

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**PJM Interconnection, L.L.C.**            )  
  )       **Docket No. ER19-469-000**  
  )

**ANSWER  
OF PJM INTERCONNECTION, L.L.C.**

PJM Interconnection, L.L.C. (“PJM”), pursuant to Federal Energy Regulatory Commission (“Commission”) Rules of Practice and Procedure 212 and 213,<sup>1</sup> submits this answer to an April 12, 2019 supplemental pleading filed in this case by the Energy Storage Association (“ESA”).<sup>2</sup> Although styled as an answer, ESA’s pleading is in the nature of a supplemental protest, proposing a major departure from PJM’s current approved construct for Capacity Performance Resources<sup>3</sup> (hereafter the “Capacity Performance rules”) so as to allow full capacity compensation for battery storage resources that (in ESA’s view) would only have to provide energy for as little as four hours. Indeed, ESA is quite candid in demanding a “variation from nominally ‘equal’ treatment of diverse resources in

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<sup>1</sup> 18 C.F.R. §§ 385.212, 385.213.

<sup>2</sup> Motion for Leave to Answer and Answer of the Energy Storage Association, Docket No. ER19-469-000 (Apr. 12, 2019) (“ESA Answer”). The ESA Answer states it is responding to PJM’s March 5, 2019 answer to comments and protests on PJM’s initial filing in this proceeding. *See* Answer of PJM Interconnection, L.L.C., to Protests and Comments, Docket No. ER19-469-000 (Mar. 5, 2019) (“PJM Answer”).

<sup>3</sup> All capitalized terms not defined expressly herein have the meaning ascribed to them in the PJM Open Access Transmission Tariff (“Tariff”), Amended and Restated Operating Agreement of PJM, and Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region (“RAA”).

[capacity market qualification] rules.”<sup>4</sup> The ESA’s tactic runs directly counter to the Commission’s finding that PJM’s Capacity Performance rules are “appropriate, because [they] create[ ] the same expectations for all Capacity Performance Resources (i.e., the expectation that such resources will be available to provide energy and reserves when called upon), without regard to technology type.”<sup>5</sup>

Under ESA’s proposal, PJM would modify its current capacity construct to establish a new category of “energy-limited resources” that would only have to provide energy for four or six hours.<sup>6</sup> ESA then calculates that the PJM Region would suffer degraded reliability if more than 4,000 MWs of four-hour resources were committed as capacity, or if more than 10,000 MW of six-hour resources were committed as capacity.<sup>7</sup> ESA deems this acceptable, however, by assuming that *only battery storage resources* are allowed to provide this new short-duration capacity product.<sup>8</sup> With that key assumption, ESA opines that the maximum allowable level of short-duration capacity resources will not be realized for at least ten years.<sup>9</sup>

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<sup>4</sup> ESA Answer at 10.

<sup>5</sup> *PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208, at P 99 (2015) (“Capacity Performance Order”), *order on reh’g*, 155 FERC ¶ 61,157 (2016) (“CP Rehearing Order”) (collectively, “Capacity Performance Orders”).

<sup>6</sup> ESA Answer at 11-12; *see also* Affidavit of Kevin Carden on Behalf of the Energy Storage Association ¶¶ 9, 18 (“Carden Aff.”). The Carden Aff. is attached to the ESA Answer.

<sup>7</sup> ESA Answer at 12; Carden Aff. ¶ 16.

<sup>8</sup> *See* Carden Aff., Attachment 1, Table 5; *see also* n.24, *infra*.

<sup>9</sup> ESA Answer at 12-13; Carden Aff. ¶ 17.

The Commission should have no trouble rejecting ESA’s unreasonable and unduly preferential proposal. In the Capacity Performance Order, the Commission found reasonable PJM’s phased elimination of a Demand Resource product that, among its other limitations, had to be “available to PJM . . . for a maximum of 6 hours a day;”<sup>10</sup> and that, like ESA’s present proposal, was subject to a maximum market penetration limit.<sup>11</sup> ESA now proposes—contrary to the Capacity Performance Order—to reinstate a category of resources that would only have to provide capacity at their committed level for no more than six hours, even while ESA acknowledges (as noted above) that such resources degrade reliability if they are committed at too high a level. Moreover, as described above, ESA’s proposal requires the Commission to maintain the current rule that *Demand Resources* cannot be six-hour resources, to validate ESA’s view that PJM could commit battery storage resources for many years before hitting the reliability limit. ESA presents no basis for its proposed special treatment. In particular, ESA makes no demonstration that battery storage resources are technically and operationally incapable of discharging at a consistent level for ten hours (per PJM’s current standard).

As PJM also shows in this answer, ESA’s Tariff-interpretation argument attempting to shield Capacity Storage Resources (“CSRs”) from compliance with the RAA’s Installed Capacity rules (“the ICAP Proposal”) fails, as does ESA’s suggestion that pumped-storage hydro resources are not subject to a ten-hour standard.

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<sup>10</sup> Capacity Performance Order at P 99.

<sup>11</sup> See *PJM Interconnection, L.L.C.*, 143 FERC ¶ 61,076 (2013) (accepting Tariff revisions providing determination of maximum demand resource commitment level constraint for Limited Demand Resources); see also CP Rehearing Order at P 59.

## I. MOTION FOR LEAVE TO ANSWER

PJM respectfully requests leave to answer the ESA Answer to respond to facts and arguments raised for the first time, including a new reliability modeling analysis presented in the ESA Answer, and to aid the decision-making process. Although the Commission does not generally permit answers to answers under Rule 213(a)(2),<sup>12</sup> the Commission permits answers for good cause shown, and the Commission has held that answers are permitted where, as here, they ensure a more accurate and complete record or provide useful and relevant information that will assist the Commission in its deliberative process by correcting errors and clarifying the issues.<sup>13</sup>

## II. ANSWER

### A. ESA's Purported "Alternative Analysis" Is in Fact A Proposal to Overhaul PJM's Capacity Performance Construct and is Beyond the Scope of Order No. 841.<sup>14</sup>

ESA claims that "[a]n accurate analysis of PJM's reliability need and various resources' contributions to meeting that need requires a different method than PJM's cited

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<sup>12</sup> 18 C.F.R. § 385.213(a)(2).

<sup>13</sup> *See, e.g., N.Y. State Pub. Serv. Comm'n*, 158 FERC ¶ 61,137, at P 29 (2017) ("We will accept the Companies' and the Complainants' answers because they have provided information that assisted us in our decision-making process."); *Colonial Pipeline Co.*, 157 FERC ¶ 61,173, at P 23 (2016) ("In the instant case, the Commission will accept the Protestors' Answers and Colonial's Answer because they have provided information that assisted us in our decision-making process.").

<sup>14</sup> *Electric Storage Participation in Market Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 841, 162 FERC ¶ 61,127 (2018) ("Order No. 841").

study.”<sup>15</sup> ESA then offers, in the Affidavit of Kevin Carden, an analysis that evaluates peak load in “indicative portfolio sizes for various tranches of annual run hours,” concluding that 27 GW of Capacity Resources are only needed to run less than 100 hours per year.<sup>16</sup> Based on this conclusion, Mr. Carden asserts that “it does not make sense to impose a requirement on all capacity resources that they be able to operate thousands of hours per year, or that they be able to run for extended periods when they are deployed.”<sup>17</sup> Mr. Carden then goes on to conclude that the existing and projected resource mix in PJM could incorporate “energy limited resources” that supply full capacity value with only “modest duration requirements.”<sup>18</sup>

Modifying PJM’s capacity rules in this manner would be a dramatic departure from the current Capacity Performance construct, and is far beyond the scope of Order No. 841. In affirming the Commission’s Capacity Performance Orders, for example, the United States Court of Appeals for District of Columbia explained that “PJM’s revised market rules require sustained, predictable operation from all capacity resources.”<sup>19</sup> Likewise, in denying rehearing, the Commission found that “PJM is treating all resources identically in this respect [i.e., all resources are required to provide equivalent service];” and that the

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<sup>15</sup> ESA Answer at 12 (citing Carden Aff. ¶¶ 11-13). The referenced study is a 2010 published journal article assessing a possible alternative to PJM’s existing capacity construct, including changes to the treatment of Demand Resources. It is not a proposal in this proceeding, nor would it be within the scope of this proceeding. See PJM Answer at 23 n.72.

<sup>16</sup> Carden Aff. ¶ 8.

<sup>17</sup> Carden Aff. ¶ 8.

<sup>18</sup> Carden Aff. ¶ 9.

<sup>19</sup> *Advanced Energy Mgmt. All. v. FERC*, 860 F.3d 656, 668 (D.C. Cir. 2017).

objecting parties “are in effect asking for special treatment for certain resources, permitting them to provide a lesser quality of service for the same price.”<sup>20</sup> As the Commission made quite clear, PJM’s proposal was just and reasonable “because it creates the same expectations for all Capacity Performance Resources (i.e., the expectation that such resources will be available to provide energy and reserves when called upon), without regard to technology type.”<sup>21</sup> To the same effect, the Commission found it reasonable for PJM “to tighten up its performance measurement [for Demand Resources] to provide an incentive for year-round dispatchability.”<sup>22</sup>

Contrary to these core attributes of PJM’s current capacity construct, ESA proposes reinstating a special category of short-duration resources that are paid the same as all other capacity resources, but have a much lesser obligation to perform. Such an approach, on its face, entails a dramatic reversal from the approved Capacity Performance construct, as described by the Commission and the reviewing court. Requiring PJM to implement this approach would far exceed the four corners of compliance with Order No. 841, the goal of which was to facilitate participation by electric storage resources in Regional Transmission Organization/ Independent System Operator markets.<sup>23</sup>

At most, ESA’s analysis demonstrates that if the PJM Capacity Performance construct were to be redesigned, there may be a role for a limited amount of short-duration resources in a PJM Region capacity portfolio that would not degrade reliability. But ESA’s

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<sup>20</sup> CP Rehearing Order at P 59.

<sup>21</sup> Capacity Performance Order at P 99.

<sup>22</sup> CP Rehearing Order at P 121.

<sup>23</sup> Order No. 841 at P 76.

final assumption is *that role should be reserved for storage*.<sup>24</sup> Such an assumption appears facially unduly discriminatory and contrary to the resource-neutral approach to capacity procurement affirmed by the Commission in the Capacity Performance Orders.

**B. The ICAP Proposal Is Not a Departure from PJM’s Existing Treatment of CSRs as Capacity Performance Resources.**

1. *CSRs Fall Squarely Within the Definition of Generation Capacity Resources.*

ESA argues that PJM’s Capacity Performance rules, as set forth in the Tariff, distinguish Generation Capacity Resources from CSRs, while CSRs by contrast are omitted from RAA Schedule 9. Based on this distinctive treatment, ESA asserts that PJM is “relying on a post hoc rationale” for the ICAP Proposal that utilizes Manual 21<sup>25</sup> to modify Commission-approved Tariff provisions.<sup>26</sup> ESA further asserts that the Capacity Performance rules discuss CSRs “repeatedly and exclusively” with other non-traditional resources, including Intermittent Resources, and that such grouping was “intentional.”<sup>27</sup>

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<sup>24</sup> Although Mr. Carden refers in his Affidavit to the six-hour resources as “Energy Limited Resources” or “ELRs,” *see, e.g.*, Carden Aff. ¶ 17, his attached supporting analysis describes the calculated 4,000 MW and 10,000 MW penetration levels as for “penetration of energy storage resources,” (Carden Aff. Attachment 1, Table 5 and preceding text) and explicitly distinguishes “energy limited resources” from “demand response resources *which do not have duration limitations*.” *Id.* (emphasis added). Absent this assumption, duration-limited Demand Resources might fully satisfy Mr. Carden’s calculated ELR penetration levels, crowding out storage. Alternatively, if ESA intends Demand Resources to now serve as six-hour resources, then their proposal is even more clearly out-of-scope for this proceeding

<sup>25</sup> PJM Interconnection, L.L.C., *PJM Manual 21: Rules and Procedures for Determination of Generating Capacity* (rev. 13, eff. May 1, 2019), <http://www.pjm.com/~media/documents/manuals/m21.ashx>.

<sup>26</sup> ESA Answer at 4-6.

<sup>27</sup> *Id.* at 4.

These arguments reflect a fundamental misunderstanding of the Capacity Performance rules and PJM's basis for the ICAP Proposal.

Simply put, every CSR is a Generation Capacity Resource.<sup>28</sup> As PJM explained in the May 1 Response, all Capacity Resources fundamentally fall into one of two categories: those that inject energy into the grid and those that reduce load; i.e., (1) net capacity from an Existing or Planned Generation Capacity Resource, or (2) load reduction from a Demand Resource or Energy Efficiency Resource.<sup>29</sup> All net capacity, regardless of resource type, is a Generation Capacity Resource that must meet the capability and deliverability requirements of RAA Schedules 9 and 10.<sup>30</sup> Because CSRs inject energy into the grid and are not load reduction, they are Generation Capacity Resources, and their capability must be determined and established under RAA Schedule 9, and must be found to be deliverable to PJM load under RAA Schedule 10.

While all CSRs are Generation Capacity Resources under the RAA, CSRs are also subject to certain differing rules as expressly noted in PJM's governing documents. For example, CSRs (like Intermittent Resources, which are also net capacity and therefore also a subset of Generation Capacity Resources) are not required to offer their Unforced Capacity into all Reliability Pricing Model ("RPM") Auctions.<sup>31</sup> CSRs are also, as ESA

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<sup>28</sup> See Response to April 1, 2019 Request for Additional Information of PJM Interconnection, L.L.C., Docket No. ER19-469-000, at 3-5 (May 1, 2019) ("May 1 Response").

<sup>29</sup> See *id.* at 4 (citing RAA, Article 1, Definitions).

<sup>30</sup> See *id.*

<sup>31</sup> Tariff, Attachment DD, section 6.6A(c).



notes, subject to differing rules on Sell Offers.<sup>32</sup> Importantly, however, the Sell Offer rules, which are specified for all resource types, do not substitute for, or displace, the ICAP rules that are intended under the RAA to apply to every resource capable of injecting energy onto the grid. As PJM previously explained in its prior Answer, the Sell Offer rules make clear that a seller cannot offer more than its resource's ICAP, which is determined under the RAA.<sup>33</sup> Thus, the distinctions between Generation Capacity Resources and CSRs identified by ESA have no relationship to the rules and procedures under the RAA for *determining* the ICAP of Capacity Resources. ESA's continued reliance on the Sell Offer rules in Tariff, Attachment DD to link Intermittent Resources and CSRs is therefore unfounded.

Finally, including the technical details of ICAP determination for CSRs in Manual 21 does not violate the Commission's "rule of reason." As ESA itself notes, none of the rules detailing ICAP determination for any resource are found in the Tariff.<sup>34</sup> ESA does not explain why determining ICAP value for CSRs must be included in the Tariff while such determination is not included in the Tariff for any other resource.

Moreover, nothing in the ICAP Proposal or Manual 21 conflicts with the Tariff's Sell Offer rules. Under Tariff, Attachment DD, section 5.6.1(h), CSRs are permitted to base Capacity Performance offers on their average expected output during peak-hour periods, provided, however, as explicitly prescribed by Tariff, Attachment DD, section 5.8(g), PJM "shall accept a Sell Offer only up to the megawatt amount of installed capacity

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<sup>32</sup> *Id.*, Attachment DD, section 5.6; *see also* ESA Answer at 5-6.

<sup>33</sup> PJM Answer at 16.

<sup>34</sup> ESA Answer at 4-5.

of Capacity Resources owned or controlled by such Capacity Market Seller that has not previously been committed for the applicable Delivery Year.” The installed capacity of every Capacity Resource committed to the reliability needs of the PJM Region is determined under RAA Schedule 9, and PJM Manual 21. Contrary to ESA, nothing in Tariff, Attachment DD, section 5.6.1(h) exempts CSRs from those fundamental requirements.

2. *ESA Has Not Demonstrated that CSRs are Incapable of Meeting the Technical Requirements of the ICAP Proposal*

ESA argues that the ICAP Proposal will result in unjust and unreasonable rates.<sup>35</sup> Yet no party to this proceeding, let alone ESA, has demonstrated that CSRs are *technically incapable* of satisfying the ICAP Proposal. The Commission explained in Order No. 841 that “‘technically capable’ of providing a service means that a resource can meet all of the technical, operational, and/or performance requirements that are necessary to reliably provide that service.”<sup>36</sup> Rather than showing that CSRs are incapable of satisfying the ICAP Proposal (e.g., that they cannot discharge their stored capability at some level over ten hours), ESA attempts to define down “the capacity contribution [from] CSRs” that—in ESA’s opinion—the PJM Region needs from CSRs.<sup>37</sup> But redefining the PJM Region’s reliability requirements is not the relevant inquiry. Under Order No. 841, the only question

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<sup>35</sup> See ESA Answer at 10.

<sup>36</sup> Order No. 841 at P 76.

<sup>37</sup> ESA Answer at 10.

is whether CSRs can meet PJM’s “technical, operational, and/or performance requirements,” including sustaining discharge at a particular MWh level over ten hours.

If a resource is not technically capable of sustaining for ten hours the same discharge level that it could sustain for only four or six hours, that does not mean it is incapable of satisfying the ICAP Proposal. Rather, consistent with the requirements of Order No. 841, CSRs can de-rate their capacity to satisfy PJM’s continuous run-time requirements and remain eligible to participate as a Capacity Performance Resource.<sup>38</sup> Accordingly, while the ICAP Proposal may not provide the maximum economic value the CSRs may seek to participate in RPM, it does allow all CSRs to participate on a non-discriminatory basis.

**C. ESA’s Attempt to Cast Doubt on the Expected Performance of Pumped-Storage Hydro Resources is Unpersuasive.**

ESA suggests, citing nothing more than another party’s earlier pleading in this case, that the Installed Capacity of pumped-storage hydroelectric resources is not based on the output level the resource can provide over ten hours.<sup>39</sup>

ESA’s suggestion is incorrect. PJM’s intent, design and approach to determining ICAP for pumped-storage hydro resources has always been ten hours of sustained output for all units. ESA’s suggestion otherwise compares PJM data on the rated MW capacity of three pumped-storage hydro resources (out of five such resources on the PJM system)

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<sup>38</sup> Order No. 841 at PP 94-100.

<sup>39</sup> ESA Answer at 9 (citing Protest and Comments of the Public Interest Organizations, Docket No. ER19-469-000, at 12-15 (Feb. 7, 2019) (“PIO Protest”)).

with references from various other sources<sup>40</sup> to alleged MWhs of storage capability of those resources. However, PJM does not use or rely on any of those asserted MWh estimates. Indeed, PJM does not develop or track MWh estimates for pumped-storage plants. Rather, PJM monitors and relies on reservoir data, and the exact number of available MWhs from those reservoir levels can vary.

Consistent with these reservoir considerations, the MW capacity levels from PJM's RPM Resource Model (cited in the PIO Protest) were developed based on the level of output each unit could provide on a sustained basis for ten hours, assuming efficient operations. Notably, nothing in this data justifies setting Installed Capacity levels for CSRs on sustained output for only four or six hours, as ESA seeks.

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<sup>40</sup> The cited sources include a general readership magazine article, a blog post, and an article focused on hydro resources in the Pacific Northwest. The PIO Protest also cites a Department of Energy Global Storage Database, but the cited page (<https://www.energystorageexchange.org/projects/954>) does not contain the duration estimate that the PIO Protest ascribes to that source. *See* PIO Protest at 12-13 nn. 32, 35, & 38. PIO concedes that the data “originates from different operating years and from varied authorities outside of PJM.” PIO Protest at 13.

### III. CONCLUSION

For the reasons set forth in this Answer, PJM respectfully requests that the Commission accept the Markets and Operations Proposal by May 30, 2019, to accommodate implementation as of December 3, 2019, as meeting PJM's compliance obligations under Order No. 841.

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May 14, 2019

**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 Washington, D.C., this 14<sup>th</sup> day of May 2019.

*/s/ Elizabeth P. Trinkle* \_\_\_\_\_

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