

SDG&E 2016 Preferred Resources LCR RFO

Questions & Answers / FAQs

Energy Storage Product Type Specific Questions

1. The RFO states that SDG&E will differentiate flexible attributes based on their Flexible Resource Categories, with Base Ramping (Category 1 Flex) providing the greatest benefit. I have reviewed the EFC Category 1 requirements for Category 1 Flex as in the referenced CAISO Business Process Manual sections. In summary, the requirements for battery storage appear to be:

DAM and RTM Economic Bidding 5 am to 10 PM all days per year.

Startups: 2 per day: every Day

Energy Requirement 6 hours at EFC.

For battery storage to qualify must the battery be able to discharge at its EFC rated MW for 6 Hours? For a battery is the EFC the total of its charge and discharge max sustainable MW rates? (For example, a fully charged battery that can discharge continuously for 6 hours at 1 MW and also charge at 1 MW for 7 hours, would that battery have an EFC of 2 MW?) Or does such a battery with 2 MW of EFC require 12 MWH of energy storage so it can discharge for 6 hours at EFC as required? Perhaps the intent is this battery that has an EFC of 2 MW is only required to have 6 MWH of energy storage?

Please note that the CPUC and CAISO are the governing regulatory entities over flexible capacity, these are not SDG&E regulations. We highly recommend each respondent to read through the CAISO tariff, business practice manual (BPM), and the CPUC decisions governing flexible resource adequacy (for example 14-06-050). SDG&E can only comment on the current EFC rules from the CPUC and CAISO, not what might be set forth in the future. If the regulatory requirements change in the future, it is the responsibility of the offeror to meet those new and/or changed requirements.

Currently to qualify as a Flexible Category 1 base-ramping resource, the project must economically bid between 5 am and 10 PM every day of the year and must have the capability to start twice per day in a given month. The "six hours at EFC" requirement given by CAISO tariff 40.10.3.2(a)(2) may be met through various operational methods such as

1. Run for 6 hours continuously
2. Run for three hours, then charge back up, and run for another three hours in the 17 hour window

The EFC of a battery, assuming it has a Start-Up Time less than or equal to 90 minutes, is given by the CAISO tariff 40.10.4.1(a)(2)

"If the Start-Up Time of the resource is less than or equal to 90 minutes, the Effective Flexible Capacity value shall be the weighted average ramp rate of the resource calculated from zero to Net Qualifying Capacity multiplied by 180 minutes. The Effective Flexible Capacity shall not exceed the Net Qualifying Capacity of the resource."

Since the EFC of the resource may not exceed the NQC (the term given to the RA value of a project), in practice SDG&E anticipates that a utility-scale battery's EFC will most likely be limited by the four hour continuous output requirement for its NQC.

Please see CPUC Decision 14-06-050, Appendix for more examples and CAISO Tariff Section 40.10.4.1 for more information.

- 2. I want to submit an ESSEPC and/or ESSBOT offer, do I need to register for the ESSPPTA event on PowerAdvocate?**
No. Please contact SDG&E's Cost Development Team at 2016ESSEPCBOTRFO@semprautilities.com for any questions related to submitting bid documents for the ESSEPC and/or ESSBOT RFO.
- 3. Can you clarify the relationship between the ESSEPC and ESSBOT procurement effort and the rest of the product types?**
Please see question #9 under the general FAQ.
- 4. Can ESSPPTA projects that are located at different sites (of at least 500kW/2MWH in size each) all in the San Diego sub region be aggregated into one bid offer? Or if they are each at separate meters, does each site have to be a separate bid offer?**
No, ESSPPTA projects cannot be aggregated and must be separately metered and separately Offered in.
- 5. For storage with excess capability installed up front, how will it be valued? Specifically, to meet a constant capability commitment, if we overprovision up front, rather than using periodic augmentation, the initial excess capacity is a form of residual capacity that has definite value because it could be put to productive use.**
If the capacity, energy, or any other characteristics change over time, that should be entered into the Offer Form so that the project can be fully quantifiably valued properly; and then those attributes entered into the contract. Excess capabilities of a project that do not add additional measureable capacity, energy, or other services might be taken account as a qualitative factor. If the excess capacity is guaranteed contractually and identified in the offer form as such, and the interconnection is sized to accommodate the excess capacity, it will be considered in the evaluation. However, if the capacity is not guaranteed or the interconnection does not allow for the excess, those constraints would limit the value in our evaluation.
- 6. Given the loading order ranking, do newly installed storage products like batteries or load shifting products (like cold air storage) qualify as incremental Demand Response resource?**
This answer was revised on 4/26/16
If the storage is BTM, then it should be bid into DR product type. If it is a stand-alone / in-front-of-the-meter project, it should be bid into the energy storage product type.

Storage based offers will likely be considered "incremental" to the CAISO studies associated with the 2012 long term procurement plan proceeding that served as a basis for SDG&E's Track 4 authorized need based on the wording in the study assumptions (attachment A to the 5/21/2013 revised scoping ruling and memo of the assigned commissioner and ALJ - available here: ftp://ftp2.cpuc.ca.gov/PG&E20150130ResponseToA1312012Ruling/2013/10/SB_GT&S_0148784.pdf)
- 7. Please give more details on "incremental"?**
See General FAQ #18
- 8. How long does energy storage need to operate?**
To qualify for RA the resource must be able operate for a minimum of 4 consecutive hours per day for 3 consecutive days and a minimum of 24 hours per month. To qualify for Local RA, the resource must be located within the San Diego local sub-area and meet the assumptions set within the CAISO's annual Local Technical Study, Transmission Planning Process and Business Process manuals for Reliability Requirements. Flexible resources must also meet the minimum start requirements of the Flexible Capacity Category of the resource.

9. **Does the energy storage project have to be fully deliverable at bid date or by online date?**
The project must be fully deliverable by the delivery start date.
10. **The interconnection requirement for submitting Energy Storage bids was a Phase 1 study from the CAISO. Does that mean a Phase 1 must have been submitted to the CAISO prior to bidding, or must the resulting Phase 1 study be completed before submitting the offer to SDG&E?**
The Phase I study must be completed and submitted as part of the offer.
11. **Could you clarify the connection between SDG&E's TOU proposal and storage project eligibility? It does not seem inherently clear.**
Energy storage based DR offers are contingent on SDG&E receiving approval of the updated TOU periods requested in A.15-04-012. The current, out-of-date TOU periods do not accurately represent SDG&E's costs to serve customers, and as such, behind-the-meter storage facilities would be charging and discharging based on an inaccurate price signal and therefore SDG&E would consider that the resource is being subsidized under the out-of-date rate schedule (which contains the TOU period definitions) and therefore non-conforming under resource criteria #4 in the DR RFO document (see pg. 8 of that document).
12. **I am interested in offering in a storage based behind-the-meter technology / program. Should that be offered in as a DG or DR product?**
It should be offered in as DR. If, after going through the DR conformance requirements you are unsure if it will be conforming, please also check the DG conformance requirements. If, at that point, you are still not clear, please contact SDG&E at 'PrefResourcesRFO@SempraUtilities.com'.
13. **Explain how the ESS flex offering/additional cycles are treated in the evaluation methodology?**
Only the base cycles will be quantitatively evaluated. The additional cycles and associated cost information provided will be used as a qualitative evaluation metric.
14. **Is there a reasonable set of maximum annual cycles that should be offered?**
SDG&E has not expressed a limitation or preference on maximum annual cycles.
15. **Is it possible a 600 cycle offer will be evaluated as less valuable than a 300 cycle offer? Is there a possibility that offering more cycles could be detrimental?**
Yes, it is possible that a 600 cycle offer could be evaluated as less valuable than a 300 cycle offer depending on the pricing and other offer specifics included.
16. **Does SDG&E have a preference for a large number of base cycles as opposed to optional flex?**
SDG&E has no preference between these two, but the Bidder is allowed multiple offer submissions and SDG&E encourages bidders to offer in projects in different ways with differing pricing.
17. **What is the benefit premium placed on meeting Base Ramping (Category 1 Flex)?**
Category 1 Flex RA is used as a qualitative factor; there is no quantitative premium place on it.
18. **Can you provide additional clarification on how bids with different numbers of maximum annual cycles would be evaluated? Can I provide you a hypothetical scenario to understand the evaluation?**
Please see the evaluation FAQ #6 for insight into how bids will be evaluated and how NMV works. The energy benefit is computed based on a model of storage dispatch which will not cycle more than the daily/monthly/annual/lifetime maximum (but may cycle less). Please also note that SDG&E's Bid Evaluation Team will not pre-evaluate hypothetical scenarios/pricing for bidders.

19. **If my project installs additional energy storage to a system that has received SGIP, will my project be conforming?**

Please see FAQ DG question #18

20. **We have an annual throughput limit based on total MWh/yr, not in terms of number of cycles. You would be allowed unlimited shallow or deep cycling, subject to that total throughput limit. Can you help me understand how to input this into the spreadsheet?**

Please enter an equivalent number of full deep cycles in the offer form. In addition, below the cycle inputs there is a free form field for you to enter any other operational details and constraints such as total throughput limits. SDG&E will take those details into considering during the quantitative evaluation.

21. **For an IFOM Energy Storage project, we understand that we can provide a maximum number of shallow and deep cycles as well as a shallow vs. deep cycle cutoff %. This makes it clear that for duration/energy applications, there will be a limit on how much the battery will be dispatched on an annual basis. It is less clear how we are able to limit the ancillary services use that SDG&E applies. Do you intend that SDG&E can dispatch a system for the four A/S types as much as they please so long as the maximum shallow and deep cycles are not exceeded?**

For in-front-of-the-meter (IFOM) energy storage resources, SDG&E intends to act as scheduling coordinator and will therefore control the approach to bidding these resources into the CAISO markets. The storage resource characteristics will play an important role in developing the bidding strategy for these resources. All dispatches of the storage unit, whether by the CAISO or SDG&E shall comply with the cycle limits and any other operating restrictions included in the offer form, which includes narrative fields that can be used to describe limits on utilizing the resources. For example, a total annual MWh limit can be included if the offeror is concerned that other limits may not result in properly modeling the usage of the storage resource. With respect to A/S, any service that is certified in the Resource Data Template (RDT) will be able to be bid in. These resources may have certain limitations which may prevent certification or limit their available quantities.

22. **With the requirement for energy storage to use the newly proposed TOUs, has there been any additional proceedings or notice regarding potential tariff restructuring? i.e. redistribution of demand charges, etc?**

As stated in the DR RFO document, any DR offers that are based on energy storage technology that may be shortlisted are contingent on the adoption by the CPUC of SDG&E's proposed new time-of-use periods as set forth in A.15-04-012. There are no additional proceedings besides A.15-04-012 as amended (filed February 9, 2016) that contain potential tariff restructuring that is relevant for purposes of this RFO.

23. **In the Energy Storage Pro Forma Tolling Agreement, Appendix 9.2, please define the term "ERP".**

"ERP" has been removed from the latest version of the PPA.

24. On the Energy Storage Products Offer Form, Tab 4 "Operational Constraints" please answer the following:

- a. **Total Capacity, C9 - Does this included oversized for capacity degradation, or the nameplate available to SDG&E for dispatch?**

The contracted capacity available for SDG&E dispatch.

- b. **Discharge Rate, E13 and Charge Rate E15:**

- i. **Should Min be a positive or negative number?**

Positive

- ii. **Average - please clarify what is intended here for the above system.**

The lifetime average expected charge/discharge rate (in MW/hr), given system degradation, under typical operating conditions.

- c. **System Efficiency, E18:**

- i. **How is SDG&E taking into account self-discharge rates for minimum efficiency requirements?**

All system losses related to storage system round-trip efficiency should be included in these values.

- ii. **Should respondents assume that the system is utilized at least 1x per week/month?**

The quantitative evaluation will take into account all operational constraints and variable costs provided by each offer to determine the optimal dispatch profile. It is possible that an offer could contain constraints and variable costs that result in an optimized dispatch profile that does not include any charge/discharge activity over any given period of time.

- iii. **Should seller assume that It is possible that Buyer could charge system on 1/1/2019 and then not discharge until 12/31/2019.**

See answer to 23.c.ii. above.

- d. **Notification Time, C20 and Min run time per charge/discharge, C21 - If notification time is less than 1min, or less than 1 second, how should that value be input?**

<1

- e. **Min downtime between charges, C22 - If system does not need downtime between charging/discharging, is the correct input "0"?**

Yes

- f. **Shallow vs. deep cycle cut off, G29 - Please confirm a 0% discharge would be interpreted by SDG&E to mean that any utilization of the system would be interpreted to be a cycle.**

0% in the cycle cutoff field would indicate that any usage is considered a deep cycle, and no shallow cycles are offered.

- g. **A/S Table**

For more details on A/S certification with the CAISO:

<http://www.caiso.com/Participate/Pages/MarketProducts/AncillaryServices/Default.aspx>

Tariff, Section 8

Market Operations Business Practice Manual, Sections 2.2.2 and 4

- i. **Ramp Rate, C40-43**

1. **Please describe how ramp rate should be determined (over what period).**

As the form states, in MW/minute.

2. **Is it characterized only by the positive operational range (discharge only), or absolute range (charge and discharge)?**

It should be characterized by the range expected to be certified by the CAISO.

- ii. **Operating Range Min (MWh), D40-43 and Operating Range Max (MWh), E40-43:**

1. **Non-spin - Please confirm 30min of continuous energy discharge at rated power level is required to meet the CAISO requirement**

2. **Spin - Please confirm 30min of continuous energy discharge at rated power level is required to meet the CAISO requirement**
3. **Reg Up - Please confirm 15min of continuous energy discharge at rated power level is required to meet the CAISO requirement**
4. **Reg Down - Please confirm 30min of continuous energy discharge at rated power level is required to meet the CAISO requirement**

CAISO BPM section 2.2.2 states:

Ancillary Services

The following types of Ancillary Services (AS) products are procured in the CAISO Markets. Section 4 of this BPM describes these Ancillary Services and their requirements in greater detail:

- Regulation Up (must be synchronized and able to receive AGC signals, and be able to deliver the AS Award within 10 minutes^[1] based on the regulating ramp rate of the resource^[2])
- Regulation Down (must be synchronized and able to receive AGC signals, and be able to deliver the AS Award within 10 minutes based on the regulating ramp rate of the resource)
- Spinning Reserve (must be synchronized, be able to deliver the AS Award within 10 minutes)
- Non-Spinning Reserve (must be able to deliver the AS Award within 10 minutes)

[1] In DAM, AS are procured for each Trading Hour. In RTM, AS from resources that are Dynamic System Resources are procured for each 15 minute interval. For resources that are identified as Non-Dynamic System Resources, AS capacity will be procured for the hour. In either case, when AS is dispatched, the associated Energy must be delivered within 10 minute according to the AS definition.

[2] Tariff Sections 8.4.1.1 and 30.5.2.6.1 provides that Ancillary Services Bid for Regulation must contain an upward and downward range of generating capacity over which the resource is willing to provide Regulation within a range from a minimum of 10 minutes to a maximum of 30 minutes. Initially the CAISO sets this requirement at 10 minutes.

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