UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Energy Storage Association v. PJM Interconnection, L.L.C.	)	Docket No. EL17-64-000
Renewable Energy Systems Americas and Invenergy Storage Development LLC v. PJM Interconnection, L.L.C.	)	Docket No. EL17-65-000

ANSWER AND MOTION FOR LEAVE TO ANSWER
OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rules 212 and 213 of the Commission's Rules and Regulations,[1] Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor for PJM[2] ("Market Monitor"), submits this answer to the answer of the Energy Storage Association ("ESA") submitted on June 2, 2017. ESA makes various assertions that are unsupported and have no merit. The complaint should be denied.

1 18 CFR §§ 385.212 & 385.213 (2016).

2 Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff ("OATT") or the PJM Operating Agreement ("OA").

I. ANSWER

A. No Evidence Supports the Claim that RegD Resources Are Forced to Exceed Their Physical Capability.

ESA continues to argue (at 4) that the new RegD signal (introduced on January 9, 2017) is causing their resources to "operate outside their design parameters and to overheat, leading to equipment damage, battery degradation and decreased useful life." ESA states (*id.*) that "[t]he principal causes of the damage resulting from the new RegD signal are that it (a) abandons the central characteristic of the initial RegD market design—energy neutrality—over short periods of time, and (b) dwells for much longer periods of time at high output/input levels." ESA further argues (at 15) that "[o]ne of the most damaging aspects of the new RegD signal is that it frequently dispatches battery resources to their full capability or close to their full capability for extended time periods."

ESA's argument has no merit. PJM dispatch cannot damage a resource, by definition. If a resource is damaged, it is the responsibility of the resource owner. Resources are not forced or required to operate outside of their actual capability. Participation in the regulation market is voluntary on an hourly basis. The parameters offered and the response of a resource to a regulation signal is under the control of the resource owner. This is true of both RegA and RegD resources.

It is a fact that individual resources may, at times, not be able to follow the regulation signal exactly. This is true of both RegA and RegD resources. ESA's allegation that their RegD resources are discriminated against (at 9) by being singled out and "being required to operate beyond their unit characteristics" is incorrect. The performance score tracks the actual performance of resources in following the signal.

Resource owners can change operational parameters to be consistent with the actual capability of resources to follow the defined dispatch signals. Resource owners can choose not to make offers during hours in which the resources are expected to be uneconomic. Resource owners can govern response to a dispatch signal so that the resource stays within its actual capability. These choices will affect the MW offered and the performance score associated with those MW.

B. No Evidence Supports the Claim that RegD Resources Cannot Reduce Offered Capability.

ESA does not deny that resources can modify their offer parameters and/or their hours of availability to avoid damage, or could adjust their actual operation to avoid damage. Instead, ESA argues (at 22) that offer parameters should not have to be adjusted to be in line with resources' actual capabilities, stating that "derating resources to meet PJM's new performance expectations presumes that those expectations are appropriate."

The real complaint appears to be (at 5) that the new signal "prevents them from being operated as they had been prior to the signal change."

Participants are not guaranteed that market signals or market design will not change. In this case, participants including ESA had multiple years of warning of significant regulation market design issues.

ESA ignores evidence that the old signal, given the amount of RegD clearing the market, was unsustainable and counterproductive. At the levels being procured, RegD, following the old signal, created operational issues for PJM. PJM's goal is to maintain system security through a competitive and efficient market mechanism. Given these operational issues, the RegD signal had to change and/or the amount of RegD clearing the market had to be reduced by correcting the MBF. As part of a set of temporary measures designed to address the operational issues, PJM made adjustments to the MBF and changed the RegA and RegD signal to accommodate the current levels of RegD.

C. PJM's New RegD Signal Does Not Discriminate Against RegD Resources.

ESA states (at 9) that the new dispatch signal "severely and adversely affects only those RegD resources that had been designed specifically to rely on the original dispatch signal designed by PJM." ESA states (*id.*) that the new signal "unduly discriminates against many RegD resources insofar as only they effectively are being required to operate beyond their unit characteristics in order to solve an operational issue."

ESA is incorrect. No unit has ever been required to operate beyond its capabilities. ESA ignores the tradeoff between the stated capacity of a battery and the duration of energy neutrality. For a given battery, the lower the defined capacity in MW, the longer the duration of energy neutrality. This is not a resource design issue. This is an issue about how to offer a resource into the market.

The new RegA and RegD signals do not discriminate against RegD resources. PJM redesigned the RegD signal to address a significant operational issue that resulted from the old signal. The new signal allows RegD to continue to provide regulation service at current, inefficient levels of RegD market participation. Rather than discriminate against RegD, the new signal requires RegA to support RegD. RegD as a class of resources is not being disadvantaged or discriminated against. RegD as a class is being accommodated, supported and subsidized. This is true for the specific subgroup of RegD resources represented by the ESA.

D. The Regulation Signals and the Ability of Resources to follow that Signal Determines the Relative Value of Resources.

ESA asserts (at 17) that "[i]t is irrelevant that there might be instances when neutrality in the RegD signal results in RegD resources working against ACE." ESA argues (*id.*) that there are times that RegA, due to its delay, can also sometimes move in the wrong direction relative to ACE correction. ESA also asserts (at 4–5) that the new RegD signal, "by calling upon Complainants (and other suppliers) to operate their projects beyond their design capabilities, or refrain from operating as they once did, the directions provided by the new RegD signal effectively serve to deprive the market of the superior benefits of battery operation in the provision of Regulation service." ESA's assertions are unsupported and incorrect.

ESA confuses a RegA signal with a lag with a RegD signal that provides the wrong signal by design.

To accommodate energy limited RegD resources, the original RegD signal was based on 15 minute energy neutrality, meaning that the signal would provide an energy neutral signal over 15 continuous minutes of operation. Energy neutral means that energy produced equals energy used. If a battery were following the regulation signal to provide MWh for 7.5 minutes, it would have to consume MWh for the next 7.5 minutes and would be energy neutral over the total 15 minutes. Energy neutrality has meant that the RegD signal has hurt rather than helped the control of ACE. When that happens, PJM system operators rely on RegA to control ACE and to offset the negative impact of the RegD resources.

The difference between the RegA and RegD signal is that a market made up solely of RegA resources could control ACE. In PJM prior to 2012, regulation was provided solely by resources following the RegA signal. In contrast, a market made up solely of RegD resources requiring 15 minute energy neutrality could not control ACE.

E. No Evidence Supports the Claim that RegD is better than RegA.

ESA asserts (at 18) that "a RegA resource limitation can be more problematic with respect to ACE management because its slower speed can impair its accuracy in all periods under all conditions; and a RegA resource also can work against ACE—no evidence has been offered that it does so any less—at the exact moment when its response is most needed: when system events occur." ESA provides no evidence to support this assertion and there is no basis for this assertion.

F. Reg D Resources Make More Money Under the New Rules.

In their initial complaint, ESA claimed (at 15) to "have experience[d] significant reduction in their compensation." Both PJM and the Market Monitor refuted this assertion, pointing out that revenues are up for RegD resources due to increased performance payments. The Market Monitor has determined that, on a year over year basis (first quarter 2016 versus first quarter 2017), total RegD revenue increased 12.1 percent per raw MW and 17.2 percent per performance adjusted MW. In their reply comments, ESA agrees (at 24) that revenues may have increased.

ESA now asserts (at 24) that "the new RegD signal is causing more lost revenue than the increase in mileage revenues." ESA asserts (*id.*) that the new signal has caused them increased costs and that the "increased costs serve to overwhelm any increase in the mileage revenues." In other words, ESA is asserting that their margins are down due to increased costs. ESA provides no evidence to support the assertion.

Even if ESA's assertion were correct, ESA does not address the fact that RegD resources are actually being overpaid under the current market design and that PJM's new signal design has increased the overpayment of RegD resources relative to their effective MW contributions.[3] The current settlement process does not result in RegA and RegD resources being paid the same price per effective MW. RegA resources are paid on the basis of dollars per effective MW of RegA. RegD resources are not paid in terms of dollars per effective MW of RegA because the marginal benefit factor is not used in settlements. When the marginal benefit factor is above one, RegD resources are generally (depending on the mileage ratio) underpaid on a per effective MW basis. When the marginal benefit factor is less than one, RegD resources are generally overpaid on a per effective MW basis. Currently, the marginal benefit factor is generally less than one, and the result has been the persistent overpayment of RegD resources.

Even if ESA's assertions of reduced margins were correct, this is not evidence that such a market result is unjust and unreasonable. Market participants can reflect costs (plus adder) in their cost-based offer and they can provide price-based offers and, if cleared in the market, are guaranteed their offer or better. Market participants that cannot profit under these conditions are by definition uneconomic relative to their competitors.

The objective of an efficient market is to ensure a competitive price and not to guarantee profit margins or returns on investment. The objective of a competitive market is not to protect competitors; it is to promote competitive outcomes. The objective of PJM's

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3 *See* Q1 *2017 State of the Market Report for PJM* (May 11, 2017) at 424–426.

regulation market design is to minimize the cost to provide regulation via a combination of resources following two different signals (RegA signal and RegD signal) in a single, competitive and efficient market.

G. It Was Clear that Regulation Market Design Was Flawed and Would Change.

ESA asserts (at 23–24) that they had no way of knowing that PJM's Regulation Market could be subject to significant structural changes at the time they made their investments. ESA asserts (at 23–24) that had they known that the market design could change within the life cycle of their resources, they might not have entered the market when they did. ESA asserts (*id*.) "[h]ad there been the slightest reason to believe that PJM, less than two to three years later, would completely change its procedures and eviscerate the projects' economics, they plainly would have taken this into account before designing their projects as they did, or even deciding to construct and invest in them."

Contrary to assertions of ESA, issues with PJM's Regulation Market were publicly identified and reported in the same year the new market design was put in place in 2012 and in every year since then. The Market Monitor filed a protest identifying fundamental market design issues with PJM's compliance filing of March 5, 2012.[4] In the 2012 Annual State of the Market Report for PJM (SOM), the Market Monitor noted the flawed market design that had been implemented and recommended that the regulation market be modified to incorporate a consistent application of the marginal benefit factor throughout the optimization, assignment and settlement process.[5] On October 2, 2013, the issues with the market design were exacerbated when PJM was directed to eliminate the use of the marginal benefit factor entirely from settlement calculations of the capability and performance credits and replace it with the RegD to RegA mileage ratio in the performance

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4 *See* Protest of the Independent Market Monitor for PJM, Docket No. ER12-1204-000 (March 26, 2012).

5 *See 2012 State of the Market Report for PJM*, Vol. II (March 14, 2013) at 272.

credit paid to RegD resources, effective retroactively to October 1, 2012.[6] The Market Monitor made clear the problems with the resulting market design at the time.[7] The issues with the market were repeated in every subsequent SOM from 2012 to the present, including explicit statements that RegD resources were being overpaid.[8]

The market design flaws introduced in 2012 and 2013 led directly to the issues with the regulation market which were brought before the PJM Operating Committee in May of 2015, and which ultimately led to the creation of the Regulation Market Issues Senior Task Force purposed with addressing the observed market design and operational issues.[9] The Market Monitor has repeatedly raised the issues in that stakeholder process which ESA professes to have been unaware of.

The issues with the regulation market design have been well documented from the beginning. ESA's claim to be surprised is implausible. ESA knows or should know that a redesign of the PJM Regulation Market was approved by the Regulation Market Issues Senior Task Force and is expected to be filed with FERC in the near future.

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6 *PJM Interconnection, L.L.C.*, 145 FERC ¶ 61,011 (2013).

7 *See* Comments of the Independent Market Monitor for PJM, Docket Nos. ER12-1204-001, -002 and ER12-2391-000 (February 5, 2013).

8 The MBF function is not correctly defined as the MRTS between RegA and RegD and it is not consistently applied throughout the market design, from optimization to settlement. The result has been that the PJM Regulation Market has over procured RegD relative to RegA in most hours and has provided a consistently inefficient market signal to participants regarding the value of RegD to the market in every hour. This over procurement began to degrade the ability of PJM to control ACE in some hours while at the same time increasing the cost of regulation. When the price paid for RegD is above the level defined by an accurate MBF function, there is an artificial incentive for inefficient entry of RegD resources. *See Q1 2017 State of the Market Report for PJM*, (May 11, 2017) at 420.

9 Regulation Performance Impacts, PJM Operating Committee, (May 26, 2015), which can be accessed at: <http://www.pjm.com/committees-and-groups/committees/oc.aspx>.

II. MOTION FOR LEAVE TO ANSWER

The Commission's Rules of Practice and Procedure, 18 CFR § 385.213(a)(2), do not permit answers to answers or protests unless otherwise ordered by the decisional authority. The Commission has made exceptions, however, where an answer clarifies the issues or assists in creating a complete record.[10] In this answer, the Market Monitor provides the Commission with information useful to the Commission's decision-making process and which provides a more complete record. Accordingly, the Market Monitor respectfully requests that this answer be permitted.

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10 *See*, *e.g.*, *PJM Interconnection, L.L.C.*, 119 FERC ¶61,318 at P 36 (2007) (accepted answer to answer that "provided information that assisted … decision-making process"); *California Independent System Operator Corporation*, 110 FERC ¶ 61,007 (2005) (answer to answer permitted to assist Commission in decision-making process); *New Power Company v. PJM Interconnection, L.L.C.*, 98 FERC ¶ 61,208 (2002) (answer accepted to provide new factual and legal material to assist the Commission in decision-making process); *N.Y. Independent System Operator, Inc.*, 121 FERC ¶61,112 at P 4 (2007) (answer to protest accepted because it provided information that assisted the Commission in its decision-making process).

III. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to this answer as the Commission resolves the issues raised in this proceeding.

Respectfully submitted,

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Dated: June 9, 2017

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 9th day of June, 2017.

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