

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

Voltus, Inc., and Mission:data	)	Docket No. EL26-4-000
	)	
v.	)	
	)	
PJM Interconnection, L.L.C.	)	
	)	

COMMENTS OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rule 211 of the Commission’s Rules and Regulations,¹ Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor (“Market Monitor”) for PJM Interconnection, L.L.C. (“PJM”),² submits these comments responding to the complaint filed on October 8, 2025, (“Complaint”) by Voltus, Inc. (“Voltus”), and Mission:data under Sections 206, 306, and 309 of the Federal Power Act and Rule 206.³ The Complaint requests that the Commission find that PJM’s OATT “is unjust, unreasonable and unduly discriminatory” to the extent “it requires Curtailment Service Providers (“CSPs”) to submit load reduction meter data to PJM or risk no payment for participation despite evidence CSPs have little to no meaningful access to the required meter data while electric distribution companies (“EDCs”) have full access because of their own advanced metering infrastructure (“AMI”).”

¹ 18 CFR § 385.211 (2025).

² 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”).

³ 16 U.S.C. §§ 824e, 825e, and 825h; 18 CFR § 385.206.

The Complaint seeks to replace the current rules with rules that would require PJM to revise its Tariff Manuals and related documents to permit CSPs to use PJM's statistical sampling method that is currently limited to cases where interval meter data is not available.⁴ Because the existing rules have not been shown to be unjust and unreasonable, or unduly discriminatory, there is no need to implement relief. Even if it were determined that the existing rules are not just and reasonable, or are unduly discriminatory, the Complaint fails to demonstrate that the proposed relief is just and reasonable. Using statistical sampling when actual interval meter data is available would unjustly and unreasonably degrade PJM's ability to accurately measure the MW of capacity actually available and the actual performance of that capacity and therefore degrade PJM's ability to maintain resource adequacy and to correctly determine efficient capacity market prices through supply and demand in the market. In addition, such treatment would introduce undue discrimination in favor of the demand response resources that do not use available meter data which is what all other capacity resources are required to use. The relief sought in the Complaint is contrary to the public interest and should be rejected.

I. COMMENTS

A. The Complaint Fails to Show that the Rules Requiring Accurate Measurement and Verification of Load Reductions Are Unjust, Reasonable or Unduly Discriminatory.

PJM's demand response programs in which end-use customers receive compensation for reducing load in response to dispatch instructions participate in the capacity and energy markets and are paid for by all PJM customers. For such programs to function fairly and transparently, accurate measurement and verification of load reductions is essential. One key tool to enable that accurate measurement and verification is interval metering that records energy usage in short time intervals (e.g., hourly or sub-hourly). PJM's requirement that

⁴ OA Schedule 1 § 8.3(b).

demand response resources use interval metering where available supports the integrity of the market and is just and reasonable, and not unduly discriminatory. Rules that require accurate measurement of demand resources serve the public interest. Nothing in the Complaint demonstrates otherwise.

Demand response is a voluntary program that compensates end-use retail customers for reducing their energy use when it is an economical alternative to buying power or when the reliability of the grid is threatened. Because this reduction must be timely and verifiable, knowing exactly when and how much load is reduced is critical to system operations and to accurate compensation. If load reductions are only measured on coarse intervals or through statistical sampling, it is not possible to verify that the defined reduction can occur and did occur when dispatched and thereby to count on it for reliability and compensate it appropriately. The public interest in system reliability and efficiency justifies the metering requirement for participants seeking to sell demand response. The requirement to use interval metering is consistent with the measurement and verification for all other energy and capacity resources and is therefore a prerequisite to prevent undue discrimination in favor of the demand response resources that do not use available meter data.

The interval metering requirement is just and reasonable because it ensures accurate and verifiable measurement of demand reductions. Accurate metering ensures that only real, verifiable reductions are compensated. If load reductions are overstated because of coarse metering or estimation through statistical sampling, then compensating them inefficiently raises costs for all customers. Interval metering supports cost effectiveness by reducing verification error and enhancing competitive participation.

The interval metering requirement is just and reasonable because it ensures fairness and prevents gaming. If demand resources are not metered with sufficient granularity, then providers might overstate reductions by shifting load outside the dispatch window or gaming baseline assumptions. Interval metering reduces that risk by providing actual usage profiles. Interval metering protects both market participants and ratepayers from paying for reductions that did not verifiably occur when claimed. Thus the interval metering

requirement helps ensure integrity. Demand resources should be treated analogously to generation resources in terms of measurable performance. Having reliable data supports credible settlements, avoids disputes and helps regulators and stakeholders monitor performance accurately.

The interval metering requirement is just and reasonable because it balances cost and benefit. The savings and benefits of demand response resources cannot be accurately defined without interval metering. Without such metering, CSPs are not selling a verifiable product. Selling a verifiable product is essential to maintaining competitive markets. The fact that there are costs to selling a verifiable product makes demand response comparable to every other energy and capacity product sold in the PJM markets. There is no reason to exempt Voltus or any other CSP from that requirement. Thus it is just and reasonable that demand response participants meet this requirement. Demand resources are being compensated as a reliability product, therefore the measurement standard should align with the product's value.

The interval metering requirement is just and reasonable because it requires parity in the measurement requirement of demand resources with other resources. Generation resources in PJM are metered and settled at high granularity, typically five-minute intervals. Demand resources likewise should meet metering standards that ensure comparable performance verification. The interval metering requirement thus promotes competitive fairness.

Demand resources displace generation resources MW for MW in the capacity market. It is essential that comparable rules apply, so that the actual supply of energy and capacity, and demand reductions are as nearly equivalent as possible. Demand resources have a significant impact on the energy and capacity markets in PJM. Demand resources are paid significant amounts by PJM customers as uplift and have the ability to set prices at extremely high levels. For those reasons, the rules for demand resources matter. The rules apply just and reasonable standards to demand resources. PJM must be allowed to meet its responsibilities by establishing effective rules. If anything, the standards should be tightened.

The Complaint fails to show that PJM rules are unjust and unreasonable, and it should be rejected.

B. The Relief Proposed in the Complaint Has Not Been Shown Just and Reasonable.

1. No Matter How Robust, Statistical Sampling of Retail Meter Data Can Never Be as Accurate as Direct Measurement.

There are inherent accuracy limits to statistical sampling of retail electric metering. Statistical sampling can never match the accuracy and reliability of direct measurement. Due to intrinsic limitations in statistical methodologies such as sampling error, non-representative data, and temporal variability in energy consumption, statistical sampling can never achieve the same level of precision, granularity, and accuracy as direct measurement though the use of interval metering. The implications of these limitations are critical for market prices, customer bills, system reliability and regulatory compliance.

Statistical sampling involves selecting a subset of a population and using the data collected from this sample to estimate characteristics of the entire population. Claims that measuring every unit is too expensive, time-consuming, or logistically difficult do not justify the use of sampling when interval retail meter data is available.

By its very nature, sampling introduces sampling error, the difference between the true population parameter and the estimate derived from the sample. This error is inevitable unless the sample includes the entire population, which then ceases to be a sample.

Even with rigorous random sampling, the estimate will always carry a margin of error, expressed as a confidence interval. Direct measurement in contrast, reports actual values with no estimation error beyond minor meter accuracy tolerances.

Retail electricity consumption is non-stationary, meaning that it changes over time due to factors such as time of day, weather, appliance usage, behavioral patterns and economic activity. These temporal and behavioral fluctuations can cause sampling data to misrepresent actual consumption. By contrast, direct measurement captures these

fluctuations in real time, while statistical sampling only estimates them, often with significant time lags or averaging that obscures variability.

Proper compensation for demand resource performance requires per-customer accuracy. Consumers expect to be charged for services that are actually being provided. Sampling, by definition, cannot provide customer level performance data making it impossible to ensure appropriate compensation for resource performance. Extrapolating group data to individuals risks inaccurate or inappropriate resource compensation and undermines confidence in the PJM's markets. Direct measurement ensures each resource's actual performance is captured and credited accordingly.

Granular, verifiable data for demand response resources is essential to the proper administration of these programs as well as net metering and renewables integration. Statistical sampling simply lacks the required resolution and verifiability to support these ends.

Statistical sampling can underperform in diverse or rapidly changing populations. For instance, in areas with high DER (Distributed Energy Resources) penetration, sampling fails to capture variability in solar generation or storage behaviors. During heatwaves or cold snaps, sampled data can underestimate peak loads, leading to inadequate resource performance assessment and compensation. Statistically sampled data can be misaligned with actual customer behavior, leading to over or under compensation for resource performance.

On September 19, 2024, the Commission issued an order denying the complaint by Enerwise Global Technologies seeking to use statistical sampling for measuring demand response performance when interval metering is available.⁵ Commissioner Chang concurred with the Commission's determination and agreed that using actual metered interval data is

⁵ See "Order Denying Complaint re Enerwise Global Technologies, LLC v. PJM Interconnection," EL23-104-000 (July 28, 2023).

the ideal method to measure and verify performance for demand-side resources. Commissioner Chang further noted that it is essential that resources that are procured and compensated in the markets actually deliver on their reliability and economic commitments.⁶

Statistical sampling can never equal the precision or operational reliability of direct measurement of demand response resource performance.

2. Interval Retail Electric Meter Data Is Required for Effective Monitoring of Resource Performance and Ensuring Proper Compensation.

Interval retail electric meter data is indispensable for monitoring resource performance and ensuring proper compensation of demand resources. Alternative approaches such as statistical sampling lack the resolution, specificity, and temporal granularity required to support accurate performance tracking and appropriate compensation for resource performance.

To effectively monitor and evaluate resource performance requires measuring, verifying, and evaluating how energy resources behave in response to price signals and dispatch instructions. Effective monitoring is essential for:

- Maintaining market integrity by ensuring demand response participants are delivering the services they are being paid for.
- Ensuring system reliability by verifying that resources respond as expected to maintain grid security.
- Performing program evaluation and assessing the impact of DERs and demand response programs to guide policy and investment decisions.

Interval retail meter data provides timestamped, location-specific, and customer-specific information that enables accurate tracking of these behaviors. Without this data, resource actions cannot be individually distinguished, leading to uncertainty and potential misrepresentation of performance and inappropriate compensation.

⁶ *Id.*, Commissioner Chang Statement Concurring at 1.

Interval retail electric meter data enables accurate compensation. Compensating resources for their contributions, whether it is energy, capacity, or ancillary services, requires a clear, measurable baseline and accurate measurement of deviation from that baseline during dispatch events. Interval retail electric meter data provides the only consistent and authoritative measurement of these deviations because it captures:

- Granular usage data at intervals aligning with operational dispatch timelines.
- Location specific data necessary for evaluating individual resource performance.
- Time synchronized readings which can be matched against event windows to determine actual performance.

This interval resolution data is critical to both volumetric and time based compensation schemes. Without it, compensation would be based on estimates or proxies, introducing inequity and undermining market outcomes.

Statistical sampling has inherent limitations rendering it ineffective to these purposes. Statistical sampling involves selecting a subset of participants to represent the larger population. Statistical sampling cannot meet the requirements for operational monitoring and individual resource performance assessment and compensation. Resource performance assessment using statistical sampling prevents individual accountability. Sampling cannot provide individual resource-level performance data. It aggregates performance across a subset of the population, making it impossible to verify whether a specific resource complied with dispatch instructions or delivered its expected value. Resource performance assessment using statistical sampling makes it impossible to capture localized impacts. Grid impacts of demand resources and determination of resource performance are highly dependent on location and time. Sampling smooths out these variations, leading to errors in evaluating the value or performance of individual resources. Only resource specific interval meter data can allow effective measurement of individual resources. Interval retail meter data provides continuous, time-synchronized data that ensures necessary visibility of resource performance

before, during and after dispatch events in order to effectively evaluate resource performance and ensure proper compensation.

Statistical sampling, no matter how robust, inherently introduces error and uncertainty. This uncertainty is unacceptable for financial settlements, where precision is critical. Misestimating performance by even a few percent could translate into substantial under or over compensation.

Interval retail meter data provides additional benefits. Beyond performance monitoring and compensation, retail electric meter data supports baseline estimation for demand response programs. Historical interval data is required to construct accurate baselines.

Interval retail meter data promotes regulatory compliance and auditability by providing a defensible record of resource performance and compensation for regulatory oversight.

Interval retail meter data is essential for effective resource performance monitoring and proper compensation. It offers the end use customer level granularity, accuracy, and specificity required to ensure that demand response resources are performing as expected, participants are compensated accordingly and that customers are receiving the services that they are being charged for. Statistical sampling lacks the precision and accountability needed in an operational or settlement environment. As the grid becomes increasingly reliant on distributed, customer-sited resources, the role of interval retail meter data will only grow in importance. Ensuring consistent and proper use of this data should be a foundational principle for energy market design and resource integration efforts.

3. Recent Demand Response Dispatch Events Highlight the Need for Interval Retail Meter Data.

PJM dispatched pre-emergency load management during a period of hot weather on June 23-25, 2025. Load management resources overall failed to perform to their committed ICAP level during the June 23-25, 2025 dispatch event. Load management resources were evaluated based on their ability to reduce load to their nominated Firm Service Level (FSL).

Customer Base Line (CBL) is an hourly estimate of the load level of a demand resource in the absence of a demand response event. The expected hourly reduction of each resource is defined as the difference between the CBL and the FSL. The actual hourly reduction is defined as the difference between the CBL and the metered load of the resource adjusted for losses. If a resource reduces to its FSL, then its actual reduction equals its expected reduction. This metric provides a better assessment of demand response performance than simply comparing metered load to FSL.

During Winter Storm Elliott, demand resource loads were already at a reduced level when dispatched. While deemed to have generally met their ICAP commitments, there was very little incremental reduction provided in order to reach their FSL.

The difference between CBL and FSL provides a better estimate of the expected incremental reduction. If a dispatched registration has a CBL equal to or less than the FSL, the expected incremental reduction is zero. Based on this metric, demand resources provided 69.3 percent of their expected reduction on June 23, 2025, 70.6 percent of their expected reduction on June 24 2025, and 68.8 percent of their expected reduction on June 25, 2025.

The Market Monitor's access to interval retail metering data was essential to evaluating individual resource performance during this event. Resource performance across the three days varied widely not only between, but within customer classes. Simply sampling data within or among customer classes would fail to capture this variability and mask individual performance. This behavior and the Market Monitor's ability to exercise appropriate diligence in ensuring that resources are following PJM dispatch instructions and being appropriately compensated for performance is only possible through Curtailment Service Providers providing interval retail meter data for each of the customer locations supporting their resource commitments.

II. CONCLUSION

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

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Respectfully submitted,



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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 28th day of October, 2025.



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