

## CAISO 2018 Policy Initiatives: Draft Roadmap and Final Catalog Stakeholder Comments

Submitted by	Company	Date Submitted
Colin Meehan Director, Regulatory & Public Affairs (512) 537-2169 Colin.meehan@firstsolar.com	First Solar, Inc.	January 4, 2018

First Solar, Inc. (First Solar) appreciates the opportunity to comment on the CAISO's Three-Year Roadmap (Roadmap) and 2018 Stakeholder Initiatives Catalog (Catalog) and to address how the CAISO can use these documents and initiatives to drive effective and reliable renewable integration. We support the initiatives identified by the CAISO this year and look forward to further collaboration on additional tools, market products, and coordination with the CPUC that may be needed to further the promise of greening ancillary services. First Solar has made similar comments in other specific initiatives, but given the scope of the Roadmap and the importance of ensuring that controllable renewables contribute to grid reliability, we are reiterating many of our comments here.

### **Background on First Solar**

First Solar designs, manufactures and sells PV solar modules with an advanced thin-film semiconductor technology. First Solar is the world's largest thin-film PV solar module manufacturer, with net sales of just under \$3 billion in 2016. The company also develops, designs and constructs PV solar power systems throughout the world, using its vertically-integrated structure across the supply chain to deliver meaningful PV solar energy solutions to a variety of energy problems worldwide. First Solar is headquartered in the United States and has been in business for over ten years, and its stock trades on the NASDAQ. The company is currently the only pure-play renewable energy company in the S&P 500 Index.

First Solar's experience and technology has resulted in a significant number of operating solar generation resources in the United States, including about a third of the currently-operating solar PV generation fleet supplying the State of California. For California alone, First Solar has constructed over twenty generating facilities that operate to serve the state, including two of the largest solar facilities in the world, the 550 MW Desert Sunlight project and the 550 MW Topaz project.

First Solar has extensive experience with the advanced power controls that are required to provide Essential Reliability Services, including primary frequency response. Most First Solar-designed projects in California are capable of providing regulation, voltage support and frequency response during various modes of operation today. This means that these utility-scale PV plants have active power management controls for the whole plant and can respond to dispatch instructions. While some may require minor software configuration changes to allow the plants to respond directly to ISO dispatch instructions, many First Solar projects are accepting the ISO's Automated Dispatch System (ADS) commands now and responding accordingly.

### **Comments on Roadmap**

First Solar applauds the CAISO on the Roadmap effort as an important tool in addressing the complicated issues associated with the transition to a more renewable grid. In 2017 the CAISO Board issued a draft Vision Discussion Paper, "Electricity 2030-Trends and Tasks for the Coming Years" (Vision Paper), which positioned the CAISO as a leader in managing this transition effectively. The CAISO should strive to align the Roadmap with the key trends identified in the Vision Paper, including a future system shaped by the variable output of wind and solar and the decline of gas-fired generation as the grid is modernized. As stakeholders, we appreciate the increased transparency to the planning of initiatives that these two documents provide and urge the CAISO to use the Roadmap as a starting point to thoughtfully identify solutions to address grid-related constraints.

With more renewables interconnecting to the grid, the CAISO will need to create pathways to allow and encourage renewables to provide ancillary services, to ensure that all

resources are on an equal playing field with respect to supporting grid reliability, to foster the development of new procurement structures to facilitate reliability, and to evaluate the RPS constraints. The CAISO Board's vision for the future positions the CAISO as a leader in grid modernization through the implementation of policies that require all resources to operate flexibly and allows renewable resources to supply an increasing share of essential reliability services.<sup>1</sup> The full suite of capabilities offered by utility-scale solar should be evaluated in implementation of this Roadmap and the planning of future initiatives in order to optimize the existing resources.

Utility-scale solar is able to meet the needs of the grid quickly and accurately, as demonstrated in the NREL, CAISO, and First Solar study published last year.<sup>2</sup> 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. In some cases, renewable resources can provide services more efficiently than conventional resources. When paired with energy storage, utility-scale solar can enhance these reliability services and provide additional benefits such as energy shifting, energy arbitrage, etc.

We believe that the time is right for the CAISO to examine what market products and associated pricing structures are necessary to support greater grid-related flexibility and controllability so that renewable generators can provide these services. One of 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 can utilize these renewables to solve identified operational issues by establishing appropriate protocols and operational requirements and by providing adequate compensation to these generators to incent the operational behavior that would provide the grid with additional flexibility. The Roadmap, broken into three broad categories: evolving the ISO markets, enhancing Resource Adequacy, and shaping electric sector decentralization, has the potential to drive these new pathways for renewables. We encourage the CAISO to

---

<sup>1</sup> See CAISO Board Vision Discussion Paper, pg. 10-12.

<sup>2</sup> NREL, CAISO, and First Solar, *Using Renewables to Operate a Low-Carbon Grid* (January 2017), available at <http://www.aiso.com/Documents/UsingRenewablesToOperateLow-CarbonGrid.pdf>

consider the capabilities of utility-scale solar as they may apply to each of these identified tracks.

### **Comments on 2018 Stakeholder Initiative Catalog**

First Solar has been an active participant in the FRAC MOO 2 stakeholder initiative, advocating for the inclusion of renewables in the solution to the identified operational issues. We continue to applaud the CAISO for being proactive and taking the time now to design a grid and market structure that meets these emerging needs. We are encouraged that the CAISO is looking at changes to the timeframe for the must-offer obligation and a different cap on effective flexible capacity for variable energy resources, among other changes, and reiterate our support for the initiative.

Through this initiative, the CAISO identified several operational issues that it intends to address in through a variety of Day-Ahead Market enhancements, including the extension of the Day-Ahead Market to EIM entities. First Solar broadly supports expanding the market to improve efficiency and renewable integration through day-ahead unit commitment and scheduling.

First Solar also supports the CAISO's Interconnection Process Enhancements 2018 initiative. In our initial comments on the potential scope, we urged the CAISO to address a lack of transparency around the availability of deliverability, process issues, and the timing of technical requirements. We also sought the inclusion of issues related to the forced conversion to energy-only and the punitive forfeiture of interconnection deposits. We support the CAISO's broad categories for the initiative: deliverability, energy storage, generator interconnection agreements, interconnection financial security and cost responsibility, interconnection requests, and project modifications, as we believe, pending more information, there is room for all of our identified issues to be addressed within these categories.

We look forward to participating in these upcoming initiatives and supporting policies that integrate renewables effectively and support using the capabilities of utility-scale solar to address operational needs.