UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators	))))	Docket No. RM18-9-000

Comments of Sunrun Inc. in
Support of Allowing DERs to Compete in Wholesale Markets

Sunrun Inc. (Sunrun) submits the following comments in response to the Commission's Notice Inviting Post-Technical Conference Comments of April 27, 2018 (Notice).[1] The Notice poses numerous questions relating to the participation of Distributed Energy Resource (DER) aggregations in Regional Transmission Organization (RTO) and Independent System Operator (ISO) markets.

The cost and performance of DERs have improved faster than nearly any observer would have expected just a few years ago. Between 2010 and 2017, residential solar PV system costs fell over 60%,[2] and lithium ion battery prices fell 79%.[3] Inverter prices have also fallen, while their functionality has improved in ways that enable the integration of higher penetrations of

[1] Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators, Notice Inviting Post-Technical Conference Comments, Docket No. RM18-9-000 (Apr. 27, 2018) (Notice).

[2] *See* Ran Fu, David Feldman, Robert Margolis, Mike Woodhouse & Kristen Ardani, National Renewable Energy Laboratory, *U.S. Solar Photovoltaic System Cost Benchmark: Q1 2017* at vi, https://www.nrel.gov/docs/fy17osti/68925.pdf.

[3] *See* Bloomberg New Energy Finance, *Batteries and their impact on the electricity sector,* NEW ENERGY OUTLOOK 2018 (2018), available at https://about.bnef.com/new-energy-outlook/?utm_source=newsletter&utm_medium=email&utm_campaign=newsletter_axiosgenerate&stream=top#toc-download.

DERs onto the grid.[4] These improvements in cost and performance, combined with increased penetration of smart meters and rising awareness among consumers, create an opportunity for DERs to provide services in both retail and wholesale markets in ways that can greatly benefit consumers and system reliability.

What the industry needs to make the most of this opportunity are non-discriminatory rules that provide wholesale market access for DER aggregations. Although the Commission has posed many good questions in its Notice, the Commission need not resolve every implementation detail in order to issue a Final Rule. What is needed, rather, is a Final Rule that directs the RTOs/ISOs to provide market access and participation models for DER aggregations in a manner that takes advantage of their full capabilities, including the ability to inject energy to the grid and the freedom to provide services at both the retail and wholesale levels. While DERs like residential solar represent a small portion of overall electric generation at present, in some regions they have exceeded 5% and are approaching double digits. Rather than wait for DERs to become a more significant source of supply, it is timely for FERC to create the conditions for wholesale market access and participation today to ensure that DERs are used efficiently and to encourage efficient patters of investment. The Commission has clear legal authority to put such rules in place, and should do so without delay.

I. Introduction

Sunrun is the largest dedicated residential solar, battery storage, and energy services company in the United States. Sunrun established the solar as a service model in 2007 and continues to lead the industry in providing clean energy to homeowners with little to no upfront

[4] *See* National Renewable Energy Laboratory, *Advanced Inverter Functions to Support High Levels of Distributed Solar*, available at https://www.nrel.gov/docs/fy15osti/62612.pdf.

cost and often at a savings to traditional electricity. We design, install, finance, insure, monitor, and maintain solar panels, as well as complementary battery systems, on a resident's home, while families receive predictable pricing for 20 years or more. Existing DER markets in the United States have been driven by ratepayers' desire to assert control over their electric bills. These "prosumers" have privately financed an industry revolution that values low-cost, customer-based solutions to integrate renewable energy resources onto our grid.

As prices have fallen and consumer awareness has grown, Sunrun has seen its residential customers increasingly choose to include battery storage along with solar. Sunrun's Brightbox residential storage product has an over 20% adoption rate among Sunrun's solar customers in California, and nearly 10% in Massachusetts, where the offer has launched recently. Sunrun's customers purchase the Brightbox primarily as a source of backup power for distribution-level outages. The Brightbox meets that need, but with the right market rules in place it can do much more to provide services at the distribution and wholesale level, benefitting its owner and the market as a whole.

II. The Commission Has Clear Authority to Regulate Sales from DER Aggregations into RTO/ISO markets

a. Sales from aggregated DERs into RTO/ISO markets are wholesale sales in interstate commerce

Sunrun submitted comments prior to the Technical Conference devoted to explaining the Commission's jurisdiction to remove barriers to the participation of DERs in organized wholesale electric markets.[5] These comments need not be repeated, but can be summarized briefly. The basis for the Commission's jurisdiction is straightforward. Sales from DER

[5] *See* Supplemental Comments of Sunrun Inc., FERC Docket Nos. RM18-9-000 & AD18-10-000 (filed April 5, 2018) (Sunrun Supplemental Comments).

aggregators into wholesale markets are sales at wholesale in interstate commerce.[6] The Commission has exclusive jurisdiction over such sales. Whether wholesale sales originate from facilities interconnected to the transmission system, the distribution system, or behind the meter is immaterial to the Commission's jurisdiction.[7] The U.S. Court of Appeals for the D.C. Circuit has made this clear on more than one occasion, explaining that "all aspects of wholesale sales are subject to federal regulation, regardless of the facilities used"[8] and that "when a local distribution facility is used in a wholesale transaction, FERC has jurisdiction over that transaction pursuant to its wholesale jurisdiction."[9]

b. State authority over distribution system reliability

With respect to DER participation in organized wholesale electric markets, the role of states and state-regulated distribution utilities is to promulgate and enforce non-discriminatory rules governing the reliable operation of distribution facilities. Section 201(b) of the Federal Power Act reserves to states the regulation of "facilities used in local distribution."[10] Because DERs interconnect on the distribution system, states' authority over distribution facilities will inevitably impact the manner in which DERs participate in wholesale markets. Section 201(b), however, distinguishes between authority to regulate *transactions* and authority to regulate

[6] 16 U.S.C. § 824(b)(1).

[7] *See Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators, Order No. 841*, 162 FERC ¶ 61,127 (2018) (Order No. 841) (explaining that the Commission possesses "exclusive jurisdiction over the wholesale markets and the criteria for participation in those markets, including the wholesale market rules for participation of resources connected at or below distribution-level voltages.").

[8] *Transmission Access Policy Study Group v. FERC*, 225 F.3d 667, 696 (D.C. Cir. 2000).

[9] *Detroit Edison Co. v. FERC*, 334 F.3d 48, 51 (D.C. Cir. 2003); *see also Nat'l Ass'n of Regulatory Util. Comm'rs v. FERC*, 475 F.3d 1277, 1282 (D.C. Cir. 2007) (holding that when FERC was "exerting jurisdiction over transactions" it "had no occasion to decide whether a facility as such should be classified as jurisdictional or not.").

[10] 16 U.S.C. § 824(b)(1).

facilities. The reservation of authority "over facilities used in local distribution" applies to the regulation of facilities as such, *i.e*. the planning and reliability of those facilities and their cost recovery in connection with retail sales.

The principal means by which states and state-regulated distribution utilities may ensure that DERs may safely export energy to the grid are through interconnection requirements and associated interconnection agreements. For example, to further its goal of increased DER penetration in the state, the New York State Public Service Commission has recently updated its small generator interconnection requirements, paying careful attention to ensure that the technical screens applied to DER interconnection are up to date technologically.[11] New York's small generator interconnection process asks applicants whether the system will operate in NYISO markets, but does so on a non-binding basis for informational purposes only.[12]

In its Notice inviting comments, the Commission asked whether distribution utilities should "be able to override RTO/ISO decisions regarding day-ahead and real-time dispatch of DER aggregations to resolve local distribution reliability issues," and,"[i]f so, should DER aggregations nonetheless be subject to non-deliverability penalties under such circumstances?"[13] To begin, we note that distribution utilities and RTO/ISO system operators must work together to specify what binding constraints on the distribution system must limit dispatch of DER aggregation. To the greatest extent possible, those binding constraints should be specified in advance, and before bids from DER aggregations would clear in the RTO/ISO market. In the

[11] New York Public Service Comm'n, *Proposed Amendments to the New York State Standardized Interconnection Requirements (SIR) for Small Distributed Generators*, Order Modifying Standardized Interconnection Requirements, Cases 18-E-0018, 15-E-0557 and 15-E-0751 (April 19, 2018) [2018 WL 1968776].

[12] *Id.* at Exhibit A page 67.

[13] Notice at 9.

event that a distribution system operator needed to override RTO/ISO dispatch of a DER in order to maintain reliability of the distribution system, then of course the distribution system operator should be able to do so. In such circumstances, however, the curtailment would be no fault of the DER and non-deliverability penalties would be inappropriate.

Finally, with respect to the impact that DERs have on state policy and state-regulated distribution utilities, we note that DERs are being financed and built today without any expectation of wholesale market revenues. Which means that many of the potential distribution-system impacts that concern states and state-regulated utilities are impacts that will occur regardless of whether DERs participate in organized wholesale electric markets. If anything, we believe that, in time, allowing DER aggregations to participate in wholesale markets will help to alleviate safety and reliability concerns by increasing operator visibility into distribution systems and fostering a more transparent conversation about binding constraints on distribution systems.

c. Distribution Utilities Should Not Have Veto Rights to Restrict DER Participation in Wholesale Markets

The Commission has asked whether RTO/ISO tariffs should empower distribution utilities to review lists of DERs that enroll in aggregations and to provide either binding or non-binding input to the RTO/ISO regarding these DERs' market participation.[14] It would be inappropriate to give distribution utilities veto rights over what DERs may join aggregations or what aggregations may participate in organized wholesale electric markets. States and state-regulated distribution utilities have authority under state law to determine binding constraints on their distribution systems and to establish non-discriminatory interconnection requirements for DERs that wish to export energy to the grid. But the Commission should not give states and

[14] Notice at 6.

state-regulated distribution utilities additional rights under FERC-jurisdictional tariffs to obstruct DER participation in wholesale markets. The Commission considered a similar question in the recent *Advanced Energy Economy* rehearing order.[15] There, the Commission rejected the argument that Relevant Electric Retail Regulatory Authorities (RERRAs) should have the right to decide what resources participate as energy efficiency resources in PJM. The Commission explained that its "authority to determine which resources are eligible to participate in the wholesale markets is a fundamental component of the regulation of the wholesale markets."[16]

Although granting distribution utilities veto power over which resources may participate in wholesale markets would be inappropriate, Sunrun does not object to RTO/ISOs affording distribution utilities a brief notice period in which they may review lists of DERs that are joining aggregations to participate in wholesale markets. For example, CAISO gives distribution utilities 30 days to raise concerns with proposed DER aggregations.[17] Under the CAISO tariff, however, the burden lies with the distribution utility to raise concerns, and CAISO makes the final determination regarding eligibility.[18]

III. Providing States an Opt-Out Would Needlessly Restrict Wholesale Market Competition

The Commission's authority to provide wholesale market access for DER aggregations in no way depends on allowing states to opt out.[19] As the Commission explained in the *Advanced*

[15] *Advanced Energy Economy,* Order Denying Rehearing and Granting Clarification in Part, 163 FERC ¶ 61,030 (April 17, 2018).

[16] *Id*. at P 36.

[17] CAISO Tariff, Section 4.17.4.

[18] *Id*.

[19] *See* Sunrun Supplemental Comments at 6–9.

Energy Economy rehearing order,[20] the Supreme Court's decision in *FERC v. Electric Power Supply Ass'n* was based on the finding that demand response resources directly affect wholesale markets, and not on the opt-out afforded by Order No. 745.

Just as an opt-out would be unnecessary as a matter of law, it would be counter-productive as a matter of policy. The great potential of DERs is their versatility to provide value at both the retail and wholesale levels. To capture that potential, the Commission will need to encourage sustained cooperation between itself, the RTO/ISOs, and state regulators. An opt-out, where exercised, would cut that cooperation short and would limit the ability of DERs to maximize their potential by competing in both retail and wholesale markets.

The Commission has also asked about a "limited opt-out provision which would allow states to require DERs to choose participation in either the RTO/ISO market or retail compensation programs, but not both."[21] A "limited" opt-out provision would also prevent DERs from realizing their full potential by unreasonably denying them the opportunity to provide value at both the retail and wholesale level.

A "limited" opt-out would also do nothing to advance its ostensible goal of preserving state autonomy. States already have the legal authority to place conditions on what facilities participate in their retail compensation programs and whether those facilities may simultaneously participate in other retail or wholesale programs. Because states already have the right to control their own programs, granting RERRAs the right to force DERs to choose between state and federal markets would not advance any notion of cooperative federalism. To the contrary, embedding a "limited opt-out" within a FERC-jurisdictional tariff would only interfere with regular state legal processes for imposing eligibility criteria for state programs. Eligibility

[20] 163 FERC ¶ 61,030 at PP 39–41.

[21] Notice at 4.

criteria for state-administered retail programs may be legislatively-determined in some cases and administratively-determined in others, but in all cases subject to the substantive and procedural requirements of state law, which would be short-circuited by placing the "limited opt out" in a RTO/ISO tariff.

IV. DERs Should be Allowed to Provide Value in both Retail and Wholesale Markets

In the November 17, 2016 NOPR,[22] the Commission proposed that "distributed energy resources that are participating in one or more retail compensation programs such as net metering or another wholesale market participation program will not be eligible to participate in the organized wholesale electric markets as part of a distributed energy resource aggregation."[23] Sunrun and many other commenters objected to this proposal because it would destroy the ability of DER to provide value at both the retail and wholesale level. In its supplemental comments, Sunrun also explained why requiring bifurcation on a prophylactic basis – *i.e.* due to the mere *possibility* of double compensation – would be unreasonably broad and inconsistent with Commission precedent.[24]

In the post-technical conference Notice, the Commission asked: "Given the variety of wholesale and retail services, is it possible to universally characterize a set of wholesale and retail services as the 'same service'?"[25] The answer to this question is 'No.' For the Commission to attempt to formulate a general rule on this topic or any sort of "universal"

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[22] *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 157 FERC ¶ 61,121 (Nov. 17, 2016) (NOPR).

[23] *Id.* at P 134.

[24] Sunrun Supplemental Comments at 10 (explaining the Commission's rejection of an argument that it should restrict wholesale market access based on a risk of double counting in *Advanced Energy Economy*, 161 FERC ¶ 61,245 at P 64 (Dec. 1, 2017)).

[25] Notice at 5.

characterization among services would invite litigation and confusion, with little benefit to ratepayers. Whether two markets compensate the "same service" on the one hand, or "distinct values" on the other is a question that cannot be answered in the abstract. The Commission should resist the temptation to develop general definitions, and instead wait to address these types of questions as they arise in practice with the benefit of a full record.

When such questions do arise, the Commission should rebuttably presume that state programs aim to compensate a value that is different than what the DER provides to the wholesale market. A rebuttable presumption along these lines is justified because states have no incentive to create retail programs that waste their ratepayers' money by duplicating services procured in wholesale markets. States create such programs because they believe they will produce value to the retail market/ distribution system that is distinct from the values that RTO/ISO markets produce. And, where it is impossible to provide value at both levels, they make participants choose between participating in the retail program and the wholesale market.

Experience to date shows that states have been careful not to create programs for DERs that purely duplicate wholesale market functions. For example, in an order earlier this year on Multi-Use Applications, the California Public Utility Commission (CPUC) developed a methodology for allowing storage resources to stack services in multiple markets without risking overcompensation.[26] The CPUC's order identifies reliability services and non-reliability services within each of five domains (customer, distribution, transmission, wholesale market, and resource adequacy).[27] The order gives reliability services priority such that

[26] CPUC, DECISION ON MULTIPLE-USE APPLICATION ISSUES, Rulemaking 15-03-011, Decision 18-01-003 (Jan. 11, 2018).

[27] *Id.* at 10.

> a single storage resource may not contract for two or more different reliability services from the same capacity in a single, or multiple, domains, over the same or overlapping time interval for which the resource is committed to perform or be available. The storage provider must not enter into multiple reliability service obligations such that the performance of one obligation renders the resource from being unable to perform the other obligation.[28]

The order creates an exception to this rule for resource adequacy services, which may be provided using the same capacity over the same time interval. The order offers an example that "if a storage resource is providing local resource adequacy capacity, it may meet its resource adequacy must offer obligation by providing any service in the wholesale service domain using its resource adequacy capacity."[29]

We share this example not to suggest that the Commission should necessarily replicate the CPUC's methodology. Rather, it illustrates how states have appropriate incentives to look carefully at how DERs may participate in multiple markets and how they are unlikely to design retail programs that allow DERs to receive duplicative compensation.

V. CAISO DER Provider Participation

The Commission has asked in the Notice "why DER aggregators have not used [the CAISO DERP] model to date, what other approaches, if any, that DERs are using to access the CAISO and other RTO/ISO markets, and whether those alternative approaches provide adequate RTO/ISO market access for both behind-the-meter and front-of-meter DERs."[30]

Sunrun is grateful for the leadership CAISO has shown in advancing the participation of DER aggregations in wholesale market. However, there are several features of the CAISO

[28] *Id*. at 11 (Rule 6); *see also id.* at Appendix A (Rule 6).

[29] *Id*. at 11 (Rule 7).

[30] Notice at 2.

DERP model that have made it unattractive to behind-the-meter resources and that should be remedied. First, the CAISO DERP model requires non-generator resources to settle in the CAISO settlement system in all time intervals (24x7 settlement). That is, CAISO receives the non-generator resource's meter data and applies a wholesale energy settlement regardless of whether the resource has submitted a bid to the CAISO in that interval.[31] This requirement is prohibitive for behind-the-meter storage because, among other reasons, it requires resources to pay twice for charging energy (once at wholesale LMP and again at retail).[32] Second, the CAISO DERP model requires DERs to go through the Wholesale Distribution Access Tariff (WDAT) process, which is far more expensive and time consuming than what is otherwise required for behind-the-meter resources to participate in retail programs.[33]

Neither the 24x7 settlement requirement nor WDAT interconnection apply to behind-the-meter resources participating as demand response. As a result, DER aggregations have focused exclusively on CAISO's demand response programs to date. This alternative, however, does not provide adequate market access for DERs for the simple reason that as demand response resources they may not inject energy to the grid. So long as DERs have no better option than to participate as demand response resources without the right to inject energy, much of their value to the wholesale market will go unrealized.

VI. Multi-Nodal Aggregation

[31] *See* CPUC, ADMINISTRATIVE LAW JUDGE'S RULING SEEKING COMMENTS ON JOINT STAFF PROPOSAL, Rulemaking 15-03-011 at 11 (May 18, 2017).

[32] *See* Justin Gundlach & Romany Webb, *Distributed Energy Resource Participation in Wholesale Markets: Lessons from the California ISO*, 39 ENERGY L. J. 47, 68 (2018)

[33] *Id.* at 70.

At the technical conference, representatives of CAISO and PJM both offered workable approaches to allowing DERs to aggregate across nodes. CAISO has developed Sub-Load Aggregation Points, each containing clusters of pricing nodes within which little congestion typically occurs. PJM's representatives described an approach by which DER aggregations could bid in across multiple nodes using distribution factors and then settle at each node using metered data.

What would be unworkable would be to restrict DER aggregations to a single pricing node. Pricing nodes for load were not designed with this purpose in mind. Even with low minimum size requirements, there is no guarantee that each of the many thousands of nodes across the RTO/ISOs would be of a sufficient size to sustain aggregations and to foster market competition among multiple aggregators. The Commission need not take an overly prescriptive approach to this question, so long as RTO/ISOs are required to implement an approach that fosters opportunities for meaningful competition from DER aggregations.

VII. Conclusion

Sunrun urges the Commission to proceed to a Final Rule that directs the RTOs/ISOs to provide market access and participation models for DER aggregations in a manner that takes advantage of their full capabilities, including the ability to inject energy to the grid and to provide services at both the retail and wholesale levels. The Commission has clear legal authority to put such rules in place, and should do so without delay.

Respectfully submitted,

/s/_____

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