

Stakeholder Comments

Frequency Response Issue Paper and Discussion, August 13, 2015

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SDG&E appreciates the opportunity to comment on the Frequency Response Issue Paper and CAISO’s development of the CAISO decisions on methods to comply with BAL-003. Frequency response is a valid concern and deserves consideration in light of the shifting landscape of generation technology that is on-line and how much primary response it can supply. Overall, SDG&E requests more information as outlined below as the CAISO and stakeholders develop a suitable solution to meeting BAL-003 and NERC requirements.

1. How should the ISO ensure there is sufficient frequency response capability on the system in all hours to satisfy the new requirement?

SDG&E requests more information in many areas from the CAISO to better assess how the CAISO should ensure sufficient frequency response. Detail, both quantitative and qualitative, will help stakeholders make informed contributions and recommendations during this stakeholder process. For example, what are short and long term assumptions made about the future resource mix and corresponding frequency response available each hour? How much of the future frequency response will be available from synchronous resources with governor control during different seasons? If the CAISO moves forward with creating a new market product to procure frequency response, when does the CAISO realistically believe it could be implemented and what would be the stop gap for meeting requirements until that time?

The CAISO is considering one option of looking at spinning reserve and what role that product may be able to play in meeting the frequency response need. SDG&E asks the CAISO to provide more information about the spinning reserve market as it currently functions. How much supply and procurement of spinning reserve is the CAISO currently seeing in the DA and RT markets? How liquid is the market or what does the

supply price (cost) curve look like? How large is the spinning reserve market now and how much would the estimated need increase if looking at procuring to meet frequency response needs in the future? How costly may this method be, particularly in periods of over generation?

SDG&E would also like to see CAISO outline and provide assumptions about the future of frequency response needs and the resource mix. Currently, the contingency of Palo Verde is being used to figure out the frequency response requirement. But, how might that change over time? Is there a chance a different contingency may be used for future requirements? And, what might that mean to frequency response needs? Additionally, the resource mix is shifting away from synchronous resources which currently provide frequency response as a requirement and inherent to their operation. The generation mix is shifting towards more asynchronous resources that do not have the governor action intrinsic to synchronous generators. However, what do we realistically estimate the timeline to be of the shifts and changes of the generation mix? Will storage come online quickly enough to add balance to the portfolio? Will there truly be a shortage of frequency response in the CAISO system in the longer term?

SDG&E believes it is worth exploring the idea of a 'Frequency Response Sharing Group' (FRSG) to meet the requirements of BAL-003. A FRSG allows two or more BA's to collectively meet the sum of the frequency response obligation of the group members. Partnering with another BA may be the most cost effective way to meet frequency response obligations even if CAISO were to compensate a BA for their excess frequency response (say a BA with a greater amount of hydro resources).

SDG&E also requests clarification on how frequency response is measured. We understand it is the median of the response among 25 frequency events. However, if there is a frequency event and other BAAs respond much faster such that CAISO only looks to have met a portion of the response, do we fail the performance standard?

2. Should the ISO develop a market product to procure frequency response?

SDG&E has reservations about developing a new market product because it is estimated a new market product will not be able to be implemented in time for compliance with BAL-003 and because we really don't know if one is necessary at this point. It is premature to jump to creating a new product and make assumptions we will need an additional market signal and compensation for frequency response. Once a need is established, a market product is worth exploring. This could be done in tandem with exploring a partnership of sorts with another BA or multiple BAs as a FRSG.

Additionally, if we truly take a look at the holistic system and a short to midterm forecast of frequency power needs and the resource mix, we may find a new market product has a short lifespan and is barely implemented before it is no longer relevant.

3. If the ISO cannot develop a product in time for the fall 2016 release, what interim solution would be appropriate? For example, using existing or modifying spinning reserve procurement.

If the CAISO finds studies to show the CAISO BAA will be deficient in frequency response, spinning reserve very well may be the optimal short term fix for meeting their obligation. In this case, SDG&E requests analysis from the CAISO on what type of impact over-generation will have on spinning reserve procurement. Spinning reserve delivery may be compromised as synchronous generators are shut down in over-generation situations.

Once more information is provided by the CAISO, it should become more clear what optimal short and long term solutions are for meeting frequency response obligations. It is hard to say what interim solutions could be when we don't know the need, the length of the interim solution, how the spinning reserve market is currently functioning and if that is a viable option to expand to meet frequency response obligations.

4. WECC standards apply only to synchronous generators. Should the ISO explore a requirement that non-synchronous generators have primary frequency response capability?

SDG&E believes the CAISO should explore a primary frequency response requirement for asynchronous generators. As asynchronous resources, primarily solar and wind, provide a larger share of generation over the year, their operation puts more of a burden on fewer synchronous resources to provide frequency response. Additionally, there will be instances synchronous resources are off-line due to a significant amount of renewable generation and soft loads, as the system has experienced in the spring months. This will mean less frequency response is available to the system unless asynchronous resources are required to provide some level of primary response when they are being curtailed.

SDG&E understands the inverters at renewable plants to be capable of providing frequency response. However, this is only possible if the plant is not running at full output. The plant must have some headroom available to provide primary frequency response in the upward direction. This should be considered in construction of the

requirement. We imagine this requirement will be for new resources coming online. In that case, the requirement could be implemented as part of the LGIA. Some existing renewables (like solar PV) are designed with some extra capacity to allow for 20 years of degradation and still maintain contract output levels. These units may be able to provide some frequency response even at rated output levels. Changes would probably have to be made in contracts, interconnection studies and inverter programming to allow for providing frequency response and should be evaluated by the CAISO.