for Participants to offer new generation.

## TARGETS

1. What is PG&E's transmission-connected ES target for the RFO?

- PG&E's transmission-connected target for the RFO is 50 MW.

2. What is PG&E's distribution-connected ES target for the RFO?

- PG&E's distribution-connected target for the RFO is 24 MW, after obtaining credit from the CPUC for 6 MW of existing PG&E-owned battery projects.

3. What is PG&E's customer-connected ES target for the RFO?

- PG&E's customer-connected target is expected to generally be met through existing CPUC programs. However, PG&E will consider customer-connected ES Projects that are able to compete with T&D connected projects in the RFO.

4. What type of agreement is PG&E looking to execute as a result of the RFO?

- PG&E may elect to execute a range of agreement types out of the RFO. Please refer to the RFO Solicitation Protocol Section II.B., Agreement Types, for additional information.

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

## **TIMELINE**

1. What are the key dates/deadlines<sup>2</sup> Participants should be aware of for the RFO?
  - The key dates and deadlines that Participants should be aware of for the RFO can be found in the RFO Solicitation Protocol in Section 1.C., Schedule Overview.
2. Does PG&E have a deadline by which to complete the RFO?
  - Yes. No later than December 1, 2015, PG&E must file an application seeking CPUC approval of agreements resulting from the RFO. Because of this short timeline, Participants are encouraged to submit projects that are on a path to being fully developed, to minimize redlines to agreements, and to respond promptly to requests for additional information from PG&E. Otherwise, a Participant's proposal may not receive consideration in the solicitation process.

## **EVALUATION**

1. Will PG&E provide the detailed calculation methods or the results of its valuation process to Participants or other interested parties?
  - No. PG&E's evaluation methodology, selection process, and results are proprietary and are not available to Participants or third parties. An exception is made for the staff of the CPUC and members of the Procurement Review Group in order to support PG&E's execution and cost recovery for ES procurement agreements. An overview of PG&E's methodology is provided in Chapter 5 of the testimony filed along with PG&E's Application. That testimony is available at this [link](#).

## **TECHNICAL**

1. Please explain how PG&E and CAISO must both be able to schedule the resource?
  - ES Projects that will participate in the CAISO market must obtain a single CAISO Resource ID and have one Locational Marginal Price node. Projects must be able to respond appropriately to a single electronic signal for the purposes of scheduling and dispatch from PG&E, CAISO or, if applicable, a third party Scheduling Coordinator.
  - These scheduling capabilities are not applicable for Distribution Deferral Asset Projects. PG&E will own and operate this category of resources after construction.
2. Please provide details on how PG&E will operate ES Projects that will participate in the CAISO market, for example the duration/depth of discharge and the frequency of discharge.

---

<sup>2</sup> The schedule and documents for the ES RFO are subject to change at PG&E's sole discretion at any time and for any reason.

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

- Operations will depend on market conditions and CAISO dispatch orders. Operations will also respect the operational limitations specified in the contract for such features as duration/depth of discharge and discharge frequency. See Appendix II of the Energy Storage Agreement for an example of Operational Limitations.
3. Should the cost of warranties and equipment replacement be included in the pricing of a storage offer?
- ES Projects should factor the cost of warranties and expected overhauls (if applicable) when pricing their offers. Operational limitations, such as the frequency and length of overhauls, should be included in offer terms as required to support the storage performance being offered. PG&E will consider the effect of operational limitations on a project's benefits, when calculating the value of an offer.
  - For Projects that PG&E would own, PG&E requires warranties (see PSA for specific type and length), credit support for these warranties, and insurance during the life of the storage system. PG&E is also requiring bidders to provide a term sheet for a ten (10) year Operating Agreement. In this term sheet, PG&E wants the costs of routine maintenance and major maintenance which includes a forecast of timing and costs of major equipment replacement.

## **INTERCONNECTION**

1. Does PG&E require Participants to have submitted an application for an interconnection study at the time of offer submission?
- No. PG&E does not require Participants to submit an application for an interconnection study to the CAISO or applicable distribution provider at the time of offer submission. However, Participants must still submit any and all portions of applicable interconnection studies (e.g., Cluster 7 Phase 1 Studies) that have been completed at the time of offer submission. However, a Project's status in the interconnection process will be considered as a factor contributing to its project viability, and the Project must have an Interconnection Agreement prior to commercial operation.
  - Participants submitting offers for PG&E-owned distribution deferral assets are required to go through the Work at Request of Others process as noted in the PSA. Participants will be responsible for all interconnection study costs, distribution upgrades, and interconnection facilities required to interconnect the project, and will need to negotiate interconnection terms with PG&E.
2. When must an ES Project request its interconnection study?
- A project that will participate in the wholesale electricity market must have a valid and active interconnection application prior to agreement execution. See this [link](#) for information on the transmission and distribution interconnection processes. For

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

projects that must have their interconnection applications studied via the transmission or distribution cluster process, the CAISO transmission interconnection application window is open April 1 through April 30, 2015 while PG&E's wholesale distribution application window is open March 1 through March 31, 2015. No other opportunity will be available for projects to enter the cluster process during the 2014 RFO. A project's failure to have a valid and active interconnection application in place by the relevant deadline above means PG&E will not consider it for shortlisting and execution of an agreement.

3. For an ES Project associated with an existing RPS resource, can the ES charge from both the grid and the RPS resource? (added 01-14-2015)
  - No, an ES Project associated with an existing RPS resource can only charge from the grid OR the RPS resource, not both. Please refer to the CEC Guidebook regarding the Renewable Portfolio Standard Eligibility of RPS resources with energy storage (<http://www.energy.ca.gov/2013publications/CEC-300-2013-005/CEC-300-2013-005-ED7-SF.pdf>).
4. On page 13 of the RFO document, it states: "Stand-alone ES resources must directly interconnect into the CAISO or applicable distribution provider and have a single dedicated CAISO-approved meter located on the high side of a step-up transformer. For amendments to existing Agreements with PG&E, the ES resource must share the CAISO-approved meter with the existing generation."

It is our intent to submit stand-alone ES resources that would ideally be metered at the low side of the transformer. Is the above language correct that it must be at the high side? If the high side of the transformer is indeed a requirement, would it be acceptable to have both low-side and high-side meters to differentiate the project from any other generation facilities that would also be delivering to the low side of the step-up transformer? (added 02-03-2015)

- PG&E clarifies what is intended by the Performance and Operational Requirement listed in Protocol Section III.C.3 as follows: PG&E may consider on a case by case basis stand-alone ES resources metered at the low side of the transformer if and only if all of the other generating facilities are under contract to PG&E.

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

### **PG&E-OWNED PV SITES**

1. Does PG&E have any guidelines or constraints for site dimensions required for installation of an ES system? (added 01-14-2015)
  - The PV facilities all have a limited amount of unused land within the facility perimeter that is available to the Participants. Because PG&E is not limiting the type of technology in the RFO, the available land will be allocated according to the requirements of the technology. A guideline for available land for each of the sites is no greater than ½ acre with a square or rectangular geometry.
2. Can you please provide the tilt angle of the panels at the 3 PV sites? (updated 01-28-2015)
  - The tilt angles for the Huron, Gates, and Stroud PV sites are 25 degrees.
3. Is union or prevailing wage labor required? (added 01-28-2015)
  - Prevailing wages may need to be paid to personnel working on the common facilities of the proposed energy storage project, for PSAs at PG&E-owned PV sites.
4. What kind of ancillary services and energy products are preferred for PV-PG&E sites? (added 02-11-2015)
  - For PG&E-owned PV sites, we want energy, ancillary services (regulation up/down or Regulation Energy Management (REM), spinning reserves, non-spinning reserves), RA, and Flex RA.

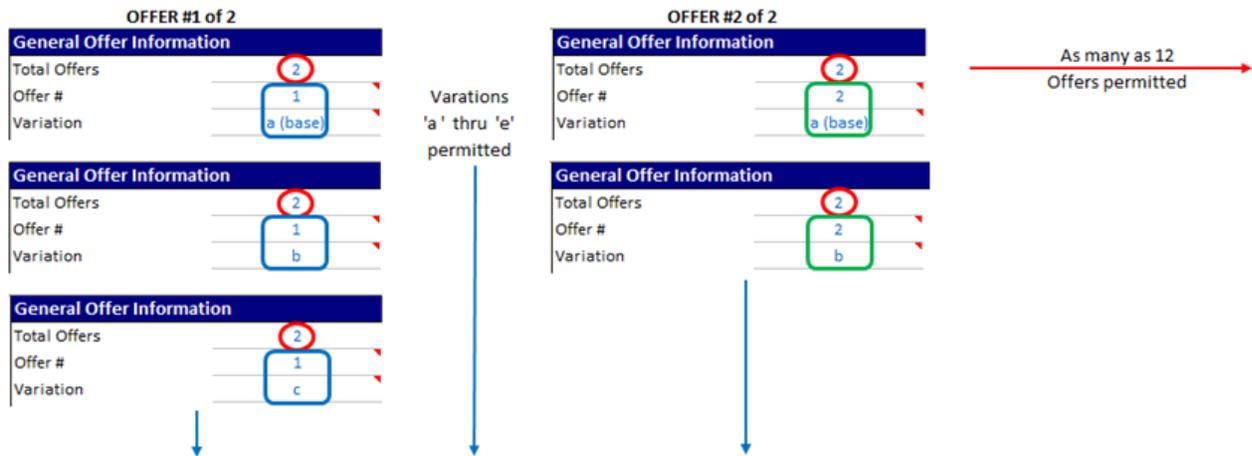
### **DISTRIBUTION DEFERRAL SITES**

1. What kind of ancillary and energy services are preferred for distribution deferral sites? (added 02-11-2015)
  - For distribution deferral sites, we want energy products.

### **OFFER FORM QUESTIONS**

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

- Can you clarify the difference between offers and variations, and how to number/letter them? (added 02-11-2015)
  - You may submit up to twelve (12) Offers. Changes in a Project’s location, technology, or specific agreement type (e.g., ESA, or PSA) would result in a new Offer. You may submit up to five (5) variations. If a Project’s location, technology, or specific agreement type remain constant, then changes in other characteristics such as delivery term, price, commercial operation date, capacity, or duration would constitute a unique variation.
  - Example:** Offer Form screenshots for two Offers are illustrated below. The first Offer (PSA) has 3 variations, a → c. The second Offer (ESA) has two variations, a → b. In the illustration below there would be five (5) Offer Form workbooks submitted, for the five (5) unique variations. Each Offer should submit a complete Offer package of applicable appendices. PSA packages should not include ESA information and vice versa.



- The required Project Development Security on the Offer Form’s “Project Information” tab seems low. Is it correct? (added 02-11-2015)
  - The Project Development Security listed in the “Required” column for PSA contracts (cell N46) is **incorrect** – it should be multiplied by a factor of 1,000. Thus, your offered PSA amount should be 1,000 times the amount listed in the “Required” column.

**STAND-ALONE PSA**

PG&E may modify the information provided below at any time for any reason. No advance notice is necessary for such modifications to take effect. In the case of differences between this information and the PG&E RFO Solicitation Protocol, the PG&E RFO Solicitation Protocol will govern.

1. We are submitting a stand-alone PSA Offer. Should a corresponding ESA offer be submitted? (added 02-11-2015)
  - Yes, if Participants are submitting a stand-alone PSA offer for a project, they must submit a corresponding ESA Offer for that same project.