

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

Enerwise Global Technologies, LLC d/b/a	)	
CPower	)	Docket No. EL23-104-000
v.	)	
PJM Interconnection, L.L.C	)	
	)	
	)	

**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,<sup>1</sup> Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor (“Market Monitor”) for PJM Interconnection, L.L.C. (“PJM”),<sup>2</sup> submits this answer to the answer submitted by PJM, to the comments submitted by Sierra Club (“Sierra Club”), to the comment submitted by Advanced Energy Management Alliance (“AEMA”), and to the comments submitted by Resideo Technologies, Inc. (“Resideo”), on October 18, 2023.

In its complaint submitted on September 28, 2023 (“Complaint”), CPower alleges that the PJM market rules are unjust, unreasonable, and unduly discriminatory because it prevents CSPs and EDCs from using statistical sampling for capacity and energy market participation for residential customers who have AMI technology that permits direct metered measurement of such participation. In other works, CPower seeks to force PJM to use an inferior measure of participation even where better data exists. PJM stakeholders were correct

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<sup>1</sup> 18 CFR §§ 385.212 & 385.213 (2023).

<sup>2</sup> Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff (“OATT”), the PJM Operating Agreement (“OA”) or the PJM Reliability Assurance Agreement (“RAA”).

to reject CPower’s proposal to degrade the already inadequate quality of measurement and verification for demand side products. PJM correctly explains in its Answer that the Complaint should be denied.

PJM limited its response to the reasons why the Complaint should be rejected. The Complaint demonstrates flaws in the rules for demand response. AMI technology or its equivalent should be required for all customers included in PJM’s demand response programs. Reliance on statistical sampling for capacity and energy market participation is unjust and unreasonable because it undermines competitive markets and their ability to establish just and reasonable rates. All resources should provide direct evidence that they are providing the capacity or energy for which they seek to be paid. Demand response resources displace generation capacity resources that respond in measurable ways to PJM dispatch and market signals. Demand response must become a real resource that can respond in measurable ways when needed. The industry needs to move beyond the pilot phase established more than a decade ago. Demand response is increasingly relied on by PJM, and demand response resources must be held to standards comparable to competing resources. The Commission should consider initiating an investigation concerning whether the continued use of any statistical sampling is just and reasonable, and whether, instead, all resources should be held to comparable, efficient and non discriminatory measurement and verification standards.

On October 27, 2023, CPower filed an answer to PJM (“CPower Answer”). The CPower Answer generally repeats the Complaint, but the Market Monitor does respond to one erroneous argument made by CPower in order to avoid confusion in the record.

## **I. ANSWER**

### **A. The Complaint Should Be Denied.**

The Market Monitor agrees with PJM, for the reasons stated in PJM’s Answer, that the complaint should be denied.

## **B. Reasons for Use of Interval Metering When Available.**

PJM's market rules requiring the use of interval metering, when available, are intended to foster precise measurement, accurate compensation and predictability of the expected response of demand resources.<sup>3</sup> Any other PJM Energy or Ancillary Services market resource with access to interval metering is required to use it. In contrast to the CPower's assertions, to simply estimate performance, rather than to actually measure it using available interval metering, would hamper observability, just and reasonable compensation of demand resources, accurate price formation and PJM's ability to maintain grid reliability. The fact that a CSP must incur costs to acquire the rights to offer verifiable demand side resources into the market does not distinguish this situation from any other market entry and does not mean that there is an inefficient or artificial barrier to entry. PJM's requirement that demand response resources use interval metering when available is intended to ensure fair and accurate measurement and compensation of resources. If the relief that CPower requests were granted, it is very likely that the majority of CSPs would elect to use statistical sampling as it would require less effort and expense to provide than actual meter data. The consequence of such a decision would be to deny PJM the ability to accurately measure demand response performance and fairly compensate them reflective of their actual performance. The Complaint ignores that other CSPs have for years successfully aggregated residential demand response using interval meter data supplied by Electric Distribution Companies. Allowing the use of estimates, rather than the actual metered data when such data exists, would be a step backwards and contrary to PJM's history of evolving its rules to improve accuracy and leverage emerging technologies. PJM's lessons learned from recent events, including Winter Storm Elliott, reinforce the conclusion that relaxing the requirements for interval metering for demand response customers is ill advised. What is termed an actual load reduction is

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<sup>3</sup> OA Schedule 1 § 8.3(b).

measured as the difference between the amount of capacity paid for (PLC) and the metered load. If a demand resource location was already at a reduced load level when PJM called a PAI, the demand resource would be deemed to have performed if the PLC less the metered load level was equal to the ICAP sold in the capacity market. That is exactly what happened during Elliott. Interval metering is critical to identifying if, and in what quantity, load management resources reduce demand in response to PJM dispatch instructions. PJM customers should be charged for demand response resources only when their performance is accurately measured.

**C. Statistical Sampling Is Not a Substitute for Actual Data.**

PJM's rules provide a narrow exception that permits a CSP to provide interval meter data for a statistically significant sample of its residential customers that lack interval metering.<sup>4</sup> This exception only applies when the customer does not have interval metering.<sup>5</sup> No other resource type participating in PJM's energy or ancillary services markets is permitted to use sampling when interval metering data is available. PJM last revised its rules for the use of statistical sampling in 2015.<sup>6</sup> In the years since, state sponsored programs have resulted in significant penetration of AMI and the availability of interval metering for residential customers. Where such metering exists, PJM has long mandated its use in measuring the performance and ensuring accurate compensation of demand resources.<sup>7</sup> Contrary to CPower's representations (at 15) that PJM extolls the virtues of statistical sampling, PJM simply contrasted the relative accuracy of the 2015 revised methodology versus the static historic study methodology previously used. PJM

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<sup>4</sup> See *id.*

<sup>5</sup> PJM Manual 19: Load Forecasting and Analysis, Attachment C: Residential Non-Interval Metered Guidelines, Rev. 35 (Dec. 31, 2021).

<sup>6</sup> *PJM Interconnection, L.L.C.*, PJM Revisions for CSPs with Residential Demand Response Customers, Docket No. ER15-1849-000 (June 4, 2015) at 3 (the "June 4, 2015 Filing").

<sup>7</sup> OA Schedule 1 § 8.3(b).

did not state that sampling was comparable to, or a substitute for, using actual interval metering. It is not. Regardless of the complexity or robustness of a sampling regimen, it can never yield as precise a result as the use of actual metered performance. Statistical sampling was never intended to be a substitute for actual measurement of resource performance and compensation where such capability exists. The Market Monitor has long noted that even PJM's metering requirement for demand resources is outdated, and has not kept up with the changes to PJM's market design.<sup>8</sup> PJM moved to five minute settlements, but the metering requirement for demand resources remained at an hourly interval meter. It is impossible to measure energy usage on a five minute basis using an hourly interval meter. PJM estimates real-time usage by prorating the hourly interval meter and assume if load is less than the Customer Baseline that the reduction occurred during the required dispatch window. The meter reading is not telemetered to PJM in real time. The resource is allowed up to 60 days to report the data to PJM. The Market Monitor continues to recommend that PJM adopt five-minute metering requirements in order to ensure that dispatchers have the necessary information for reliability and that market payments to demand resources be calculated based on interval meter data at the site of the demand reductions so that they can accurately measure compliance.

To grant the CPower's requested relief not only fails to propose improvements in measurement and verification, but would be a step backwards. PJM's observations and lessons learned during Winter Storm Elliott underscore the importance of improving PJM's ability to anticipate, measure and appropriately compensate Demand Resource performance.

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<sup>8</sup> See Market Monitor, *2023 Quarterly State of the Market Report for PJM: January through June* (August 10, 2023) at 382–383.

#### **D. CPower Mischaracterizes AMI and Data Requirements for Participation in PJM Markets.**

CPower asserts (at 4) that without statistical sampling available, it is not feasible for CSPs to acquire interval meter data for all residential DR customers with interval meters, as well as obtain EDC Loss Factors and other required data. Each of CPower's assertions are incorrect.

CPower states (at 5), without supporting evidence, that AMI systems are not set up to be able to allow a CSP and/or the EDC to:

- a. *Verify that customer consents to release their data are valid for tens of thousands of residential customers, and to easily manage which customers and CSPs the EDC can share or cannot share data with; Consent to release data for Demand Response Measurement & Verification is generally obtained via a contract with the end use customer and is not a consequence of the type of metering the customer has. To suggest that AMI somehow thwarts the ability for CSPs to obtain customer consent to release data unlike other metering types is erroneous. Furthermore, to assist CSPs in obtaining the electric usage information of the end-use customer, PJM provides a Customer Usage Information Authorization form.<sup>9</sup>*
- b. *Retrieve the data necessary to calculate PJM Summer Peak Load Contributions ("PLC") and apply the applicable scaling factors for each customer, which is required for PJM Capacity market participation. As a general matter, PLC values for residential customers are determined and provided by the EDCs.<sup>10</sup> PLC values for residential customers are not typically developed on an individual account*

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<sup>9</sup> PJM Manual 11: Energy & Ancillary Services Market Operations § 10.2.2.2. , Rev. 126 (May 31, 2023).

<sup>10</sup> PJM Manual 18: PJM Capacity Market § 7.4, Rev. 57 (July 26, 2023).

basis but rather by rate class or segmented rate class. It is not necessary for the CSP to have access to AMI to obtain a customer's PLC.

- c. *Retrieve the data to calculate Winter Peak Loads necessary for participation as an annual DR resource, which require historic data from 2 years before the upcoming PJM Delivery Year, which is also needed for PJM's Capacity market participation.* Historical interval data is the basis for determining a customer's Winter Peak Load which in turn is used to calculate the winter nominated Demand Response value for a Capacity Performance registration as well as the appropriate compensation when dispatched by PJM. Interval data from AMI or equivalent metering would actually simplify determination of Winter Peak Load and PJM offers assistance where this data is not available.<sup>11</sup> Winter Peak Load and winter Firm Service Levels are required for Capacity Performance DR registrations. Winter Peak Load and winter Firm Service Levels are not required if such registration indicates that it is a Summer-Period DR Only registration.<sup>12</sup>
- d. *Retrieve data necessary to calculate an accurate energy baseline, including data sufficient to evaluate whether the energy baselines passes the accuracy test known as the Relevant Root Mean Square Error ("RRMSE").* Economic registrations in PJM's Demand Response program undergo a Customer Baseline certification process to ensure that the Customer Baseline used to predict the customer load and therefore, determine the quantity of each hourly load reduction, is reasonably accurate and non-biased. Registrations should use a Customer Baseline with a Relative Root Mean Square Error (RRMSE) no greater than 20

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<sup>11</sup> PJM Manual 18: PJM Capacity Market § 4.3.7, Rev. 57 (July 26, 2023).

<sup>12</sup> PJM Manual 18: PJM Capacity Market § 4.3.5, Rev. 57 (July 26, 2023).

percent unless otherwise approved by PJM.<sup>13</sup> Interval data from AMI or equivalent metering is actually vital to determining Customer Baseline to accurately measure and compensate Demand Resources for their actual response to a PJM dispatch event.

- e. *Calculate the data necessary to determine customer energy baselines on a rolling basis, which consists of interval data for between 5-45 days, which is required for all economic DR participation; and calculation of performance of DR capacity resources for Performance Assessment Interval (“PAI”) events and to fulfill the requirement for mandatory updates of energy reduction capability for DR capacity resources, which PJM relies upon to dispatch the PJM system during pre-Emergency and Emergency conditions.* The Customer Baseline for a customer is an estimate of what load would have been if the customer had not responded to LMP and reduced load. The difference between the CBL and real-time load is the energy reduction. Capacity Performance Demand Resources dispatched by PJM during Performance Assessment Intervals are responsible for submittal of compliance information to PJM within 45 days after the end of the month in which a Performance Assessment Interval occurred.<sup>14</sup> By relying on interval data from AMI or equivalent metering, that reduction can be verified without complicated and inaccurate metrics to estimate load reductions. AMI data makes this easier and not harder. Relying on load estimates rather than actual metered load weakens PJM’s ability to accurately determine and compensate Demand Resource performance.

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<sup>13</sup> PJM Manual 11: Energy & Ancillary Services Market Operations §10.2.5, Rev. 126 (May 31, 2023).

<sup>14</sup> PJM Manual 11: Energy & Ancillary Services Market Operations §8.6, Rev. 126 (May 31, 2023).



CPower's own problem statement brought before the PJM Demand Response Subcommittee ("DRSC") on August 2, 2022, contradicts many of the assertions in the Complaint regarding the suitability and availability of AMI data to meet the data requirements for participation in PJM's markets.<sup>15</sup> The Complaint not only fails to allege that residential smart meters do not provide interval data, their own problem statement at the PJM DRSC in fact acknowledges its existence. CPower's problem statement further characterizes the problem as being one of cost and time-consuming administrative challenges.

The problem statement states:

"Today the data required for every residential customer with a smart meter participating in the Emergency Load Response Program as an annual resource includes not only usage data for settlements and compliance during events or tests, but substantial historic data from two prior delivery years in order to establish a Winter Peak Load and Peak Load Contribution needed to establish baselines. Although EDCs may have the data, if there are smart meters present, retrieving that data and making it accessible and available for thousands of customers upon request by a CSP to facilitate participation in the wholesale market presents costly and time-consuming administrative challenges to both CSPs and EDCs."<sup>16</sup>

#### **E. This Is a Retail Regulatory Jurisdiction Matter.**

CPower alleges (at 2) that where AMI systems have been installed, EDCs have demonstrated limited cooperation and/or a limited ability to cooperate, or the EDCs have refused to provide CSPs with the residential AMI data that would enable CSP participation

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<sup>15</sup> See PJM. "Residential and Small Commercial Customer Measurement and Verification for Demand Response," Demand Response Subcommittee (August 2, 2022), which can be accessed at: <https://www.pjm.com/-/media/committees-groups/subcommittees/drs/2022/20220802/item-03a--statistical-sampling-problem-statement-cpower.ashx>.

<sup>16</sup> *Id.*

in PJM’s residential markets. The Complaint relies (at 12–14) on a single instance involving Walmart Inc.’s request to the Virginia State Corporation Commission (“VA SCC”) that it be required to make the interval meter data available to CSPs.<sup>17</sup> While the petitioner in this case did not prevail, it does not support CPower’s allegation that CSPs in PJM are denied access to EDC interval meter data generally. In Attachment A, CPower refers broadly (at 29) to EDCs having failed to provide CSPs, such as CPower, with AMI interval meter data and offers their reasons for doing so. Neither specific instances are provided nor does CPower mention having pursued these matters with PJM, FERC or the affected State Commission at the times that they allegedly occurred despite acknowledging (at 30) access to retail customer data is a state jurisdictional matter.

CPower provides no further examples of their alleged inability to access the interval meter data at issue. To the extent that such a situation actually existed, it would be a matter of retail regulatory jurisdiction in the affected state. Instead of bringing the matter before the appropriate jurisdiction as was done with the Walmart case, CPower instead alleges anticompetitive behavior on the part of the EDCs and proposes that the solution lies in weakening the rules designed to safeguard the integrity of PJM Markets and the reliability of the grid. Were there issues obtaining interval meter data from an EDC, the Commission previously stated that it will defer to states.<sup>18</sup> Additional remedies are also available to CPower as the PJM Tariff already contains a provision allowing CSPs to install their own interval meters in order for demand response resources to participate in PJM markets.<sup>19</sup> More recently, FERC Order No. 2222 reinforced the requirements for use of interval metering and

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<sup>17</sup> See Petition of Virginia Elec. And Power Co., Final Order, VA SCC Case No. PUR-2021-00127, at 11-12 (Jan. 7, 2022), which can be accessed at: <https://www.scc.virginia.gov/docketsearch/DOCS/6byy01!.PDF>.

<sup>18</sup> *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,143 at P 407 (2023)

<sup>19</sup> OA Schedule 1 § 1.5A.4(a).

limiting statistical sampling to only those instances where interval metering is not available.<sup>20</sup> The Commission noted that PJM’s proposed metering requirements do not pose an unnecessary and undue barrier to distributed energy resources such as demand response.<sup>21</sup>

**F. CPower Originally Characterized the Matter as Cost Prohibitive.**

CPower asserts (at 6) that EDCs have consistently demonstrated limited cooperation or limited ability to cooperate, and/or the EDCs have refused to provide CSPs with the residential AMI data at scale that would enable CSP participation in the PJM markets. CPower’s own problem statement presented at the August 2, 2022, PJM DRSC meeting, characterized access to data as cost prohibitive and administratively challenging rather than one of accessibility. The problem statement stated in part, “Although EDCs may have the data, if there are smart meters present, retrieving that data and making it accessible and available for thousands of customers upon request by a CSP to facilitate participation in the wholesale market presents costly and time-consuming administrative challenges to both CSPs and EDCs.”<sup>22</sup> The cost of doing business is neither a barrier to entry nor does it render PJM’s Tariff unjust and unreasonable. At the October 24, 2022, PJM Markets and Reliability Committee meeting members correctly recognized the value of using interval metering to accurately measure and compensate the performance of demand resources and voted to reject the adoption of CPower’s problem statement that

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<sup>20</sup> See *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 2222, 172 FERC ¶ 61,247 (2020).

<sup>21</sup> *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,143 at P 250 (2023).

<sup>22</sup> See PJM. “Residential and Small Commercial Customer Measurement and Verification for Demand Response,” Demand Response Subcommittee (August 2, 2022), which can be accessed at: <https://www.pjm.com/-/media/committees-groups/subcommittees/drs/2022/20220802/item-03a--statistical-sampling-problem-statement-cpower.ashx> >.

was designed to weaken the accuracy of the measurement of demand resource performance.<sup>23</sup>

**G. CPower Misinterprets Statistical Sampling Provisions in Section 8.3 of Schedule 1 to the OA.**

In the CPower Answer, CPower proffers that PJM erred in suggesting that AMI data may be used for statistical sampling purposes. CPower goes on to reassert its belief that such prohibition further supports its argument that Section 8.3 of Schedule 1 to the OA is unjust and unreasonable.<sup>24</sup> In fact, Section 8.3 contains no such prohibition. Section 8.3 clearly provides that non-interval metered residential customers that have Direct Load Control may use current statistical sampling of interval metering equipment on an electric distribution company account basis in accordance with the PJM manuals.<sup>25</sup> Neither Section 8.3 nor the PJM manuals bar the use of AMI data for statistical sampling purposes.

**H. Rules Ensuring that Demand Resources Meet Requirements Comparable to Other Resources Do Not Constitute Artificial Barriers to Entry.**

Sierra Club, Resideo and AEMA all argue (*passim*) that PJM market rules create “barriers to entry” for demand response. Artificial barriers to participation in wholesale electricity markets should be eliminated to the extent they exist. Artificial barriers to market participation create inefficiencies and can result in market failure. Natural barriers include product and/or service requirements that define market products so that a market can function efficiently. PJM’s rules that require the use of the data from interval meters when they exist for the verification of load reductions by Demand Resources is such a

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<sup>23</sup> See *Summarized Voting Report*, Markets & Reliability Committee (Oct, 24, 2022), which can be accessed at: <https://pjm.com/-/media/committees-groups/committees/mrc/2022/20221024/summarized-voting-report.ashx> .

<sup>24</sup> CPower Answer at 7.

<sup>25</sup> See OA Schedule 1 § 8.3 (“Non-interval metered residential customers that have Direct Load Control may use current statistical sampling of interval metering equipment on an electric distribution company account basis in accordance with the PJM Manuals and subject to PJM approval.”).

requirement. The requirement to provide evidence that the product being sold actually exists is not an artificial barrier to entry. All markets have natural barriers to entry and market design should not attempt to eliminate them. The removal of natural barriers to entry creates inefficiencies in the same way that the addition of artificial barriers to entry creates inefficiencies. Exclusion caused by artificial barriers is inefficient, but exclusion caused by natural barriers is efficient.

## 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 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.<sup>26</sup> 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.

## 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.

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<sup>26</sup> 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).

Joseph E. Bowring  
Independent Market Monitor for PJM  
President  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8051  
*joseph.bowring@monitoringanalytics.com*

Paul G. Scheidecker  
Senior Analyst  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8050  
*paul.scheidecker@monitoringanalytics.com*

Dated: November 2, 2023

Respectfully submitted,



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Jeffrey W. Mayes

General Counsel  
Monitoring Analytics, LLC  
2621 Van Buren Avenue, Suite 160  
Eagleville, Pennsylvania 19403  
(610) 271-8053  
*jeffrey.mayes@monitoringanalytics.com*

## 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 2<sup>nd</sup> day of November, 2023.



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Jeffrey W. Mayes

General Counsel

Monitoring Analytics, LLC

2621 Van Buren Avenue, Suite 160

Eagleville, Pennsylvania 19403

(610) 271-8053

*jeffrey.mayes@monitoringanalytics.com*