Stakeholder Comments Template

FRACMOO 2 Stakeholder Working Group

This template has been created for submission of stakeholder comments on the FRACMOO 2 Working Group Call that was held on August 2, 2017. The working group presentations and other information related to this initiative may be found at: http://www.caiso.com/informed/Pages/StakeholderProcesses/FlexibleResourceAdequacyCriteria-MustOfferObligations.aspx

Submitted by	Company	Date Submitted
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Upon completion of this template, please submit it to initiativecomments@caiso.com. Submissions are requested by close of business on **August 18, 2017.**

Please provide your organization's comments on the following items:

1. Operational issues discussed during the working group related to flexible capacity needs.

First Solar, Inc. (First Solar) appreciates the opportunity to comment on the identified operational issues and proposed flexible capacity procurement framework, and to provide additional information regarding the ability of utility-scale solar projects to provide grid support. While solar and wind generation have changed the nature of the operational challenges as the grid increases supply from clean technologies to meet California's policy goals, utility-scale solar generators can also contribute to managing the grid with the right tools, market signals and incentives in place. Unlike generators with limited flexibility, like "baseload" resources, rooftop solar and old once-through-cooled units, utility-scale solar generators with advanced controls offer fast and accurate movement to support grid stability if operated to do so.

Utility-scale solar can provide intra-hour flexibility, meeting the identified needs of the grid quickly and accurately. First Solar has worked with the CAISO and NREL to demonstrate this capability, exhibiting faster and more accurate results than the capabilities of conventional generation.[1] The test data showed that utility-scale solar plants can provide services that range from spinning reserves, load following, voltage support, ramping, frequency response, variability smoothing and frequency regulation. Additionally, when paired with energy storage, utility-scale solar can considerably enhance these essential reliability services and even provide a few additional benefits like energy shifting, energy arbitrage, etc.

[1] NREL, CAISO and First Solar, *Using Renewables to Operate a Low-Carbon Grid* (January 2017), available at http://www.caiso.com/Documents/UsingRenewablesToOperateLow-CarbonGrid.pdf

First Solar urges the CAISO to evaluate the existing utility-scale solar fleet and the ability of new renewable generation to provide essential reliability services and to further explore additional opportunities for renewable resources to participate in the various ancillary services markets. The primary barrier to resources operating to provide these services is the lack of compensation and financial incentive for preservation of headroom and the implementation of state-of-the–art controls design and advanced configuration changes to the inverters. As utility-scale solar plants have historically been used primarily as an energy resource, the incentives are all directed at the generators running at full capacity, which does not leave the necessary headroom to provide these essential reliability services. With a new established tariff or financial mechanism with the appropriate incentives for operating to provide additional services, utility-scale solar is a highly efficient and effective tool that also provides environmental benefits.

California will need to add significantly more utility-scale renewable generation to meet the state's laudable RPS and GHG reduction targets. The misperception that there is too much utility-scale solar on the grid must be overcome by utilizing these resources to their full potential. It is imperative that the CAISO look to utility-scale solar as part of the solution to operational issues associated with variable resources. The power system is undergoing a rapid pace of evolution as variable generation resources like solar are becoming an increasing share of the generation mix. It will be easier to increase solar generation if it is flexible and controllable.

2. Proposed flexible capacity procurement framework presented by The Brattle Group.

First Solar supports the proposed framework presented by The Brattle Group and wants to ensure that utility-scale solar generation is presented as part of the solution. First Solar believes there are several opportunities for utility-scale solar to become a significant contributor to the solution through participation in the ancillary services markets, as discussed above. In defining the flexible capacity products, Brattle describes a plan to minimize participation barriers. First Solar urges the CAISO to consider the compensation barriers that fast-responding utility-scale solar projects encounter. Including this generation resource as part of the solution will be essential to helping the state achieve GHG goals cost effectively. Utility-scale solar can now be developed at the lowest price of any generation resource, so with the cost and environmental benefits, it will serve the grid well to engage this resource in providing essential grid services as well.

The CAISO also needs to adopt real-time tools, such as short-term forecasts, to identify flexibility needs at the granular scale that will have the most beneficial impacts to the grid. Improved tools will better inform the operations of the solar generators through improved forecasting.

3. Proposed flexibility metrics and any additional metrics that you believe the CAISO should consider.

First Solar also asks the CAISO to examine, as part of initiative, the market products designed in response to FERC Order 755 to compensate generation for providing regulation movement, or mileage. We urge the CAISO to evaluate how mileage is compensated and the existing metrics used. As the market operates now, resources are not adequately compensated for fast, accurate performance. Current mileage prices are typically at zero or close to zero and

the reason for these low prices is unclear. Any new, fast and accurate resources are thus not compensated for the services they provide. First Solar suggests that an evaluation of the cause of the lack of payment for performance may provide a solution to address some of the operational issues identified in this initiative.

4. Plan to move the flexible capacity initiative forward.

First Solar applauds the CAISO for undertaking this initiative and tackling these challenging issues. We appreciate the CAISO's transparency and the rigor of the technical and operational analysis provided, and look forward to working with the CAISO and other stakeholders. We strongly support moving forward with this initiative.