Stakeholder Comments

FRACMOO 2 Stakeholder Working Group Discussion September 25, 2017

Submitted by	Company	Date Submitted
Vladimir Chadliev, Director-Global Grid Integration 1 (602) 414-9349 VChadliev@firstsolar.com	First Solar, Inc.	October 10, 2017

First Solar, Inc. (First Solar) appreciates the opportunity to comment on the CAISO's most recent workshop on the Flexible Resource Adequacy Criteria Must Offer Obligation 2 (FRACMOO 2) initiative, as well as the new conceptual framework discussed during the presentation. As California adds significantly more renewable generation resources to meet its RPS and GHG reduction targets, it is imperative that all resources are both required to deploy available technology to provide grid reliability services and provided the opportunity within the market and operational structures to receive compensation for providing the services.

Utility-scale solar generating facilities can be controlled and operated to provide flexible ramping and essential reliability services, but both the CAISO market opportunities and the state's procurement framework need to change to fully realize the potential of these resources to operate as grid-support resources. As the CAISO proceeds with designing better market tools to support operational needs, First Solar urges the CAISO to also evaluate how these tools would be enhanced through changes to the procurement framework overseen by the California Public Utilities Commission.

As the least-cost renewable generating resource, utility-scale solar combined with storage will help California meet its GHG targets while achieving the goals of SB 350, but the rules, incentives and products need to be aligned between the CAISO market and the CPUC procurement framework to fully realize the potential at the lowest possible cost for ratepayers.

Utility-Scale Solar Capabilities and the Four Product Conceptual Framework

First Solar reiterates its comments made previously in this initiative, emphasizing the need for the CAISO to ensure that there is no discrimination against what types of resources will be eligible to provide these services. The original proposed framework, presented by the Brattle Group, described a plan to minimize participation barriers. However, the CAISO's new conceptual framework is limited in its detail of how it envisions the market functioning with the

four proposed products. Will these products translate to increased capacity, products on the open market outside of CAISO, or manifest in some other form? The CAISO hinted that the four products may be separated only at point of implementation, raising additional questions about what new eligibility requirements would be imposed for procurement of flexible capacity. It is also unclear to us how the CAISO's framework will address procurement of flexible capacity. Is the CAISO intending to develop new products for its own market or revisions to current CAISO ancillary services market products? First Solar urges the CAISO to elaborate on its plans for creating or revising CAISO market products.

First Solar additionally requests a specific definition of what the CAISO is now considering a non-dispatchable resource. From the meeting, it was unclear whether this is based on fuel or technology, or how the resource is scheduled. Clarity on this point will allow First Solar to better provide input on what the CAISO is proposing, as the CAISO indicated that the amount of flexible capacity needed is affected by the amount of non-dispatchable resources utilized. Utility-scale solar should not be considered non-dispatchable because of its controllability and ability to offer intra-hour flexibility.

Utility-scale solar is able to meet the identified needs of the grid quickly and accurately, as demonstrated in the NREL, CAISO, and First Solar study published earlier this year.[1] The test data shows faster and more accurate results in a range of services – from spinning reserves, load following, voltage support, ramping, frequency response, variability smoothing, and frequency regulation. When paired with energy storage, utility-scale solar can enhance these reliability services and provide additional benefits such as energy shifting, energy arbitrage, etc. The major barriers to resources acting in this way is lack of compensation and the current procurement framework. As the market currently incentivizes renewable generation to output a maximum amount of energy, generation does not leave the amount of headroom required to provide these services. The CAISO could do its part to solve this issue by providing adequate compensation to these generators to incent the operational behavior that would provide the grid with additional flexibility.

Analysis of Alternatives

First Solar is concerned that the CAISO is attempting to merely put a patch on an identified problem rather than addressing the root cause and analyzing the availability of cheaper, more efficient solutions. For example, an important issue identified in this workshop is the inaccuracy of forecasting. If CAISO can improve forecasting tools, such as providing a fifteen-minute day-ahead forecast to align with the fifteen-minute product proposed, there is less of a need to impose a new framework for additional procurement of resources only for these purposes. Using day-ahead hourly forecasts errors to justify a new fifteen-minute product does not align well enough to justify this additional procurement burden. Investing in better

[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

forecasting is more cost effective and will better allow California's existing and newly interconnecting renewable generation to respond to the grid's needs.

As discussed above, the CAISO system already has resources that can offer the types of services that the CAISO is identifying it needs for intra-hour operability. It is essential that the CAISO look to the renewable resources already on the system, and new renewable resources being brought online, that have these additional capabilities. Utility-scale solar resources have the ability to provide more assistance to the grid, and we encourage the CAISO to explore compensation structures to incentivize this behavior.

Ultimately, First Solar believes more analysis must be done – both into identifying what the problems are and also into what services grid-connected resources can already provide. Though the CAISO has indicated that work with the Brattle Group will not move forward, First Solar encourages the CAISO to still provide the data and analysis promised to be included in that report.

CPUC Advocacy

First Solar was encouraged to hear the CAISO's comments at the October 5 Market Performance and Planning Forum describing the CAISO's intention to vet the FRACMOO framework at the CPUC in the RA proceeding. With multiple interrelated proceedings affecting the success of any new RA framework, it is important that the CPUC be on board with any proposal. The types of requirements coming out of this stakeholder initiative must be part of the future integrated resource plan in order to ensure that the most efficient procurement for these requirements is taking place.

We encourage the CAISO to also be active at the CPUC beyond vetting its own policies. Multiple changes can be made to procurement that address these same ramping issues and generators need the CAISO to identify and advocate for the changes. For example, the CAISO is seeing these increased reliability issues as a result of the increased supply of uncontrollable distributed energy resources. First Solar is agnostic to the growth of DERs, but believes everything interconnected to the grid must be controllable. Controllable resources, like utility-scale solar, are bearing the burdens imposed on the grid by non-controllable DERs. The controllability of utility-scale resources allows their upward ramp rates to be controlled and allows the resources to be curtailed, compensating for the lack of controllability, and even visibility, of DERs on the system. As a second example, geographic diversity for locating plants can also address the reliability needs of the grid over the CAISO's large balancing authority area. The current proceeding underway at the CPUC for integrated resource planning has not optimized for the location of renewables, though this would provide an additional solution to the CAISO's operational challenges. The CAISO needs to be in a position to advocate for solutions where these issues are interrelated.

First Solar looks forward to continuing to work with the CAISO to address the operational challenges it has identified and in offering input on the capabilities of utility-scale solar to provide solutions.