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REVIEW OF MARKET REFORM ASSESSMENT PRODUCED BY ENERGY AND ENVIRONMENTAL ECONOMICS, INC (E3)	**§**	**PUBLIC UTILITY COMMISSION**
	§	
	§	**OF TEXAS**

COMMENTS OF SUNNOVA ENERGY INTERNATIONAL INC., SUNRUN INC., AND SUNPOWER CORPORATION ON ASSESSMENT OF MARKET REFORM OPTIONS TO ENHANCE RELIABILITY OF THE ERCOT SYSTEM REPORT

Sunnova Energy International Inc. (Sunnova), Sunrun Inc. (Sunrun), and SunPower Corporation (SunPower, and together with Sunnova and Sunrun, Joint Commenters) submit these comments in response to long-term market design proposals set forth in the November 10, 2022, Assessment of Market Reform Options to Enhance Reliability of the ERCOT System (Report), prepared by Energy and Environmental Economics, Inc. (E3) for the Public Utility Commission of Texas (PUCT or Commission). The Joint Commenters appreciate the opportunity to submit these comments to the Commission and urge the Commission to ensure that any market reforms, including a Forward Reliability Market (FRM) market design or a Performance Credit Mechanism (PCM), allow for the full participation of (behind-the-meter) distributed energy resources (DERs). As explained in these Comments, DERs are rapidly growing resource that can contribute substantially to the wholesale market and meet the objectives identified by the Commission for Phase II of the Market Design Blueprint.

Interest of the Joint Commenters in this Proceeding

The Joint Commenters are each leading national residential solar and storage companies that have a substantial presence in the State of Texas. Sunnova (NYSE: NOVA) is a leading Energy as a Service (EaaS) provider with customers across the U.S. and its territories. Sunnova is headquartered in Houston, Texas. Sunnova's goal is to be the source of clean, affordable, and reliable energy with a simple mission: to power energy independence so that homeowners have the freedom to live life uninterrupted. Sunrun is the nation's leading provider of residential solar, storage and energy services. With a mission to create

a planet run by the sun, Sunrun pioneered residential solar service, and now serves customers across the United States, including Texas.

Summary of Comments

The Report sets forth six market reform options to improve market signals and ensure reliability in the ERCOT market, including an FRM and a PCM. The Joint Commenters generally support forward capacity and reliability markets. However, each of the six reliability reform options that the Report proposes relies on market assumptions, including the present and forecasted capacity of photovoltaic (PV) systems and battery energy storage systems (BESS) within ERCOT, that are incorrect. More specifically, E3 substantially understates both current and estimated PV and BESS capacity in Texas. Wood Mackenzie measures that Texas has 16 GW of installed PV capacity — 1.4 GW of which is residential — and anticipates that another 31 GW of PV capacity coming online in Texas through 2026 — 3.4 GW of which will be residential.[1] Wood Mackenzie also identified 1.8 GW (or 2.7 GW-h) of installed BESS capacity in Texas — 59.2 MW (or 140.4 MW-h) of which is residential — and estimates ***12 GW*** (or 27 GW-h) will be added through 2026 – 408 MW (or 1,051 MW-h) of which will be residential.[2] These figures dwarf several of the forecasts set forth in E3's report. This hyper growth of DERs and the substantial capabilities that they can bring to the wholesale market must be incorporated into any forward capacity or reserve market that ERCOT adopts.

Comments

Phase II of the Market Design Blueprint is intended to address reliability in the wholesale market through dispatchable generation resources, in accordance with objectives set in Senate Bill 3. These objectives include, among others, the procurement of generation resources on a competitive basis, development of appropriate qualifications and performance requirements, and prevention of prolonged,

[1] Wood Mackenzie, *U.S. Solar Market Insight: Q4 2022 Data*.
[2] Wood Mackenzie, *U.S. Energy Storage Monitor: Q3 2022 Data.*

rotating outages due to high demand and low supply scenarios. PV and BESS resources accomplish many of these objectives. BESS resources, in particular, provide dispatchable power during the peak net load times (9-10pm) that E3 suggests are the "hours of highest reliability risk." Indeed, E3 acknowledges that BESS resources will cut down on gross load during these peak hours. (Report at Fig. 4.) But the Report substantially understates the current and forecasted capacity of BESS resources that can be available during these hours. And it also substantially understates the current and forecasted capacity of PV resources that can be available during peak gross load hours.

DERs and the Benefits of Forward Capacity and Reserve Markets

The Joint Commenters generally support forward capacity and reliability markets provided that they incorporate a mechanism for solar and storage to fully participate in the wholesale market. Allowing full participation by DERs will increase reliability, given the benefits this type of resource can offer to the bulk power grid. DERs participating in capacity or reserve markets offer a realistic, readily available way to significantly improve long-term system reliability, including during high-risk hours and extreme weather events, for the benefit of electric consumers. For a market redesign to be successful, any reforms must employ a competitive market structure, which will encourage energy generation at the lowest costs and facilitate the participation of DERs, again, to the benefit of electric consumers.

While the Joint Commenters understand that there is hesitation to introduce forward capacity or reserve markets in a region that has historically relied on energy markets alone, similar programs have proven successful in other regions. For example, E3's FRM proposal is similar to ISO New England's Forward Reserve Market,[3] which allows the ISO to procure "quick response" assets (*i.e.*, 10-30 min response time) six months in advance for each season — four months for summer and eight months for winter. This bi-seasonal reserve capacity construct allows DERs to strategically pick the reserve obligations that they are suited to serve, based on historical seasonal grid contingency hours when reserves will be

[3] https://www.iso-ne.com/participate/support/faq/forward-reserve-market.

called upon to support the grid. Under ISO-New England's reserve structure, asset holders that want to participate in the forward reserve market (including DERs) must prove either a 10-minute or 30-minute reserve capacity score via an ISO scheduled "reserve audit." In this competitive landscape, all assets can enter a forward looking "capacity" structure for reserves, which allows participants to receive monthly payments for their reserve obligation, with penalties for a participant's failure to deliver on that obligation. This incentivizes the procurement of reserves, while helping to assure performance.

The Value of PV and BESS in Both Redesign Proposals

The Report's "Base Case Assumptions" include an existing capacity of 11,992 MW of PV resources in ERCOT (as of summer 2022) with a forecasted addition of 27,335 MW of PV capacity between 2022 and 2026. But according to research firm Wood Mackenzie, Texas has 16.17 GW of installed PV capacity — 1.4 GW of which is residential — with another 30.89 GW of PV capacity coming online between 2022 and 2026 — 3.37 GW of which will be residential.[4] The E3 Report says that Texas has 2,014 MW of installed BESS with 5,397 MW coming online between 2022 and 2026. But Wood Mackenzie estimates ***almost 12 GW*** (or 27 GW-h) of storage capacity will be added in that time – 408 MW (or 1 GW-h) of which will be residential.[5]

This ever-growing stockpile of resources must be accurately accounted for in any proposed reliability market design, because these DERs are available to meet many of the objectives identified for Phase II of the Market Design Blueprint. They provide dispatchable power during peak load hours (PV DERs are capable of generating dispatchable power during peak summer load hours of 5:00-7:00pm, while BESS DERs can generate dispatchable power at any time of day, including during E3's proposed peak-load hours), during extreme weather events when the grid's traditional power generation sources have proven to be vulnerable, and in the event of domestic terrorism. Recent substation sabotage efforts in North

[4] Wood Mackenzie, *U.S. Solar Market Insight: Q4 2022 Data*.
[5] Wood Mackenzie, *U.S. Energy Storage Monitor: Q3 2022 Data*.

Carolina left more than 45,000 homes and businesses without power. Sadly, this is just one example of sabotage of the electric system that has occurred in four states in the past two months.[6] The adverse impacts of these outages can be mitigated in a region powered primarily with or supported by substantial DERs. Thus, for all reliability concerns — whether they arise from peak demand, extreme weather, or terrorism — the Commission should ensure that any market reforms, including the adoption of a FRM or PCM, encourages further adoption of DERs by allowing for the full participation of DERs in the wholesale market.

Respectfully submitted,

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[6] *See* https://www.eenews.net/articles/attacks-on-grid-infrastructure-in-4-states-raise-alarm/?utm_source=Sailthru&utm_medium=email&utm_campaign=Newsletter%20Weekly%20Roundup:%20Utility%20Dive:%20Daily%20Dive%2012-10-2022&utm_term=Utility%20Dive%20Weekender.

Executive Summary of the Comments of

SUNNOVA ENERGY INTERNATIONAL INC., SUNRUN INC., AND SUNPOWER CORPORATION (together, Joint Commenters)

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The Report sets forth six market reform options to improve market signals and ensure reliability in the ERCOT market, including an FRM and a PCM. The Joint Commenters generally support forward capacity and reliability markets provided that they incorporate a mechanism for solar and storage to fully participate in the wholesale market.

- However, the Joint Commenters have concerns that E3's analysis of the FRM and PCM options (as well as the other market design options in the Report) does not recognize and account for the value that distributed rooftop photovoltaic (PV) systems and battery energy storage systems (BESS) can provide in these new market designs.
- The Report simultaneously overstates the need for firm dispatchable generation (*i.e.*, natural gas or other thermal generation) and overlooks the existing capacity of PV and BESS that is currently available to participate in the wholesale market. The availability and projected growth of PV and BESS resources in Texas is substantial per the Wood Mackenzie analysis discussed in the Comments.
- This hyper growth of DERs and the substantial capabilities that they can bring to the wholesale market must be incorporated into any forward capacity or reserve market that ERCOT adopts.