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The Honorable Debbie-Anne A. Reese
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426-0001

Re: *PJM Interconnection L.L.C., Docket No. ER27-522-000, Proposal to Address Operational Requirements for Large Computational Load and Establish an Annual Transmission Service Reporting Requirement*

Dear Secretary Reese:

Pursuant to Section 205 of the Federal Power Act[1] and the August 14, 2026 letter order issued in Docket No. EL26-67-000,[2] PJM Interconnection, L.L.C. ("PJM") hereby submits revisions to the PJM Open Access Transmission Tariff ("Tariff")[3] to establish disturbance ride-through requirements applicable to Eligible Customers taking transmission service on behalf of Large Computational Loads, a targeted subset of Large Loads[4] that may pose heightened operational risks to the Bulk Electric System and PJM Transmission System during grid

[1] 16 U.S.C. § 824d.

[2] *PJM Interconnection, L.L.C.*, 196 FERC ¶ 61,129, at P 10 (2026) (noting that to extent PJM submits "an FPA section 205 filing addressing the Commission's preliminary findings in the Show Cause Order on or before November 16, 2026, then the obligation of the respondent(s) who have made such an FPA section 205 filing to file a response to the Show Cause Order will be suspended[.]").

[3] For the purpose of this filing, capitalized terms not defined herein shall have the meaning as contained in the Open Access Transmission Tariff ("Tariff"), the Amended and Restated Operating Agreement of PJM ("Operating Agreement"), and the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region ("RAA").

[4] *PJM Interconnection, L.L.C.*, 197 FERC ¶ 61,019, at PP 2, 16, 27–30 (2026) (accepting, effective October 12, 2026, PJM's proposed definition of Large Load as "end-use customer(s) load that has a cumulative peak load of 50 [MW] or greater at a single electrical site behind one or more points of interconnection, where for configurations involving multiple affiliated load facilities or multiple points of interconnection with affiliated load facilities behind them, all affiliated load facilities within a one-mile radius will be considered a single electrical site as further described in the PJM Manuals.").

disturbances. PJM is also proposing additional Tariff language to address ramp rates and other "ongoing operational requirements," as described in the June 18, 2026 Show Cause Order.[5] PJM is also proposing, on compliance, an annual transmission service reporting requirement.[6]

The Tariff language proposed herein is being filed in response to the Commission's preliminary finding, in the Show Cause Order,[7] "that PJM's Tariff appears to be unjust and unreasonable because it lacks provisions addressing ongoing operational requirements for transmission customers taking transmission service on behalf of large loads."[8] PJM submits this filing pursuant to its independent authority to modify its Tariff under FPA section 205 pursuant to Tariff, Part I, section 9.2(a) and the Consolidated Transmission Owners Agreement ("CTOA"), section 7.5.1(ii), following the requisite consultation specified under Tariff, Part I, section 9.2(b) and the CTOA, section 7.5.1(ii).

[5] *PJM Interconnection, L.L.C., et al.,* 195 FERC ¶ 61,211, at P 64 (2026) ("Show Cause Order") ("[W]e preliminarily find that PJM's Tariff appears to be unjust and unreasonable because it lacks provisions addressing ongoing operational requirements for transmission customers taking transmission service on behalf of large loads." Those ongoing operational requirements include: "ramp rates," "ride-through requirements," "PJM hourly forecasts, telemetry data, and other data to ensure sufficient visibility," "equipment to enable PJM to monitor large load for impacts," equipment "enabling PJM to remotely disconnect large loads when necessary," and specification of "necessary control technologies or protection systems.").

[6] PJM will promptly submit a letter in Docket Nos. EL25-49 and EL26-27 informing participants of today's tariff filings, some parts of which are submitted in compliance with Commission directives and others of which are submitted pursuant to Section 205 of the FPA. In an abundance of caution, PJM requests waiver of any regulation or filing requirements relating to submissions in Docket Nos. EL25-49 and EL26-27 relating to today's tariff filings. Good cause exists to grant any necessary waivers because submission of these tariff filings in the structure presented efficiently addresses the complexity of the overlapping filing obligations and differing requested effective dates, PJM is providing prompt notice to participants in other relevant EL dockets of today's filings, and PJM is requesting a sixty-day comment period and 120 day Commission action date that affords interested participants reasonable time to engage in the tariff filing dockets.

[7] *Id.*

[8] *Id.* at P 64.

The proposed Tariff revisions mitigate threats to the reliability of the Transmission System and Bulk Electric System posed by Eligible Customers taking transmission service on behalf of Large Computational Loads by:

(1) defining Large Computational Loads, a subset of Large Loads that may pose heightened operational risks in the PJM Region, and thus trigger operational requirements on Eligible Customers serving them;

(2) setting the framework for minimum voltage ride-through and frequency ride-through requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which establishes the necessary groundwork for more detailed ride-through standards to be promulgated through revisions to PJM's Manuals; and

(3) setting a framework for other operational requirements to be established in the Manuals, with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, relating to: ramp rate requirements, electromagnetic transient performance requirements, operation, coordination, and maintenance of necessary auxiliary equipment, control technologies and protection systems, maintenance outage protocols, remote disconnection capabilities requirements, telemetry/data exchange requirements, and data and communication requirements.

The proposed Tariff provisions setting forth ride-through and other operational requirements state that these requirements on Eligible Customers taking transmission service on behalf of Large Computational Loads shall be set forth in PJM's Manuals.[9] At present, PJM is at an advanced stage of the process for developing Manual language for the ride-through requirement. PJM plans to commence stakeholder engagement in early 2027 to develop Manual

[9] *PJM Large Computational Load Operational Review*, PJM Interconnection, L.L.C., at slide 15 (Oct. 6, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-item-07-a---1-lcl-ride-through-requirements-background---presentation.pdf; *id*. at slide 25, https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-item-07-b---1-lcl-ride-through-requirements-solution---presentation.pdf; *PJM's Response Matrix to the Large Load Show Cause Order Opportunities*, PJM Interconnection, L.L.C., Operational Requirements section (Oct. 29, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2026/20261105-special/item-01---2-large-load-compliance-matrix.pdf.

language and requirements applicable to other operational requirements set forth in the Show Cause Order.

PJM respectfully requests that the Commission accept the proposed Tariff revisions addressing ride-through requirements and the Tariff language establishing the framework for other proposed operational requirements in the Manuals, effective January 16, 2027, which is 61 days after the date of this filing.[10]

For the reasons set forth below, the proposed revisions are just and reasonable. However, if the Commission deems necessary, and to help facilitate the Commission's acceptance of this filing without delay so that PJM can address the short-term needs for ride through requirements, PJM provides notice that it consents to the Commission's exercise of authority to sever any element of the proposed Tariff language to the extent necessary and permitted under sections 205 and 206 of the FPA and *NRG Power Marketing, LLC v. FERC*.[11] In particular, PJM consents to severance of the ride-through requirements from Tariff revisions proposed herein that pertain to other operational requirements because, as discussed further below, recent large load transfer events have made it abundantly clear that PJM already faces the serious reliability concerns that

[10] In a separate FPA section 205 filing concurrently submitted today, PJM is proposing a later effective date of March 16, 2027, for other proposed revisions to PJM's governing documents, including the addition of transmission products for Eligible Customers taking transmission on behalf of Large Loads. Attachment D to that other filing includes a Chart Mapping Order Directives to Tariff Changes, some of which are the subject of the instant filing.

[11] *NRG Power Mktg., LLC v. FERC*, 862 F.3d 108 (D.C. Cir. 2017). As the Commission has often stated, "[t]he United States Court of Appeals for the District of Columbia Circuit has held that, in certain circumstances, the Commission has 'authority to propose modifications to a utility's [FPA section 205] proposal if the utility consents to the modifications.'" *N.Y. Indep. Sys. Operator, Inc.*, 188 FERC ¶ 61,051, at P 22 n.36 (2024) (alteration in original) (citing *NRG Power Mktg.*, 862 F.3d at 114–15); *see Midcontinent Indep. Sys. Operator, Inc.*, 180 FERC ¶ 61,141, at P 26 n.29 (2022) (same), *order on reh'g*, 182 FERC ¶ 61,096 (2023), *aff'd sub nom.*, *Entergy Ark., LLC v. FERC*, 109 F.4th 583 (D.C. Cir. 2024); *ISO New Eng. Inc.*, 175 FERC ¶ 61,172, at P 16 n.20 (2021) (same).

are driving the need for the ride-through requirements in the short term. Indeed, the Manual language for the ride-through requirements are in an advanced stage of development.

Lastly, PJM is also addressing the Commission's compliance directive in the June 2026 Co-Located Load Order requiring an annual report regarding the provision of new transmission services.[12] PJM proposes to post on its website a report containing information about the demand for and use of: Network Integration Transmission Service to the extent Interim Network Integration Transmission Service was also requested; Interim Network Integration Transmission Service; Firm Contract Demand Service; and Non-Firm Contract Demand Service, in a manner consistent with the method and substance of the Commission's compliance directive.[13] This proposed revision is just and reasonable because the annual report would give the Commission, states, PJM market participants, and stakeholders the benefit of additional transparency about the new transmission services being offered in PJM. The Commission should accept this annual report proposal as just and reasonable or on compliance with the Co-Located Load Order.[14]

I. BACKGROUND

A. PJM Already Faces Risks Arising from Large Load-Transfer Events that Necessitate Ride-Through Requirements

Unlike many of the other Regional Transmission Organizations and Independent System Operators ("RTOs/ISOs") in the country, PJM already has approximately 10 GW of computational load in its footprint and, in recent years, has already experienced the reliability and operational impacts of large load transfer events. For example: (1) on July 10, 2024, an approximately 1.5

[12] *PJM Interconnection, L.L.C.*, 195 FERC ¶ 61,209, at PP 579–580 (2026) ("Co-Located Load Order").

[13] *Proposed* Tariff, Part III, section 28.2; *Proposed* Tariff, Part XI, section 718.2.

[14] PJM's filing does not further address this proposed revision.

gigawatt ("GW") large load transfer event caused frequency to increase to 60.047 Hz and voltage to increase to 1.07 per unit ("p.u."), (2) on February 17, 2025, an approximately 1.8 GW large load transfer event caused frequency to increase to 60.047 Hz and voltage to increase to 1.07 per unit ("p.u."), and (3) on July 22, 2026, an approximately 3.9 GW large load event caused frequency in the Eastern Interconnection to reach 60.092 Hz and voltage to increase with a peak of ~1.138 p.u.[15] As such, establishing minimum voltage ride-through and frequency ride-through requirements standards for Eligible Customers serving large loads is particularly critical to the reliability of the PJM Region.

According to the testimony of PJM Senior Manager, Generation Modeling and Dynamics Studies in the Planning Division Mr. David Egan, transfer events such as the one that occurred this past July "demonstrate[] how large amounts of load can disconnect in a very short period of time in response to transmission system conditions" which "can unnecessarily introduce additional dynamic impacts and exacerbate the underlying disturbance."[16]

Critically, Mr. Egan explains, "[w]hen a large block of load disconnects unexpectedly, the actual system response may differ substantially from the conditions anticipated by planners and operators. Such disconnects can alter power flows, voltage profiles, frequency response, and system dynamics across a broad geographic area."[17] Mr. Egan further explains:

> When several thousand megawatts of load disconnect within a short period of time, the resulting changes in voltage, frequency, and power flows can alter the response of generators throughout the interconnected system. These changes can affect the operation of excitation systems, voltage regulators, turbine-governor controls, and

[15] *PJM Large Computational Load Operational Review*, PJM Interconnection, L.L.C., (Sept. 15, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260915/20260915-item-02---lcl-ride-through-requirements-background-education---presentation.pdf

[16] Egan Declaration ¶ 14.

[17] Egan Declaration ¶ 15.

> other plant control systems that are responding to system conditions. As the magnitude and concentration of load transfers increase, so does the potential for these impacts to affect the broader interconnected system and complicate the restoration of stable system conditions following a disturbance.[18]

Such events pose serious threats to the reliability and safety of the Bulk Electric System in the PJM Region. In this regard, the Commission's Show Cause Order states that PJM's Tariff appears to be unjust and unreasonable because it "does not specify ramp rate or ride-through requirements which the transmission customer taking transmission service on behalf of the large load must comply."[19] The Show Cause Order also recognizes the "unique nature of . . . large loads creates challenges for operation of the transmission system and necessitates greater visibility and operational control when providing transmission service to transmission customers on behalf of large loads, without which the reliability of the transmission system could be at risk."[20]

The industry is facing unprecedented load growth, driven largely by data centers. PJM's load forecast predicts peak load growth of 32 GW from 2024 to 2030, 30 GW of which is attributable to data centers.[21] PJM is expected to host as much as 70% of future U.S. data center development, representing highly concentrated demand, especially in northern Virginia's "data center alley." Thus, the proposed Tariff revisions are not only directly responsive to the Show Cause Order but are necessary to ensure the reliability and safety of PJM's systems.

[18] Egan Declaration ¶ 16.

[19] Show Cause Order at P 64.

[20] *Id*.

[21] *Id*. at P 8.

B. Consultation with Stakeholders in the Development of the Proposed Tariff Language Regarding Large Computational Load and Ride Through Requirements

The proposed Tariff language addresses concerns raised by the Commission. First, the proposed Tariff revisions are directly responsive to the express, preliminary findings set forth in the Order to Show Cause.

Second, the proposed definition of Large Computational Load and the Tariff revisions associated with ride-through requirements were presented to stakeholders during the September 8, 2026 Planning Committee meeting.[22] Concurrently, throughout the stakeholder process, PJM has presented stakeholders with proposed Manual language setting forth the proposed technical ride through performance requirements for Large Computational Loads.

Third, on September 15, 2026, PJM held a special session of the Planning Committee dedicated to educating stakeholders about the impetus for the proposed ride-through requirements, including reliability concerns.[23]

Fourth, PJM presented revised Tariff and Manual language defining Large Computational Load and addressing ride-through requirements during the October 6, 2026 Planning Committee meeting, including a comprehensive page-by-page review of the proposed provisions and

[22] The agenda from PJM's June 16, 2026 special Market Implementation Committee meeting is available at https://www.pjm.com/-/media/DotCom/committees-groups/committees/mic/2026/20260616-special/agenda.pdf.

[23] *PJM Large Computational Load Operational Review*, PJM Interconnection, L.L.C., Item 02 (Sept. 15, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260915/20260915-item-02---lcl-ride-through-requirements-background-education---presentation.pdf; *id.*, Item 03 – 1 LCL Ride-Through Requirements Solution Education – Presentation, https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260915/20260915-item-03---1-lcl-ride-through-requirements-solution-education---presentation.pdf; *id.* Item 03 -2 LCL Ride-Through Requirements Proposed Language – Redline, https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260915/20260915-item-03---2-lcl-ride-through-requirements-proposed-language---redline.pdf.

implementation details. PJM also considered and responded—both in writing[24] and during and after the meeting—to submitted stakeholder questions and comments about the proposals, which subsequently gave rise to further refinements to various aspects of the proposed requirements.

Fifth, as described further, below, and in the declaration of Mr. Egan, the proposal is informed by PJM's ongoing participation in the North American Electric Reliability Corporation's ("NERC") development of operational standards and reliability criteria, including ride-through reliability standards, as well as PJM's assessment and analysis of how other Regional Transmission Organizations and Independent System Operators ("RTOs/ISOs") have addressed ride-through requirements for large loads. At bottom, the proposed solution has benefited from several months of stakeholder input, coordinated efforts with NERC, and careful consideration of industry standards and initiatives.

C. Additional Tariff Provisions Setting the Groundwork for Future Development of Other Operational Requirements Applicable to Eligible Customers Taking Transmission Service on Behalf of Large Computational Loads

PJM's submission also proposes Tariff language for other operational components to address potential gaps in processes for evaluating reliability impacts and transmission needs of Large Loads. PJM has not yet commenced stakeholder discussions to develop these requirements although they have been acknowledged in stakeholder consultations.[25] PJM has indicated that

[24] *Q & A on Large Computational Load Ride-Through Requirements*, PJM Interconnection, L.L.C. (Oct. 6, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-item-07-b---3-qa-on-lcl-rt-requirements.pdf

[25] *See, e.g.*, *PJM's Response Matrix to the Large Load Show Cause Order Opportunities*, PJM Interconnection, L.L.C., at pages 3 through 6 (Oct. 29, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2026/20261105-special/item-01---2-large-load-compliance-matrix.pdf; Overview of June 18 *Co-Located Load and Large Load Show Cause Orders*, PJM Interconnection, L.L.C., at slides 14–15 (July 30, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/workshops/cllsco/2026/20260730/20260730-item-02---co-located-load-and-large-load-show-cause-orders---presentation.pdf; *PJM LCL Ride-through Requirements*, PJM Interconnection, L.L.C., at slide 7 (Sept. 8, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260908/20260908-item-05---1-large-load-ride-through---presentation.pdf; *PJM Large*

development of these other operational components will comprise significant ongoing work in 2027 to develop details in Manual language relating to ramp rate and other operational requirements.[26]

Under these additional proposed Tariff provisions, PJM is committing to develop requirements in the Manuals for Eligible Customer taking transmission service on behalf of Large Computational Loads to comply with in order to address other operational requirements for fast-ramping load that may impact the transmission system, as described in the Large Load Show Cause Order.[27] The Manual language will be developed and specified in the PJM Manuals only after PJM has undergone the requisite additional study and stakeholder engagement in 2027.[28]

II. THE PROPOSED TARIFF REVISIONS ARE JUST AND REASONABLE

A. PJM Proposes to Define Large Computational Loads, the Relevant Subset of Large Loads in PJM for Purposes of the Proposed Operational Requirements

As a preliminary matter, PJM proposes to apply the ride-through requirements for large loads to Eligible Customers taking transmission service on behalf of a subset of Large Loads, which PJM refers to as "Large Computational Load." PJM proposes to add a definition of Large Computational Load to the Tariff:

"Large Computational Load" shall mean Large Load containing 25 MW or greater

Computational Load Operational Review, PJM Interconnection, L.L.C., at slide 15 (Oct. 6, 2026); https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-item-07-a---1-lcl-ride-through-requirements-background---presentation.pdf.

[26] PJM has spoken of additional operational requirements, like ramp rates, as being the subject of additional study and stakeholder engagement before they could be implemented. More precisely stated, the particulars of these additional operational requirements will be discussed and developed with stakeholders as Manual language is developed.

[27] Paragraph 64

[28] *PJM Large Computational Load Ride-Through Requirements*, PJM Interconnection, L.L.C., at slide 25 (noting ramp rate and design envelope work plan for 2027) (Oct. 6, 2026), https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-item-07-b---1-lcl-ride-through-requirements-solution---presentation.pdf.

> of maximum load served through power electronic conversion equipment. Large Computational Load shall include:
>
> A) New Large Computational Load. Any Large Computational Load on whose behalf an Eligible Customer enters the Transmission Provider or Transmission Owner study processes on or after [61 days from filing].
>
> B) Materially Modified Large Computational Load. Existing Large Load that otherwise meets the definition of Large Computational Load but does not meet the aggregate load 50 MW threshold that is subsequently modified in a manner resulting in the aggregate load becoming 50 MW or greater or otherwise constituting a material modification as determined by Transmission Provider and the applicable Transmission Owner on or after [61 days from filing].
>
> C) Transitional Large Computational Load. Any Large Computational Load, including a Large Computational Load undergoing a Material Modification, on whose behalf, prior to [61 days from filing], an Eligible Customer serving such load has:
>
> − formally initiated or completed an interconnection study with the Transmission Owner,
> − executed an interconnection agreement, service agreement, or other agreement authorizing interconnection,
> − commenced construction, or
> − achieved commercial operation.

Large Computational Load is Large Load that "contain[s] 25 MW or greater of maximum load served through power electronic conversion equipment."[29] As Mr. Egan testifies, the 25 MW "evolved from PJM's experience evaluating large co-located loads, stakeholder feedback on earlier draft language, and a review of approaches being developed by other regions, particularly MISO."[30] Furthermore, as Mr. Egan testifies, PJM tied the definition of Large Computational Load to a threshold quantity of "power electronic conversation equipment" because:

> PJM observed through its co-location and large load analyses that Large Computational Load facilities generally consist of two primary categories of load: (1) cooling and support infrastructure loads used to remove heat and maintain facility operation, and (2) electronics-based loads supplied through power

[29] Tariff, Part I, Definitions L–M–N (Large Computational Load).

[30] Egan Declaration ¶ 20.

> electronic conversion equipment, including the AC-to-DC systems that serve information technology equipment and similar technologies. The reliability concern underlying PJM's proposed requirements is primarily associated with the electronics-based portion of the load, as these systems can rapidly alter their demand or transfer off the Bulk Electric System during disturbance conditions. While the proportion of facility load attributable to cooling versus electronics varies across facility vintages and designs, PJM concluded that the defining reliability characteristic is the presence of substantial power electronic conversion equipment rather than the specific end use served by that equipment.[31]

The targeted application of ride-through requirements to Large Loads that meet the Large Computational Load definition is just and reasonable. First, the proposed definition recognizes that ride-through and other operational requirements being developed are intended to apply only to Eligible Customers serving Large Loads with operating characteristics warranting additional reliability consideration. Thus, for purposes of managing operational risk, defining Large Computational Load supports a more targeted approach than applying the same ride-through and other operational requirements to all Eligible Customers serving Large Loads without regard to facility type or operating behavior.

Second, the proposed definition of Large Computational Load is aligned with NERC's proposed definition of computational load entities, which has likewise recognized that computational loads may warrant reliability requirements distinct from those applicable to traditional loads.[32] Both PJM's proposed definition of Large Computational Load and NERC's developing definition recognize that power electronic conversion equipment that serves information technology, such as servers, storage, and networking hardware, similarly focus on the

[31] Egan Declaration ¶ 22.

[32] *See* Petition of the North American Electric Reliability Corporation for Approval of Revisions to the NERC Rules of Procedure Regarding Computational Load and Request for Expedited Action, Docket No. RD26-7 ("NERC Petition"), 4–5.

underlying electronic equipment and characteristics of the Large Load rather than a particular industry or customer type. As Mr. Egan explains, PJM's definition of Large Computational Load is tailored to the specific needs of the PJM Region, while NERC's developing definition of computational load, along with relevant registration criteria and Reliability Standards, is intended to determine which Large Loads will be subject to NERC's mandatory reliability requirements. Specifically, "PJM concluded that the relevant reliability characteristic" of Large Loads in PJM "is not limited to servers or computational facilities, but rather the presence of large quantities of power electronic conversion equipment capable of exhibiting similar disturbance-response characteristics."[33] Defining Large Computational Loads as Large Loads meeting a threshold quantity of power electronic conversion equipment, "encompasses data centers" within the definition of Large Computational Load "while also remaining applicable to other emerging load types that rely heavily on power-electronic conversion technologies, such as certain hydrogen production facilities and other future industrial processes."[34]

Third, the differences in PJM's definition of Large Computational Load and NERC's developing definition reflect the different purposes and responsibilities of PJM and NERC. Indeed, as described further, below, the proposed Tariff language establishing ride-through requirements for Large Computational Load allows an Eligible Customer or Transmission Owner to modify its ride-through requirements "to address changes in system conditions, reliability needs, applicable NERC Reliability Standards or Transmission Provider operating requirements, provided such requirements continue to meet or exceed the minimum requirements established by

[33] Egan Declaration ¶ 21

[34] *Id*.

Transmission Provider in the PJM Manuals."[35]

Fourth, PJM's proposed approach to defining a specific subset of Large Load reflects PJM's review and evaluation of emerging large-load and computational-load definitions under development by industry organizations and transmission providers.[36] These industry efforts reflect a common recognition that certain computational loads present reliability considerations that differ from those associated with traditional commercial and industrial loads. PJM's proposed definition is generally consistent with the applicability thresholds being adopted or proposed elsewhere in the industry. For example, MISO has similarly identified a subset of large load as computational load to which its proposed ride-through requirements will apply. MISO has also similarly proposed to define computational load as "Large Load comprised of 25 MW or more of Demand from information technology equipment, such as servers, storage, and network hardware."[37]

Although specific criteria vary across regions, these frameworks reflect a common recognition that large computational facilities can present unique reliability considerations requiring enhanced planning, modeling, and operational oversight. Consistent with these industry developments, PJM's proposed Large Computational Load definition identifies facilities containing substantial computational load that may create material reliability impacts if they respond to transmission disturbances in a coordinated manner. PJM's proposed criteria are informed by these industry efforts but were ultimately developed based on PJM's own reliability assessments, operational experience, planning studies, and analyses of Large Computation Load

[35] *Proposed* Tariff, Part III, section 28.2.

[36] *See* Egan Declaration ¶¶ 19–22, 25.

[37] *Midcontinent Indep. Sys. Op., Inc.*, Interconnection Reliability Requirements for Large Loads, Transmittal Letter, Docket No. ER26-3650-000, at 22 (Aug. 28, 2026).

behavior on the PJM system. As such, PJM's proposed definition is consistent with the broader industry trend toward recognizing computational loads as a distinct category of load for reliability purposes while tailoring the specific criteria to the reliability needs of the PJM region.[38]

B. PJM Is Proposing Ride-Through Requirements Applicable to Eligible Customers Taking Transmission Service on Behalf of Large Computational Loads

PJM is proposing to revise its Tariff to establish a framework for setting minimum voltage and frequency ride-through requirements, with which Eligible Customers taking transmission service on behalf of both existing and new Large Computational Loads must comply.[39] Under the proposed language in Tariff, Part III, section 28.2, the Transmission Provider shall establish "minimum voltage ride-through and frequency ride-through requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals." The proposed language sets a floor for disturbance ride-through requirements while also leaving room for Transmission Owners or Eligible Customers to establish ride-through requirements that are "no less stringent than the minimum requirements established by Transmission Provider in the PJM Manuals[]" where "the Transmission Owner determines that such requirements are necessary to maintain the reliability, security, or operational performance of its transmission facilities or the Transmission System."[40] Furthermore, any ride-through requirements established by an Eligible Customer or Transmission Owner must "be based upon reliability, planning, operational, stability, protection coordination, voltage performance, frequency performance, restoration, balancing, reserve management or other

[38] Egan Declaration ¶ 25.

[39] *Proposed* Tariff, Part III, section 28.2.

[40] *Proposed* Tariff, Part III, section 28.2.

reliability-related considerations and shall be applied in a not unduly discriminatory manner to similarly situated Large Computational Load."[41]

Finally, it is worth noting that establishing minimum ride-through requirements applicable to Eligible Customers taking transmission service on behalf of Large Computational Loads has the necessary effect of also establishing consequences for failure to comply with such requirements, including, but not limited to, referrals to the Market Monitoring Unit and the North American Electric Reliability Corporation and its Regional Entities and action at or before the Commission.

1. The Proposed Ride-Through Requirements Apply Whether Large Computational Loads Are Served Through Network Transmission Service or One of the New Transmission Services Available to Large Loads

PJM's proposed ride-through requirements apply whether Eligible Customers are serving Large Computational Loads by taking Network Service, under Part III of the Tariff,[42] or by taking any one of the new transmission services for Large Loads, pursuant to Part XI of the Tariff.[43] The application of the ride-through requirements to Eligible Customers taking any of these transmission services on behalf of Large Computational Loads adheres to the Show Cause Order, which provides:

> [T]he provision of transmission service to Eligible Customers on behalf of large loads [is intended] to encompass the provision of new, modified, or additional jurisdictional transmission service to Eligible Customers on behalf of large loads. We note that this phrase is not limited to instances where an Eligible Customer submits an application to request new transmission service. It also includes

[41] *Proposed* Tariff, Part III, section 28.2.

[42] *Proposed* Tariff, Part III, section 35.1 ("The Network Customer shall plan, construct, operate and maintain its facilities in accordance with Good Utility Practice and in conformance with the Network Operating Agreement. Eligible Customer taking transmission service to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in the PJM Manuals.").

[43] *Proposed* Tariff, Part XI, section 718.2 ("Eligible Customer taking Transmission Service under Part XI to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in in the PJM Manuals. Transmission Provider shall prepare the annual report consistent with Tariff, Part III, section 28.2.").

> instances where an Eligible Customer requests a new or modified point of delivery to serve a large load, where a large load seeks a new or modified delivery point as an unbundled retail transmission service customer, or where large loads are otherwise included in an Eligible Customer's reported load growth and that Eligible Customer is taking [Network Integrated Transmission Service ("NITS")]."[44]

Indeed, the ride-through requirements are necessitated by the operational characteristics of the underlying Large Computational Load, not by the type of transmission service that an Eligible Customer is using to serve such load. Thus, the ride-through requirements apply equally to NITS and non-NITS customers.

2. PJM's Proposal Imposes Ride Through Requirements on Eligible Customers Serving Large Computational Loads

As proposed, the ride-through requirements apply to Eligible Customers[45] taking transmission service on behalf of Large Computational Load. Placing the onus on Eligible Customers to meet these requirements when procuring transmission service on behalf of Large Computational Loads ensures that the proposed Tariff language falls squarely within the Commission's "exclusive jurisdiction over the rates, terms, and conditions of interstate transmission service to Eligible Customers on behalf of large loads connecting to the transmission system, and the practices directly affecting the provision of such interstate transmission of electricity."[46] This is just, reasonable, and not unduly discriminatory because it applies equally to all Eligible Customers taking service on behalf of LCLs in order to maintain the reliability and

[44] Show Cause Order at P 42.

[45] PJM's Tariff defines an Eligible Customer as "(i) Any electric utility (including any Transmission Owner and any power marketer), Federal power marketing agency, or any person generating electric energy for sale for resale . . . (ii) Any retail customer taking unbundled transmission service pursuant to a state requirement that the Transmission Provider or a Transmission Owner offer the transmission service, or pursuant to a voluntary offer of such service by a Transmission Owner, is an Eligible Customer under the Tariff. As used in Tariff, Part VIII, Eligible Customer shall mean only those Eligible Customers that have submitted an Application and Study Agreement." Tariff, Part I, section 1, Definitions E – F.

[46] Show Cause Order at P 47.

safety of the Bulk Electric System.

Furthermore, the ride-through requirements apply to Eligible Customers, rather than Transmission Customers. PJM recognizes that the Show Cause Order notes that "ongoing operation requirements should apply to transmission customers, rather than Eligible Customers, as these requirements apply after the Eligible Customer has an executed (or a filed unexecuted) service agreement for transmission service and have become transmission customers under the Tariff."[47] However, in PJM the term Transmission Customer is circumscribed to specific types of customers, which may unnecessarily constrain the scope of the application of these ride-through requirements.[48] PJM proposes that Eligible Customers meet minimum ride-through requirements as a condition of interconnection.

3. PJM's Proposes to Apply Ride-Through Requirements to Eligible Customers Serving Existing and New Large Computational Load

As noted above, PJM already has approximately 10 GW of existing computational load in its region and has, in recent years, already experienced the significant consequences of large load transfers. Thus, PJM's proposed definition does not exempt existing Large Computational Loads from the proposed ride-through requirements. Nevertheless, PJM's proposed ride-through requirements are mindful of the Commission's directive that any section 205 filing submitted in response to the Show Cause Order should "provide a reasoned explanation for how the proposal

[47] Order to Show Cause at P 57 n.140.

[48] The PJM Tariff defines Transmission Customers as "any Eligible Customer (or its Designated Agent) that (i) executes a Service Agreement, or (ii) requests in writing that the Transmission Provider file with the Commission a proposed unexecuted Service Agreement, to receive transmission service under Tariff, Part II. This term is used in Tariff, Part I and Tariff, Part VI to include customers receiving transmission service under Tariff, Part II and Tariff, Part III. Where used in Tariff, Attachment K-Appendix and the parallel provisions of Operating Agreement, Schedule 1, Transmission Customer shall mean an entity using Point-to-Point Transmission Service." Tariff, Part I, section 1, Definitions T – U – V.

will avoid disrupting existing commercial arrangement and clearly identify a reasonable effective date that accommodates such existing commercial arrangements."[49] Specifically, PJM proposes to accommodate existing commercial arrangements by granting additional time for a category of Large Computational Loads, called "Transitional Large Computational Load Facilities" to achieve compliance with the proposed disturbance ride-through requirements. As proposed, "where an Eligible Customer is taking transmission service on behalf of Transitional Large Computational Load for purposes of these requirements, the Eligible Customers shall achieve compliance with respect to the Transitional Large Computational Load no later than [61 days from filing plus one year], or within one (1) year of its Commercial Operation Date, whichever is later."[50]

Applying the ride-through requirements to existing Large Computational Load through a transitional mechanism is just and reasonable and, furthermore, recognizes that Eligible Customers taking transmission service on behalf of Large Computational Load poses operational risks to the PJM Region, regardless of whether the Large Computational Load is new or existing.

Indeed, the PJM Tariff already requires that Network Customers "plan, construct, operate and maintain [their] facilities in accordance with Good Utility Practice[.]" Good Utility Practice, in turn, is defined to "mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and

[49] Show Cause Order at P 38.

[50] *Proposed* Tariff, Part III, section 28.2.

expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region; including those practices required by Federal Power Act, section 215(a)(4)."

Federal Power Act, section 215(a)(4) defines "reliable operation" as meaning "operating the elements of the bulk-power system within equipment and electric system thermal, voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a result of a sudden disturbance, including a cybersecurity incident, or unanticipated failure of system elements."

Thus, Network Customers must operate existing facilities consistent with Good Utility Practice to avoid significant grid reliability events caused by, among other things sudden system disturbances unique to new *and existing* Large Computational Loads.[51] As Dr. Choi explains in his declaration, not doing so "would exempt a substantial portion of the current reliability risk from the proposed [ride-through] requirements."[52]

As discussed above, PJM faces a unique risk unlike other regions where the existing installed Large Computational Load base is comparatively small, as demonstrated by the fact that PJM has already experienced several load-transfer events attributable to voltage ride-through performance issues, including the nearly 4 GW event on July 22, 2026.[53] Unlike ERCOT and MISO, for example, PJM cannot exempt existing computational load and its demonstrated

[51] Choi Declaration ¶ 8.

[52] *Id*.

[53] *Id*.

operational effects: the requirements must apply to new and existing facilities, allowing reasonable time for Transitional Large Computational Load Facilities to achieve compliance.[54] The additional compliance period applicable to Transitional Large Computational Load provides accommodations to Eligible Customers serving existing Large Computation Load, thus minimizing potential disruptions to existing commercial arrangements while upholding Network Customers' obligations to operate consistent with Good Utility Practice and affirming PJM's mandate to ensure the reliability of the transmission system in its region.

4. Specific ride-through requirements applicable to Eligible Customers serving Large Computational Load shall be set forth in PJM's Manuals

The proposed ride-through requirements require that any Eligible Customer taking transmission service on behalf of Large Computational Load adhere to minimum voltage and frequency ride-through requirements that "shall be set forth in the PJM Manuals."[55] PJM notes that this approach—establishing the core ride-through requirement in the Tariff and the technical criteria in the manual—is consistent with the approach recently proposed by the Southwest Power Pool, Inc. ("SPP") and accepted by the Commission. SPP's ride-through requirements for transmission customers providing service to Large Loads requires transmission customers to comply with ride-through requirements set forth as guidelines in "a non-Tariff document that was separately approved by SPP stakeholder working groups."[56] Likewise, PJM is concurrently undergoing the process of developing and receiving feedback from its stakeholders on proposed

[54] *Id*.

[55] *Proposed* Tariff, Part III, section 28.2.

[56] *Sw. Power Pool, Inc*., 194 FERC ¶ 61,031, at P 20 (2026).

Manual language.[57]

C. PJM Is Proposing Tariff Language Authorizing the Development of Other Operational Requirements Applicable to Eligible Customers Taking Transmission Service on Behalf of Large Computational Loads

The Show Cause Order additionally found the PJM Tariff appeared to be unjust and unreasonable because it lacks other "provisions addressing ongoing operational requirements for transmission customers taking transmission service on behalf of large loads."[58] PJM also proposes Tariff language to address the other operational requirements to be imposed on Eligible Customers taking transmission service to serve Large Computational Loads. For the reasons cited above, as set forth at length for the ride through requirements specifically, and given the Commission's acceptance of similar operational requirements provisions in other Regions and the Commission's observations in the Large Load Show Cause Order, the Commission should accept these proposed revisions establishing the framework for other operational requirements to be developed in the Manuals as just and reasonable.[59] PJM will work with stakeholders to develop the particular requirements necessary to implement each of these provisions through vetted Manual language, with due consideration for implementation dates, before these requirements can be of any force and effect.

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[57] *See* October 6, 2026 Planning Committee meeting agenda, available at https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-agenda.pdf.

[58] Show Cause Order at P 64.

[59] *See, e.g., Sw. Power Pool, Inc*., 194 FERC ¶ 61,031 (2026) (accepting SPP Tariff language in SPP Tariff, Attachment AE, section 2.22, requiring SPP's market participants registering High Impact Large Loads to, among other things, "Have remote capability to disconnect the load from the Transmission System made available to the transmission operator; . . . Have an effective up and down ramp rate not exceeding the specified limit outlined in the Market Protocols unless otherwise directed by the SPP Balancing Authority, Reliability Coordinator, or local transmission operator; . . . Provide registration information as specified in the Market Protocols; . . . Not have a negative withdrawal at the load delivery point without appropriate Transmission Service.").

D. Pro Forma *Provisions in Transmission Service Agreements Exist or Will Exist to Memorialize Ongoing Operational Requirements*

The Commission's order also notes opportunities for *pro forma* provisions in a Transmission Service Agreement between PJM and the Eligible Customer taking transmission service on behalf of a Large Load in order to memorialize the ongoing operational requirements.[60] PJM's transmission service agreements (those existing today and those proposed) memorialize ongoing operational requirements for Eligible Customers taking transmission service.[61] The *pro forma* Network Integration Transmission Service Agreement in the Tariff provides that the "Network Customer agrees to take and pay for Network Transmission Service in accordance with the provisions of the Tariff, including the Network Operating Agreement (which is incorporated herein by reference), and this Service Agreement as they may be amended from time to time."[62] The Network Operating Agreement is the Restated and Amended Operating Agreement of PJM Interconnection, L.L.C.[63] Pursuant to the Operating Agreement, entities must "[c]omply with the requirements of the PJM Manuals."[64] Similar constructs will exist for customers taking the newly proposed transmission services.[65] Since the operational requirements addressed in this filing are being memorialized in the Tariff with details to be set forth in the Manuals, the desired *pro forma* provisions exist or will exist in the relevant service agreements to address the Commission's concern.

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[60] Show Cause Order at P 65.

[61] Show Cause Order at P 64.

[62] Tariff, Attachment F-3, section 4.0.

[63] Tariff, Part III, section 35.2; Tariff, Attachment G.

[64] Operating Agreement, section 11.3.1(e).

[65] *Proposed* Tariff, Part XI, Subpart C, section 720.2; *Proposed* Tariff, Attachment F-3A, section 4.0; *Proposed* Tariff, Attachment F-4, section 4.0.

III. STAKEHOLDER ENGAGEMENT

The proposed Tariff revisions defining Large Computational Load and establishing ride-through requirements follow an expedited stakeholder engagement effort. PJM presented its initial proposal to stakeholders at the September 8, 2026 Planning Committee meeting.[66] PJM subsequently conducted a dedicated Planning Committee education session on September 15, 2026, during which Planning and Operations subject matter experts presented the July 22, 2026 load transfer event, the associated reliability concerns, and the technical basis supporting the proposed ride-through requirements.[67] PJM then presented revised Tariff and Manual language at the October 6, 2026 Planning Committee meeting.[68]

With respect to other ongoing operational requirements applicable to Eligible Customers taking transmission on behalf of Large Computational Load, PJM is committed to developing Manual language through the stakeholder process starting in early 2027. PJM has in other fora and in posted materials – particularly at and for the Co-Located Load Workshops, the Markets and Reliability Committee, and the Special Members Committee convened on November 5, 2026 preceding this Section 205 filing – noted the operational requirements described in the Show Cause Order.

[66] *See* September 8, 2026 Planning Committee meeting agenda, available at https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260908/20260908-agenda.pdf.

[67] *See* September 15, 2026 Planning Committee–Special Session agenda, available at https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20260915/20260915-agenda.pdf.

[68] *See* October 6, 2026 Planning Committee meeting agenda, available at https://www.pjm.com/-/media/DotCom/committees-groups/committees/pc/2026/20261006/20261006-agenda.pdf.

IV. PROPOSED EFFECTIVE DATE

PJM proposes an effective date of January 16, 2027, for the proposed Tariff revisions referenced herein. PJM requests that the Commission issue an order on this filing by January 15, 2027.

V. DESCRIPTION OF SUBMITTAL

This filing consists of the following:

1. This transmittal letter;
2. Attachment A – Revisions to the Tariff, in redline format;
3. Attachment B – Revisions to the Tariff, in clean format;
4. Attachment C – Declaration of David Egan;
5. Attachment D – Declaration of Byoungkon Choi.

VI. CORRESPONDENCE

The following individuals are designated for inclusion on the official service list in this proceeding and for receipt of any communications regarding this filing:

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VII. SERVICE

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,[69] PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: https://www.pjm.com/library/filing-order with a specific link to the newly-filed document, and will send an e-mail on the same date as this filing to all PJM Members and all state utility regulatory commissions in the PJM Region[70] alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC's eLibrary website located at the following link: http://www.ferc.gov/docsfiling/elibrary.asp in accordance with the Commission's regulations and Order No. 714.

[69] *See* 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3).

[70] PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

VIII. CONCLUSION

Based on the foregoing, PJM respectfully requests that the Commission accept proposed revisions to PJM's Tariff.

Respectfully submitted,

/s/ Arleigh P. Helfer

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PJM Interconnection, L.L.C.

Attachment A

Revisions to the
PJM Open Access Transmission Tariff

(Marked Format)

Definitions – L – M – N

Large Computational Load:

"Large Computational Load" shall mean Large Load containing 25 MW or greater of maximum load served through power electronic conversion equipment. Large Computational Load shall include:

A) **New Large Computational Load**. Any Large Computational Load on whose behalf an Eligible Customer enters the Transmission Provider or Transmission Owner study processes on or after [61 days from filing].

B) **Materially Modified Large Computational Load**. Existing Large Load, which otherwise meets the definition of Large Computational Load but does not meet the aggregate load 50 MW threshold, that is subsequently modified in a manner resulting in the aggregate load becoming 50 MW or greater or otherwise constituting a material modification as determined by Transmission Provider and the applicable Transmission Owner on or after [61 days from filing].

C) **Transitional Large Computational Load**. Any Large Computational Load, including a Materially Modified Large Computational Load on whose behalf, prior to [61 days from filing], an Eligible Customer serving such load has:

- formally initiated or completed an interconnection study with the Transmission Owner,
- executed an interconnection agreement, service agreement, or other agreement authorizing interconnection,
- commenced construction, or
- achieved commercial operation.

Legacy Policy:

"Legacy Policy" shall mean any legislative, executive, or regulatory action that specifically directs a payment outside of PJM Markets to a designated or prospective Generation Capacity Resource and the enactment of such action predates October 1, 2021, regardless of when any implementing governmental action to effectuate the action to direct payment outside of PJM Markets occurs.

Limited Demand Resource:

"Limited Demand Resource**"** shall have the meaning specified in the Reliability Assurance Agreement.

Limited Demand Resource Reliability Target:

"Limited Demand Resource Reliability Target**"** for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g., the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Limited Resource Constraint:

"Limited Resource Constraint" shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and Delivery Years, for the PJM Region or each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability

Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

Limited Resource Price Decrement:
"Limited Resource Price Decrement" shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

List of Approved Contractors:

"List of Approved Contractors" shall mean a list developed by each Transmission Owner and published in a PJM Manual of (a) contractors that the Transmission Owner considers to be qualified to install or construct new facilities and/or upgrades or modifications to existing facilities on the Transmission Owner's system, provided that such contractors may include, but need not be limited to, contractors that, in addition to providing construction services, also provide design and/or other construction-related services, and (b) manufacturers or vendors of major transmission-related equipment (e.g., high-voltage transformers, transmission line, circuit breakers) whose products the Transmission Owner considers acceptable for installation and use on its system.

Load Interest:

"Load Interest" shall mean, for the purposes of the minimum offer price rule, responsibility for serving load within the PJM Region, whether by the Capacity Market Seller, an affiliate of the Capacity Market Seller, or by an entity with which the Capacity Market Seller is in contractual privity with respect to the subject Generation Capacity Resource.

Load Management:

"Load Management" shall mean a Demand Resource ("DR") as defined in the Reliability Assurance Agreement.

Load Management Event:

"Load Management Event" shall mean a) a single temporally contiguous dispatch of Demand Resources in a Compliance Aggregation Area during an Operating Day, or b) multiple dispatches of Demand Resources in a Compliance Aggregation Area during an Operating Day that are temporally contiguous.

Load Ratio Share:

"Load Ratio Share" shall mean the ratio of a Transmission Customer's Network Load to the Transmission Provider's total load.

Load Reduction Event:

"Load Reduction Event" shall mean a reduction in demand by a Member or Special Member for the purpose of participating in the PJM Interchange Energy Market.

Load Serving Charging Energy:

"Load Serving Charging Energy" shall mean energy that is purchased from the PJM Interchange Energy Market and stored in an Energy Storage Resource or Open-Loop Hybrid Resource for later resale to end-use load.

Load Serving Entity (LSE):

"Load Serving Entity" or "LSE" shall have the meaning specified in the Reliability Assurance Agreement.

Load Shedding:

"Load Shedding" shall mean the systematic reduction of system demand by temporarily decreasing load in response to transmission system or area capacity shortages, system instability, or voltage control considerations under Tariff, Part II or Part III.

Local Upgrades:

"Local Upgrades" shall mean modifications or additions of facilities to abate any local thermal loading, voltage, short circuit, stability or similar engineering problem caused by the interconnection and delivery of generation to the Transmission System. Local Upgrades shall include:

(i) Direct Connection Local Upgrades which are Local Upgrades that only serve the Customer Interconnection Facility and have no impact or potential impact on the Transmission System until the final tie-in is complete; and

(ii) Non-Direct Connection Local Upgrades which are parallel flow Local Upgrades that are not Direct Connection Local Upgrades.

Location:

"Location" as used in the Economic Load Response rules shall mean an end-use customer site as defined by the relevant electric distribution company account number.

LOC Deviation:

"LOC Deviation," shall mean, for units other than wind units, the LOC Deviation shall equal the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at

the resource's bus and adjusted for any reduction in megawatts due to Regulation, Synchronized Reserve, or Secondary Reserve assignments and limited to the lesser of the unit's Economic Maximum or the unit's Generation Resource Maximum Output, minus the actual output of the unit. For wind units, the LOC Deviation shall mean the deviation of the generating unit's output equal to the lesser of the PJM forecasted output for the unit or the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval integrated real-time Locational Marginal Price at the resource's bus, and shall be limited to the lesser of the unit's Economic Maximum or the unit's Generation Resource Maximum Output, minus the actual output of the unit.

Locational Deliverability Area (LDA):

"Locational Deliverability Area" or "LDA" shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area's reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Reliability Assurance Agreement, Schedule 10.1.

Locational Deliverability Area Reliability Requirement:

"Locational Deliverability Area Reliability Requirement" shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

Locational Price Adder:

"Locational Price Adder" shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

Locational Reliability Charge:

"Locational Reliability Charge" shall have the meaning specified in the Reliability Assurance Agreement.

Locational UCAP:

"Locational UCAP" shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

Locational UCAP Seller:

"Locational UCAP Seller" shall mean a Member that sells Locational UCAP.

Long-lead Project:

"Long-lead Project" shall have the same meaning provided in the Operating Agreement.

Long-Term Firm Point-To-Point Transmission Service:

"Long-Term Firm Point-To-Point Transmission Service" shall mean firm Point-To-Point Transmission Service under Tariff, Part II with a term of one year or more.

Loss Price:

"Loss Price" shall mean the loss component of the Locational Marginal Price, which is the effect on transmission loss costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource based on the effect of increased generation from or consumption by the resource on transmission losses, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

M2M Flowgate:

"M2M Flowgate" shall have the meaning provided in the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C.

Maintenance Adder:

"Maintenance Adder" shall mean an adder that may be included to account for variable operation and maintenance expenses in a Market Seller's Fuel Cost Policy. The Maintenance Adder is calculated in accordance with the applicable provisions of PJM Manual 15, and may only include expenses incurred as a result of electric production.

Manual Load Dump Action:

"Manual Load Dump Action" shall mean an Operating Instruction, as defined by NERC, from PJM to shed firm load when the PJM Region cannot provide adequate capacity to meet the PJM Region's load and tie schedules, or to alleviate critically overloaded transmission lines or other equipment.

Manual Load Dump Warning:

"Manual Load Dump Warning" shall mean a notification from PJM to warn Members of an increasingly critical condition of present operations that may require manually shedding load.

Marginal Value:

"Marginal Value" shall mean the incremental change in system dispatch costs, measured as a $/MW value incurred by providing one additional MW of relief to the transmission constraint.

Market Monitor:

"Market Monitor**"** means the head of the Market Monitoring Unit.

Market Monitoring Unit or MMU:

"Market Monitoring Unit" or "MMU" means the independent Market Monitoring Unit defined in 18 CFR § 35.28(a)(7) and established under the PJM Market Monitoring Plan (Attachment M) to the PJM Tariff that is responsible for implementing the Market Monitoring Plan, including the Market Monitor. The Market Monitoring Unit may also be referred to as the IMM or Independent Market Monitor for PJM

Market Monitoring Unit Advisory Committee or MMU Advisory Committee:

"Market Monitoring Unit Advisory Committee" or "MMU Advisory Committee" shall mean the committee established under Tariff, Attachment M, section III.H.

Market Operations Center:

"Market Operations Center" shall mean the equipment, facilities and personnel used by or on behalf of a Market Participant to communicate and coordinate with the Office of the Interconnection in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

Market Participant:

"Market Participant" shall mean a Market Buyer, a Market Seller, an Economic Load Response Participant, or all three, except when such term is used in Tariff, Attachment M, in which case Market Participant shall mean an entity that generates, transmits, distributes, purchases, or sells electricity, ancillary services, or any other product or service provided under the PJM Tariff or Operating Agreement within, into, out of, or through the PJM Region, but it shall not include an Authorized Government Agency that consumes energy for its own use but does not purchase or sell energy at wholesale.

Market Participant Energy Injection:

"Market Participant Energy Injection" shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Day-ahead generation schedules, real-time generation output, Increment Offers, internal bilateral transactions and import transactions, as further described in the PJM Manuals.

Market Participant Energy Withdrawal:

"Market Participant Energy Withdrawal" shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Demand Bids, Decrement Bids, real-time load (net of Behind The Meter Generation expected to be operating, but not to be less than zero), internal bilateral transactions and Export Transactions, as further described in the PJM Manuals.

Market Revenue Neutrality Offset:

"Market Revenue Neutrality Offset" shall mean the revenue in excess of the cost for a resource from the energy, Synchronized Reserve, Non-Synchronized Reserve, and Secondary Reserve markets realized from an increase in real-time market megawatt assignment from a day-ahead market megawatt assignment in any of these markets due to the decrease in the real-time reserve market megawatt assignment from a day-ahead reserve market megawatt assignment in any of the reserve markets.

Market Seller Offer Cap:

"Market Seller Offer Cap" shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with Tariff, Attachment DD. section 6 and Tariff, Attachment M-Appendix, section II.E.

Market Violation:

"Market Violation" shall mean a tariff violation, violation of a Commission-approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies, as defined in 18 C.F.R. § 35.28(b)(8).

Material Modification:

"Material Modification" shall mean any modification to an Interconnection Request that has a material adverse effect on the cost or timing of Interconnection Studies related to, or any Network Upgrades or Local Upgrades needed to accommodate, any Interconnection Request with a later Queue Position.

Maximum Daily Starts:

"Maximum Daily Starts" shall mean the maximum number of times that a generating unit can be started in an Operating Day under normal operating conditions.

Maximum Emergency:

"Maximum Emergency" shall mean the designation of all or part of the output of a generating unit for which the designated output levels may require extraordinary procedures and therefore are available to the Office of the Interconnection only when the Office of the Interconnection

declares a Maximum Generation Emergency and requests generation designated as Maximum Emergency to run. The Office of the Interconnection shall post on the PJM website the aggregate amount of megawatts that are classified as Maximum Emergency.

Maximum Facility Output:

"Maximum Facility Output" shall mean the maximum (not nominal) net electrical power output in megawatts, specified in the Interconnection Service Agreement, after supply of any parasitic or host facility loads, that a Generation Interconnection Customer's Customer Facility is expected to produce, provided that the specified Maximum Facility Output shall not exceed the output of the proposed Customer Facility that Transmission Provider utilized in the System Impact Study.

Maximum Generation Emergency:

"Maximum Generation Emergency" shall mean an Emergency declared by the Office of the Interconnection to address either a generation or transmission emergency in which the Office of the Interconnection anticipates requesting one or more Generation Capacity Resources, or Non-Retail Behind The Meter Generation resources to operate at its maximum net or gross electrical power output, subject to the equipment stress limits for such Generation Capacity Resource or Non-Retail Behind The Meter resource in order to manage, alleviate, or end the Emergency.

Maximum Generation Emergency Alert:

"Maximum Generation Emergency Alert" shall mean an alert issued by the Office of the Interconnection to notify PJM Members, Transmission Owners, resource owners and operators, customers, and regulators that a Maximum Generation Emergency may be declared, for any Operating Day in either, as applicable, the Day-ahead Energy Market or the Real-time Energy Market, for all or any part of such Operating Day.

Maximum Run Time:

"Maximum Run Time" shall mean the maximum number of hours a generating unit can run over the course of an Operating Day, as measured by PJM's State Estimator.

Maximum Weekly Starts:

"Maximum Weekly Starts" shall mean the maximum number of times that a generating unit can be started in one week, defined as the 168 hour period starting Monday 0001 hour, under normal operating conditions.

Member:

"Member" shall have the meaning provided in the Operating Agreement.

Merchant A.C. Transmission Facilities:

"Merchant A.C. Transmission Facility" shall mean Merchant Transmission Facilities that are alternating current (A.C.) transmission facilities, other than those that are Controllable A.C. Merchant Transmission Facilities.

Merchant D.C. Transmission Facilities:

"Merchant D.C. Transmission Facilities" shall mean direct current (D.C.) transmission facilities that are interconnected with the Transmission System pursuant to Tariff, Part IV and Part VI.

Merchant Network Upgrades:

"Merchant Network Upgrades" shall mean additions to, or modifications or replacements of, physical facilities of the Interconnected Transmission Owner that, on the date of the pertinent Transmission Interconnection Customer's Upgrade Request, are part of the Transmission System or are included in the Regional Transmission Expansion Plan.

Merchant Transmission Facilities:

"Merchant Transmission Facilities" shall mean A.C. or D.C. transmission facilities that are interconnected with or added to the Transmission System pursuant to Tariff, Part IV and Part VI and that are so identified in Tariff, Attachment T, provided, however, that Merchant Transmission Facilities shall not include (i) any Customer Interconnection Facilities, (ii) any physical facilities of the Transmission System that were in existence on or before March 20, 2003 ; (iii) any expansions or enhancements of the Transmission System that are not identified as Merchant Transmission Facilities in the Regional Transmission Expansion Plan and Attachment T to the Tariff, or (iv) any transmission facilities that are included in the rate base of a public utility and on which a regulated return is earned.

Merchant Transmission Provider:

"Merchant Transmission Provider" shall mean an Interconnection Customer that (1) owns, controls, or controls the rights to use the transmission capability of, Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that connect the Transmission System with another control area, (2) has elected to receive Transmission Injection Rights and Transmission Withdrawal Rights associated with such facility pursuant to Tariff, Part IV, section 36, and (3) makes (or will make) the transmission capability of such facilities available for use by third parties under terms and conditions approved by the Commission and stated in the Tariff, consistent with Tariff, section 38.

Metering Equipment:

"Metering Equipment" shall mean all metering equipment installed at the metering points designated in the appropriate appendix to an Interconnection Service Agreement.

Minimum Annual Resource Requirement:

"Minimum Annual Resource Requirement" shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Down Time:

For all generating units that are not combined cycle units, "Minimum Down Time" shall mean the minimum number of hours under normal operating conditions between unit shutdown and unit startup, calculated as the shortest time difference between the unit's generator breaker opening and after the unit's generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For combined cycle units, "Minimum Down Time" shall mean the minimum number of hours between the last generator breaker opening and after first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero.

Minimum Extended Summer Resource Requirement:

"Minimum Extended Summer Resource Requirement" shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Generation Emergency:

"Minimum Generation Emergency" shall mean an Emergency declared by the Office of the Interconnection in which the Office of the Interconnection anticipates requesting one or more generating resources to operate at or below Normal Minimum Generation, in order to manage, alleviate, or end the Emergency.

Minimum Participation Requirements:

"Minimum Participation Requirements" shall mean a set of minimum training, risk management, communication and capital or collateral requirements required for Participants in the PJM Markets, as set forth herein and in the Form of Annual Certification set forth as Tariff, Attachment Q, Appendix 1. Participants transacting in FTRs in certain circumstances will be required to demonstrate additional risk management procedures and controls as further set forth in the Annual Certification found in Tariff, Attachment Q, Appendix 1.

Minimum Run Time:

For all generating units that are not combined cycle units, "Minimum Run Time" shall mean the minimum number of hours a unit must run, in real-time operations, from the time after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, to the time of generator breaker opening, as measured by PJM's State Estimator. For combined cycle units, "Minimum Run Time" shall mean the time period after the first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, and the last generator breaker opening as measured by PJM's State Estimator.

MISO:

"MISO" shall mean the Midcontinent Independent System Operator, Inc. or any successor thereto.

Mixed Technology Facility:

"Mixed Technology Facility" shall mean a facility composed of distinct generation and/or electric storage technology types behind the same Point of Interconnection. Co-Located Resources and Hybrid Resources form all or part of Mixed Technology Facilities.

MOPR Floor Offer Price:

"MOPR Floor Offer Price" shall mean a minimum offer price applicable to certain Market Seller's Capacity Resources under certain conditions, as determined in accordance with Tariff, Attachment DD, sections 5.14(h), 5.14(h-1), and 5.14(h-2).

Multi-Driver Project:

"Multi-Driver Project" shall have the same meaning provided in the Operating Agreement.

Native Load Customers:

"Native Load Customers" shall mean the wholesale and retail power customers of a Transmission Owner on whose behalf the Transmission Owner, by statute, franchise, regulatory requirement, or contract, has undertaken an obligation to construct and operate the Transmission Owner's system to meet the reliable electric needs of such customers.

Near-Term Transmission Service:

"Near-Term Transmission Service" shall mean Transmission Service which ends not more than 10 days after the Transmission Service request date. When the description of obligations below refers to either a request for information about the availability of potential Transmission Service (including, but not limited to, a request for ATC), or to the posting of ATC or other information related to potential service, the date that the information is requested or posted will serve as the Transmission Service request date. "Near-Term Transmission Service" includes any Point-To-Point Transmission Service and Network Integration Transmission Service where the start and end date of the designation or request is within the next 10 days.

NERC:

"NERC" shall mean the North American Electric Reliability Corporation or any successor thereto.

NERC Interchange Distribution Calculator:

"NERC Interchange Distribution Calculator" shall mean the NERC mechanism that is in effect and being used to calculate the distribution of energy, over specific transmission interfaces, from energy transactions.

Net Benefits Test:

"Net Benefits Test" shall mean a calculation to determine whether the benefits of a reduction in price resulting from the dispatch of Economic Load Response exceeds the cost to other loads resulting from the billing unit effects of the load reduction, as specified in Operating Agreement, Schedule 1, section 3.3A.4 and the parallel provisions of Tariff, Attachment K-Appendix, section 3.3A.4.

Net Cost of New Entry:

"Net Cost of New Entry" shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset.

Net Obligation:

"Net Obligation" shall mean the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under Tariff, Parts II and III , and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Net Sell Position:

"Net Sell Position" shall mean the amount of Net Obligation when Net Obligation is negative.

Network Customer:

"Network Customer" shall mean an entity receiving transmission service pursuant to the terms of the Transmission Provider's Network Integration Transmission Service under Tariff, Part III.

Network External Designated Transmission Service:

"Network External Designated Transmission Service" shall have the meaning set forth in Reliability Assurance Agreement, Article I.

Network Integration Transmission Service:

"Network Integration Transmission Service" shall mean the transmission service provided under Tariff, Part III.

Network Load:

"Network Load" shall mean the load that a Network Customer designates for Network Integration Transmission Service under Tariff, Part III. The Network Customer's Network Load shall include all load (including losses, Non-Dispatched Charging Energy, and Load Serving Charging Energy) served by the output of any Network Resources designated by the Network Customer. A Network Customer may elect to designate less than its total load as Network Load but may not designate only part of the load at a discrete Point of Delivery. Where an Eligible Customer has elected not to designate a particular load at discrete points of delivery as Network Load, the Eligible Customer is responsible for making separate arrangements under Tariff, Part II for any Point-To-Point Transmission Service that may be necessary for such non-designated load. Network Load shall not include Dispatched Charging Energy.

Network Operating Agreement:

"Network Operating Agreement" shall mean an executed agreement that contains the terms and conditions under which the Network Customer shall operate its facilities and the technical and operational matters associated with the implementation of Network Integration Transmission Service under Tariff, Part III.

Network Operating Committee:

"Network Operating Committee" shall mean a group made up of representatives from the Network Customer(s) and the Transmission Provider established to coordinate operating criteria and other technical considerations required for implementation of Network Integration Transmission Service under Tariff, Part III.

Network Resource:

"Network Resource" shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis, except for purposes of fulfilling obligations under a reserve sharing program.

Network Service User:

"Network Service User" shall mean an entity using Network Transmission Service.

Network Transmission Service:

"Network Transmission Service" shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Tariff, Part III, or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner.

Network Upgrades:

"Network Upgrades" shall mean modifications or additions to transmission-related facilities that are integrated with and support the Transmission Provider's overall Transmission System for the general benefit of all users of such Transmission System. Network Upgrades shall include:

(i) **Direct Connection Network Upgrades** which are Network Upgrades that are not part of an Affected System; only serve the Customer Interconnection Facility; and have no impact or potential impact on the Transmission System until the final tie-in is complete. Both Transmission Provider and Interconnection Customer must agree as to what constitutes Direct Connection Network Upgrades and identify them in the Interconnection Construction Service Agreement, Schedule D. If the Transmission Provider and Interconnection Customer disagree about whether a particular Network Upgrade is a Direct Connection Network Upgrade, the Transmission Provider must provide the Interconnection Customer a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Direcct Connection Network Upgrade within 15 days of its determination.

(ii) **Non-Direct Connection Network Upgrades** which are parallel flow Network Upgrades that are not Direct Connection Network Upgrades.

Neutral Party:

"Neutral Party" shall have the meaning provided in Tariff, Part I, section 9.3(v).

New Entry Capacity Resource with State Subsidy:

"New Entry Capacity Resource with State Subsidy" shall mean (1) starting with the 2022/2023 Delivery Year, the MWs (in installed capacity) comprising a Capacity Resource with State

Subsidy that have not cleared in an RPM Auction pursuant to its Sell Offer at or above its resource-specific MOPR Floor Offer Price or the applicable default New Entry MOPR Floor Offer Price or (2) starting with the Base Residual Auction for the 2022/2023 Delivery Year, any of those MWs (in installed capacity) comprising a Capacity Resource with State Subsidy that was not included in an FRR Capacity Plan at the time of the Base Residual Auction or the subject of a Sell Offer in a Base Residual Auction occurring for a Delivery Year after it last cleared an RPM Auction and since then has yet to clear an RPM Auction pursuant to its Sell Offer at or above its resource-specific MOPR Floor Offer Price or the applicable default New Entry MOPR Floor Offer Price. Notwithstanding the foregoing, any Capacity Resource that previously cleared an RPM Auction before it became entitled to receive a State Subsidy shall not be deemed a New Entry Capacity Resource, unless, starting with the Base Residual Auction for the 2022/2023 Delivery Year, the Capacity Resource with State Subsidy was not the subject of a Sell Offer in a Base Residual Auction or included in an FRR Capacity Plan at the time of the Base Residual Auction for a Delivery Year after it last cleared an RPM Auction.

New PJM Zone(s):

"New PJM Zone(s)" shall mean the Zone included in the Tariff, along with applicable Schedules and Attachments, for Commonwealth Edison Company, The Dayton Power and Light Company and the AEP East Operating Companies (Appalachian Power Company, Columbus Southern Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company).

New Service Customers:

"New Service Customers" shall mean all customers that submit an Interconnection Request, a Completed Application, or an Upgrade Request that is pending in the New Services Queue.

New Service Request:

"New Service Request" shall mean an Interconnection Request, a Completed Application, or an Upgrade Request.

New Services Queue:

"New Services Queue" shall mean all Interconnection Requests, Completed Applications, and Upgrade Requests that are received within each six-month period ending on March 31 and September 30 of each year shall collectively comprise a New Services Queue.

New York ISO or NYISO:

"New York ISO" or "NYISO" shall mean the New York Independent System Operator, Inc. or any successor thereto.

Nodal Reference Price:

The "Nodal Reference Price" at each location shall mean the 97th percentile price differential between day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. Reference periods will be Jan-Feb, Mar-Apr, May-Jun, Jul-Aug, Sept-Oct, Nov-Dec. For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

No-load Cost:

"No-load Cost" shall mean the hourly cost required to theoretically operate a synchronized unit at zero MW. It consists primarily of the cost of fuel, as determined by the unit's no load heat (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, and emissions allowances.

Nominal Rated Capability:

"Nominal Rated Capability" shall mean the nominal maximum rated capability in megawatts of a Transmission Interconnection Customer's Customer Facility or the nominal increase in transmission capability in megawatts of the Transmission System resulting from the interconnection or addition of a Transmission Interconnection Customer's Customer Facility, as determined in accordance with pertinent Applicable Standards and specified in the Interconnection Service Agreement.

Nominated Demand Resource Value:

"Nominated Demand Resource Value" shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

Nominated Energy Efficiency Value:

"Nominated Energy Efficiency Value" shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

Non-Curtailment Charge:

"Non-Curtailment Charge" shall mean the charge applicable to Demand Resources and Price Responsive Demand as defined in Tariff, Attachment DD, section 10B(b).

Non-Dispatched Charging Energy:

"Non-Dispatched Charging Energy" shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant or Open-Loop Hybrid Resource receives from the electric grid that is not otherwise Dispatched Charging Energy.

Non-Firm Point-To-Point Transmission Service:

"Non-Firm Point-To-Point Transmission Service" shall mean Point-To-Point Transmission Service under the Tariff that is reserved and scheduled on an as-available basis and is subject to Curtailment or Interruption as set forth in Tariff, Part II, section 14.7. Non-Firm Point-To-Point Transmission Service is available on a stand-alone basis for periods ranging from one hour to one month.

Non-Firm Sale:

"Non-Firm Sale" shall mean an energy sale for which receipt or delivery may be interrupted for any reason or no reason, without liability on the part of either the buyer or seller.

Non-Firm Transmission Withdrawal Rights:

"No-Firm Transmission Withdrawal Rights" shall mean the rights to schedule energy withdrawals from a specified point on the Transmission System. Non-Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Withdrawals scheduled using Non-Firm Transmission Withdrawal Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Non-PAI Event:

"Non-PAI Event" shall mean, effective for the 2028/2029 Delivery Year and subsequent Delivery Years, any intervals when a Demand Resource is dispatched or when Price Responsive Demand is required to respond and a Performance Assessment Interval is not in effect for such intervals for the same registration.

Non-Performance Charge:

"Non-Performance Charge" shall mean the charge applicable to Capacity Performance Resources as defined in Tariff, Attachment DD, section 10A(e).

Nonincumbent Developer:

"Nonincumbent Developer" shall have the same meaning provided in the Operating Agreement.

Non-Regulatory Opportunity Cost:

"Non-Regulatory Opportunity Cost" shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of starts or available run hours resulting from (i) the physical equipment limitations of the unit, for up to one year, due

to original equipment manufacturer recommendations or insurance carrier restrictions, (ii) a fuel supply limitation, for up to one year, resulting from an event of Catastrophic Force Majeure; and, (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Non-Regulatory Opportunity Cost therefore is the value associated with a specific generating unit's lost opportunity to produce energy during a higher valued period of time occurring within the same period of time in which the unit is bound by the referenced restrictions, and is reflected in the rules set forth in PJM Manual 15. Non-Regulatory Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Non-Retail Behind The Meter Generation:

"Non-Retail Behind The Meter Generation" shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, or electric distribution companies to serve load.

Non-Synchronized Reserve:

"Non-Synchronized Reserve" shall mean the reserve capability of non-emergency generation resources that can be converted fully into energy within ten minutes of a request from the Office of the Interconnection dispatcher, and is provided by equipment that is not electrically synchronized to the Transmission System.

Non-Synchronized Reserve Event:

"Non-Synchronized Reserve Event" shall mean a request from the Office of the Interconnection to generation resources able and assigned to provide Non-Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes to increase the energy output by the amount of assigned Non-Synchronized Reserve capability.

Non-Variable Loads:

"Non-Variable Loads" shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Non-Zone Network Load:

"Non-Zone Network Load shall mean Network Load that is located outside of the PJM Region.

Normal Maximum Generation:

"Normal Maximum Generation" shall mean the highest output level of a generating resource under normal operating conditions.

Normal Minimum Generation:

“Normal Minimum Generation” shall mean the lowest output level of a generating resource under normal operating conditions.

28.2 Transmission Provider Responsibilities:

A. In order to provide the Network Customer with Network Integration Transmission Service over the Transmission Provider's Transmission Systems: (a) the Transmission Provider will plan and operate the Transmission System in accordance with Good Utility Practice and its planning obligations in Operating Agreement, Schedule 6; and (b) the Transmission Owners will be obligated to construct and maintain the Transmission System in accordance with the terms and conditions of the Tariff, the Operating Agreement, and Good Utility Practice. Each Transmission Owner, on behalf of its Native Load Customers, shall be required to designate resources and loads in the same manner as any Network Customer under Tariff, Part III. This information must be consistent with the information used by the Transmission Provider to calculate available transfer capability. The Transmission Provider shall include the Network Customer's Network Load in the Transmission System planning and the Transmission Owners shall, consistent with the terms and conditions of the Tariff, the Operating Agreement, and Good Utility Practice, endeavor to construct and place into service sufficient transfer capability to deliver the Network Customer's Network Resources to serve its Network Load on a basis comparable to the delivery of each Transmission Owner's own generating and purchased resources to its Native Load Customers.

Starting on March 15, 2028, and annually each year thereafter on March 15 or the closest Business Day after March 15 if that day is a day in which the Federal Reserve System is not open for business or is a scheduled PJM holiday, Transmission Provider shall post on the PJM website a report containing information about the demand for and use of: (1) Network Integration Transmission Service to the extent Interim Network Integration Transmission Service was also requested; (2) Interim Network Integration Transmission Service; (3) Firm Contract Demand Service; and (4) Non-Firm Contract Demand Service. The contents of such annual report shall reflect the information described in Paragraph 580 of 195 FERC ¶ 61,209 (2026), as further described in the PJM Manuals. PJM will provide an explanation in this annual report if its contents deviate from the information described in Paragraph 580 of 195 FERC ¶ 61,209 (2026), and the reasons for any deviations.

B. Large Computational Load Ride-Through Requirements

Transmission Provider shall establish minimum voltage ride-through and frequency ride-through requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals. Such requirements shall establish the minimum performance criteria necessary to support the reliable operation of the Transmission System and Bulk Electric System during voltage disturbances and frequency disturbances.

Each Eligible Customer (or Transmission Owner) shall establish voltage ride-through and frequency ride-through requirements applicable to Eligible Customers taking transmission service on behalf of Large Computational Load. Such requirements shall be no less stringent than the minimum requirements established by Transmission Provider in the PJM Manuals.

An Eligible Customer (or Transmission Owner) may establish requirements that are more stringent than the minimum requirements established by Transmission Provider where the Transmission

Owner determines that such requirements are necessary to maintain the reliability, security, or operational performance of its transmission facilities or the Transmission System.

The requirements established by an Eligible Customer (or Transmission Owner) shall be based upon reliability, planning, operational, stability, protection coordination, voltage performance, frequency performance, restoration, balancing, reserve management or other reliability-related considerations and shall be applied in a not unduly discriminatory manner to Eligible Customers serving similarly situated Large Computational Load.

Nothing in this section shall preclude an Eligible Customer (or Transmission Owner) from modifying its voltage ride-through or frequency ride-through requirements applicable to Eligible Customers serving Large Computational Load as necessary to address changes in system conditions, reliability needs, applicable NERC Reliability Standards or Transmission Provider operating requirements, provided such requirements continue to meet or exceed the minimum requirements established by Transmission Provider in the PJM Manuals.

Notwithstanding the above, where an Eligible Customer is taking transmission service on behalf of Transitional Large Computational Load for purposes of these requirements, the Eligible Customers shall achieve compliance with respect to the Transitional Large Computational Load no later than [61 days from filing plus one year], or within one (1) year of its Commercial Operation Date, whichever is later.

C. Large Computational Load Ramp Rate Requirements

Transmission Provider shall establish ramp rate requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals.

D. Large Computational Load EMT Performance Requirements

Transmission Provider shall establish requirements with respect to Electromagnetic Transient ("EMT") performance requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals.

E. Large Computational Load Auxiliary Equipment, Control Technologies, and Protection Systems Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to the operation, coordination, and maintenance of necessary auxiliary equipment, control technologies and protection systems approved by the Transmission Provider to limit withdrawals from the Transmission System.

F. Large Computational Load Maintenance Outage Procedures and Scheduled Maintenance Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to maintenance outage procedures and the timing of scheduled maintenance of Large Computational Loads and associated auxiliary equipment.

G. Large Computational Load Remote Disconnection Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to: (1) the ability of Eligible Customers taking transmission service on behalf of Large Computational Loads to remotely disconnect such loads from the Transmission System, and (2) the Eligible Customer making available to the Transmission Provider the ability to remotely disconnect such loads from the Transmission System.

H. Large Computational Load Necessary Control Technology Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, and which shall be set forth in the PJM Manuals, with respect to the ability of Eligible Customers taking transmission service on behalf of Large Computational Loads to have necessary control technologies, which shall also include telemetry, data exchange, and metering technology to allow Transmission Provider to monitor the Eligible Customer's use of the Transmission System, limit withdrawals if and as appropriate, and ensure relay settings are consistent with necessary control technologies and/or protection systems.

I. Large Computational Load Data and Communication Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, and which shall be developed in accordance with and set forth in the PJM Manuals, with respect to: (1) hourly forecasts, (2) telemetry data, and (3) other data needed for reliable system operations; and (4) communication requirements between PJM and the Eligible Customer taking transmission service on behalf of Large Computational Load.

35.1 Operation under The Network Operating Agreement:

The Network Customer shall plan, construct, operate and maintain its facilities in accordance with Good Utility Practice and in conformance with the Network Operating Agreement. Eligible Customer taking transmission service to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in the PJM Manuals.

718.2 Large Computational Load Requirements and PJM Annual Transmission Services Report

Eligible Customer taking Transmission Service under Part XI to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in in the PJM Manuals. Transmission Provider shall prepare the annual report consistent with Tariff, Part III, section 28.2.

Attachment B

Revisions to the
PJM Open Access Transmission Tariff

(Clean Format)

Definitions – L – M – N

Large Computational Load:

"Large Computational Load" shall mean Large Load containing 25 MW or greater of maximum load served through power electronic conversion equipment. Large Computational Load shall include:

A) **New Large Computational Load**. Any Large Computational Load on whose behalf an Eligible Customer enters the Transmission Provider or Transmission Owner study processes on or after [61 days from filing].

B) **Materially Modified Large Computational Load**. Existing Large Load, which otherwise meets the definition of Large Computational Load but does not meet the aggregate load 50 MW threshold, that is subsequently modified in a manner resulting in the aggregate load becoming 50 MW or greater or otherwise constituting a material modification as determined by Transmission Provider and the applicable Transmission Owner on or after [61 days from filing].

C) **Transitional Large Computational Load**. Any Large Computational Load, including a Materially Modified Large Computational Load on whose behalf, prior to [61 days from filing], an Eligible Customer serving such load has:

- formally initiated or completed an interconnection study with the Transmission Owner,
- executed an interconnection agreement, service agreement, or other agreement authorizing interconnection,
- commenced construction, or
- achieved commercial operation.

Legacy Policy:

"Legacy Policy" shall mean any legislative, executive, or regulatory action that specifically directs a payment outside of PJM Markets to a designated or prospective Generation Capacity Resource and the enactment of such action predates October 1, 2021, regardless of when any implementing governmental action to effectuate the action to direct payment outside of PJM Markets occurs.

Limited Demand Resource:

"Limited Demand Resource**"** shall have the meaning specified in the Reliability Assurance Agreement.

Limited Demand Resource Reliability Target:

"Limited Demand Resource Reliability Target**"** for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 and 2018/2019 Delivery Years for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g., the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

Limited Resource Constraint:

"Limited Resource Constraint" shall mean, for the 2017/2018 Delivery Year and for FRR Capacity Plans the 2017/2018 and Delivery Years, for the PJM Region or each LDA for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability

Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

Limited Resource Price Decrement:
"Limited Resource Price Decrement" shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

List of Approved Contractors:

"List of Approved Contractors" shall mean a list developed by each Transmission Owner and published in a PJM Manual of (a) contractors that the Transmission Owner considers to be qualified to install or construct new facilities and/or upgrades or modifications to existing facilities on the Transmission Owner's system, provided that such contractors may include, but need not be limited to, contractors that, in addition to providing construction services, also provide design and/or other construction-related services, and (b) manufacturers or vendors of major transmission-related equipment (e.g., high-voltage transformers, transmission line, circuit breakers) whose products the Transmission Owner considers acceptable for installation and use on its system.

Load Interest:

"Load Interest" shall mean, for the purposes of the minimum offer price rule, responsibility for serving load within the PJM Region, whether by the Capacity Market Seller, an affiliate of the Capacity Market Seller, or by an entity with which the Capacity Market Seller is in contractual privity with respect to the subject Generation Capacity Resource.

Load Management:

"Load Management" shall mean a Demand Resource ("DR") as defined in the Reliability Assurance Agreement.

Load Management Event:

"Load Management Event" shall mean a) a single temporally contiguous dispatch of Demand Resources in a Compliance Aggregation Area during an Operating Day, or b) multiple dispatches of Demand Resources in a Compliance Aggregation Area during an Operating Day that are temporally contiguous.

Load Ratio Share:

"Load Ratio Share" shall mean the ratio of a Transmission Customer's Network Load to the Transmission Provider's total load.

Load Reduction Event:

"Load Reduction Event" shall mean a reduction in demand by a Member or Special Member for the purpose of participating in the PJM Interchange Energy Market.

Load Serving Charging Energy:

"Load Serving Charging Energy" shall mean energy that is purchased from the PJM Interchange Energy Market and stored in an Energy Storage Resource or Open-Loop Hybrid Resource for later resale to end-use load.

Load Serving Entity (LSE):

"Load Serving Entity" or "LSE" shall have the meaning specified in the Reliability Assurance Agreement.

Load Shedding:

"Load Shedding" shall mean the systematic reduction of system demand by temporarily decreasing load in response to transmission system or area capacity shortages, system instability, or voltage control considerations under Tariff, Part II or Part III.

Local Upgrades:

"Local Upgrades" shall mean modifications or additions of facilities to abate any local thermal loading, voltage, short circuit, stability or similar engineering problem caused by the interconnection and delivery of generation to the Transmission System. Local Upgrades shall include:

(i) Direct Connection Local Upgrades which are Local Upgrades that only serve the Customer Interconnection Facility and have no impact or potential impact on the Transmission System until the final tie-in is complete; and

(ii) Non-Direct Connection Local Upgrades which are parallel flow Local Upgrades that are not Direct Connection Local Upgrades.

Location:

"Location" as used in the Economic Load Response rules shall mean an end-use customer site as defined by the relevant electric distribution company account number.

LOC Deviation:

"LOC Deviation," shall mean, for units other than wind units, the LOC Deviation shall equal the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval real-time Locational Marginal Price at

the resource's bus and adjusted for any reduction in megawatts due to Regulation, Synchronized Reserve, or Secondary Reserve assignments and limited to the lesser of the unit's Economic Maximum or the unit's Generation Resource Maximum Output, minus the actual output of the unit. For wind units, the LOC Deviation shall mean the deviation of the generating unit's output equal to the lesser of the PJM forecasted output for the unit or the desired megawatt amount for the resource determined according to the point on the Final Offer curve corresponding to the Real-time Settlement Interval integrated real-time Locational Marginal Price at the resource's bus, and shall be limited to the lesser of the unit's Economic Maximum or the unit's Generation Resource Maximum Output, minus the actual output of the unit.

Locational Deliverability Area (LDA):

"Locational Deliverability Area" or "LDA" shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area's reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Reliability Assurance Agreement, Schedule 10.1.

Locational Deliverability Area Reliability Requirement:

"Locational Deliverability Area Reliability Requirement" shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

Locational Price Adder:

"Locational Price Adder" shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

Locational Reliability Charge:

"Locational Reliability Charge" shall have the meaning specified in the Reliability Assurance Agreement.

Locational UCAP:

"Locational UCAP" shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

Locational UCAP Seller:

"Locational UCAP Seller" shall mean a Member that sells Locational UCAP.

Long-lead Project:

"Long-lead Project" shall have the same meaning provided in the Operating Agreement.

Long-Term Firm Point-To-Point Transmission Service:

"Long-Term Firm Point-To-Point Transmission Service" shall mean firm Point-To-Point Transmission Service under Tariff, Part II with a term of one year or more.

Loss Price:

"Loss Price" shall mean the loss component of the Locational Marginal Price, which is the effect on transmission loss costs (whether positive or negative) associated with increasing the output of a generation resource or decreasing the consumption by a Demand Resource based on the effect of increased generation from or consumption by the resource on transmission losses, calculated as specified in Operating Agreement, Schedule 1, section 2, and the parallel provisions of Tariff, Attachment K-Appendix, section 2.

M2M Flowgate:

"M2M Flowgate" shall have the meaning provided in the Joint Operating Agreement between the Midcontinent Independent Transmission System Operator, Inc. and PJM Interconnection, L.L.C.

Maintenance Adder:

"Maintenance Adder" shall mean an adder that may be included to account for variable operation and maintenance expenses in a Market Seller's Fuel Cost Policy. The Maintenance Adder is calculated in accordance with the applicable provisions of PJM Manual 15, and may only include expenses incurred as a result of electric production.

Manual Load Dump Action:

"Manual Load Dump Action" shall mean an Operating Instruction, as defined by NERC, from PJM to shed firm load when the PJM Region cannot provide adequate capacity to meet the PJM Region's load and tie schedules, or to alleviate critically overloaded transmission lines or other equipment.

Manual Load Dump Warning:

"Manual Load Dump Warning" shall mean a notification from PJM to warn Members of an increasingly critical condition of present operations that may require manually shedding load.

Marginal Value:

"Marginal Value" shall mean the incremental change in system dispatch costs, measured as a $/MW value incurred by providing one additional MW of relief to the transmission constraint.

Market Monitor:

"Market Monitor**"** means the head of the Market Monitoring Unit.

Market Monitoring Unit or MMU:

"Market Monitoring Unit" or "MMU" means the independent Market Monitoring Unit defined in 18 CFR § 35.28(a)(7) and established under the PJM Market Monitoring Plan (Attachment M) to the PJM Tariff that is responsible for implementing the Market Monitoring Plan, including the Market Monitor. The Market Monitoring Unit may also be referred to as the IMM or Independent Market Monitor for PJM

Market Monitoring Unit Advisory Committee or MMU Advisory Committee:

"Market Monitoring Unit Advisory Committee" or "MMU Advisory Committee" shall mean the committee established under Tariff, Attachment M, section III.H.

Market Operations Center:

"Market Operations Center" shall mean the equipment, facilities and personnel used by or on behalf of a Market Participant to communicate and coordinate with the Office of the Interconnection in connection with transactions in the PJM Interchange Energy Market or the operation of the PJM Region.

Market Participant:

"Market Participant" shall mean a Market Buyer, a Market Seller, an Economic Load Response Participant, or all three, except when such term is used in Tariff, Attachment M, in which case Market Participant shall mean an entity that generates, transmits, distributes, purchases, or sells electricity, ancillary services, or any other product or service provided under the PJM Tariff or Operating Agreement within, into, out of, or through the PJM Region, but it shall not include an Authorized Government Agency that consumes energy for its own use but does not purchase or sell energy at wholesale.

Market Participant Energy Injection:

"Market Participant Energy Injection" shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Day-ahead generation schedules, real-time generation output, Increment Offers, internal bilateral transactions and import transactions, as further described in the PJM Manuals.

Market Participant Energy Withdrawal:

"Market Participant Energy Withdrawal" shall mean transactions in the Day-ahead Energy Market and Real-time Energy Market, including but not limited to Demand Bids, Decrement Bids, real-time load (net of Behind The Meter Generation expected to be operating, but not to be less than zero), internal bilateral transactions and Export Transactions, as further described in the PJM Manuals.

Market Revenue Neutrality Offset:

"Market Revenue Neutrality Offset" shall mean the revenue in excess of the cost for a resource from the energy, Synchronized Reserve, Non-Synchronized Reserve, and Secondary Reserve markets realized from an increase in real-time market megawatt assignment from a day-ahead market megawatt assignment in any of these markets due to the decrease in the real-time reserve market megawatt assignment from a day-ahead reserve market megawatt assignment in any of the reserve markets.

Market Seller Offer Cap:

"Market Seller Offer Cap" shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with Tariff, Attachment DD. section 6 and Tariff, Attachment M-Appendix, section II.E.

Market Violation:

"Market Violation" shall mean a tariff violation, violation of a Commission-approved order, rule or regulation, market manipulation, or inappropriate dispatch that creates substantial concerns regarding unnecessary market inefficiencies, as defined in 18 C.F.R. § 35.28(b)(8).

Material Modification:

"Material Modification" shall mean any modification to an Interconnection Request that has a material adverse effect on the cost or timing of Interconnection Studies related to, or any Network Upgrades or Local Upgrades needed to accommodate, any Interconnection Request with a later Queue Position.

Maximum Daily Starts:

"Maximum Daily Starts" shall mean the maximum number of times that a generating unit can be started in an Operating Day under normal operating conditions.

Maximum Emergency:

"Maximum Emergency" shall mean the designation of all or part of the output of a generating unit for which the designated output levels may require extraordinary procedures and therefore are available to the Office of the Interconnection only when the Office of the Interconnection

declares a Maximum Generation Emergency and requests generation designated as Maximum Emergency to run. The Office of the Interconnection shall post on the PJM website the aggregate amount of megawatts that are classified as Maximum Emergency.

Maximum Facility Output:

"Maximum Facility Output" shall mean the maximum (not nominal) net electrical power output in megawatts, specified in the Interconnection Service Agreement, after supply of any parasitic or host facility loads, that a Generation Interconnection Customer's Customer Facility is expected to produce, provided that the specified Maximum Facility Output shall not exceed the output of the proposed Customer Facility that Transmission Provider utilized in the System Impact Study.

Maximum Generation Emergency:

"Maximum Generation Emergency" shall mean an Emergency declared by the Office of the Interconnection to address either a generation or transmission emergency in which the Office of the Interconnection anticipates requesting one or more Generation Capacity Resources, or Non-Retail Behind The Meter Generation resources to operate at its maximum net or gross electrical power output, subject to the equipment stress limits for such Generation Capacity Resource or Non-Retail Behind The Meter resource in order to manage, alleviate, or end the Emergency.

Maximum Generation Emergency Alert:

"Maximum Generation Emergency Alert" shall mean an alert issued by the Office of the Interconnection to notify PJM Members, Transmission Owners, resource owners and operators, customers, and regulators that a Maximum Generation Emergency may be declared, for any Operating Day in either, as applicable, the Day-ahead Energy Market or the Real-time Energy Market, for all or any part of such Operating Day.

Maximum Run Time:

"Maximum Run Time" shall mean the maximum number of hours a generating unit can run over the course of an Operating Day, as measured by PJM's State Estimator.

Maximum Weekly Starts:

"Maximum Weekly Starts" shall mean the maximum number of times that a generating unit can be started in one week, defined as the 168 hour period starting Monday 0001 hour, under normal operating conditions.

Member:

"Member" shall have the meaning provided in the Operating Agreement.

Merchant A.C. Transmission Facilities:

"Merchant A.C. Transmission Facility" shall mean Merchant Transmission Facilities that are alternating current (A.C.) transmission facilities, other than those that are Controllable A.C. Merchant Transmission Facilities.

Merchant D.C. Transmission Facilities:

"Merchant D.C. Transmission Facilities" shall mean direct current (D.C.) transmission facilities that are interconnected with the Transmission System pursuant to Tariff, Part IV and Part VI.

Merchant Network Upgrades:

"Merchant Network Upgrades" shall mean additions to, or modifications or replacements of, physical facilities of the Interconnected Transmission Owner that, on the date of the pertinent Transmission Interconnection Customer's Upgrade Request, are part of the Transmission System or are included in the Regional Transmission Expansion Plan.

Merchant Transmission Facilities:

"Merchant Transmission Facilities" shall mean A.C. or D.C. transmission facilities that are interconnected with or added to the Transmission System pursuant to Tariff, Part IV and Part VI and that are so identified in Tariff, Attachment T, provided, however, that Merchant Transmission Facilities shall not include (i) any Customer Interconnection Facilities, (ii) any physical facilities of the Transmission System that were in existence on or before March 20, 2003 ; (iii) any expansions or enhancements of the Transmission System that are not identified as Merchant Transmission Facilities in the Regional Transmission Expansion Plan and Attachment T to the Tariff, or (iv) any transmission facilities that are included in the rate base of a public utility and on which a regulated return is earned.

Merchant Transmission Provider:

"Merchant Transmission Provider" shall mean an Interconnection Customer that (1) owns, controls, or controls the rights to use the transmission capability of, Merchant D.C. Transmission Facilities and/or Controllable A.C. Merchant Transmission Facilities that connect the Transmission System with another control area, (2) has elected to receive Transmission Injection Rights and Transmission Withdrawal Rights associated with such facility pursuant to Tariff, Part IV, section 36, and (3) makes (or will make) the transmission capability of such facilities available for use by third parties under terms and conditions approved by the Commission and stated in the Tariff, consistent with Tariff, section 38.

Metering Equipment:

"Metering Equipment" shall mean all metering equipment installed at the metering points designated in the appropriate appendix to an Interconnection Service Agreement.

Minimum Annual Resource Requirement:

"Minimum Annual Resource Requirement" shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Down Time:

For all generating units that are not combined cycle units, "Minimum Down Time" shall mean the minimum number of hours under normal operating conditions between unit shutdown and unit startup, calculated as the shortest time difference between the unit's generator breaker opening and after the unit's generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero. For combined cycle units, "Minimum Down Time" shall mean the minimum number of hours between the last generator breaker opening and after first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero.

Minimum Extended Summer Resource Requirement:

"Minimum Extended Summer Resource Requirement" shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under Tariff, Attachment DD, section 5.10(a) to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

Minimum Generation Emergency:

"Minimum Generation Emergency" shall mean an Emergency declared by the Office of the Interconnection in which the Office of the Interconnection anticipates requesting one or more generating resources to operate at or below Normal Minimum Generation, in order to manage, alleviate, or end the Emergency.

Minimum Participation Requirements:

"Minimum Participation Requirements" shall mean a set of minimum training, risk management, communication and capital or collateral requirements required for Participants in the PJM Markets, as set forth herein and in the Form of Annual Certification set forth as Tariff, Attachment Q, Appendix 1. Participants transacting in FTRs in certain circumstances will be required to demonstrate additional risk management procedures and controls as further set forth in the Annual Certification found in Tariff, Attachment Q, Appendix 1.

Minimum Run Time:

For all generating units that are not combined cycle units, "Minimum Run Time" shall mean the minimum number of hours a unit must run, in real-time operations, from the time after generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, to the time of generator breaker opening, as measured by PJM's State Estimator. For combined cycle units, "Minimum Run Time" shall mean the time period after the first combustion turbine generator breaker closure, which is typically indicated by telemetered or aggregated State Estimator megawatts greater than zero, and the last generator breaker opening as measured by PJM's State Estimator.

MISO:

"MISO" shall mean the Midcontinent Independent System Operator, Inc. or any successor thereto.

Mixed Technology Facility:

"Mixed Technology Facility" shall mean a facility composed of distinct generation and/or electric storage technology types behind the same Point of Interconnection. Co-Located Resources and Hybrid Resources form all or part of Mixed Technology Facilities.

MOPR Floor Offer Price:

"MOPR Floor Offer Price" shall mean a minimum offer price applicable to certain Market Seller's Capacity Resources under certain conditions, as determined in accordance with Tariff, Attachment DD, sections 5.14(h), 5.14(h-1), and 5.14(h-2).

Multi-Driver Project:

"Multi-Driver Project" shall have the same meaning provided in the Operating Agreement.

Native Load Customers:

"Native Load Customers" shall mean the wholesale and retail power customers of a Transmission Owner on whose behalf the Transmission Owner, by statute, franchise, regulatory requirement, or contract, has undertaken an obligation to construct and operate the Transmission Owner's system to meet the reliable electric needs of such customers.

Near-Term Transmission Service:

"Near-Term Transmission Service" shall mean Transmission Service which ends not more than 10 days after the Transmission Service request date. When the description of obligations below refers to either a request for information about the availability of potential Transmission Service (including, but not limited to, a request for ATC), or to the posting of ATC or other information related to potential service, the date that the information is requested or posted will serve as the Transmission Service request date. "Near-Term Transmission Service" includes any Point-To-Point Transmission Service and Network Integration Transmission Service where the start and end date of the designation or request is within the next 10 days.

NERC:

"NERC" shall mean the North American Electric Reliability Corporation or any successor thereto.

NERC Interchange Distribution Calculator:

"NERC Interchange Distribution Calculator" shall mean the NERC mechanism that is in effect and being used to calculate the distribution of energy, over specific transmission interfaces, from energy transactions.

Net Benefits Test:

"Net Benefits Test" shall mean a calculation to determine whether the benefits of a reduction in price resulting from the dispatch of Economic Load Response exceeds the cost to other loads resulting from the billing unit effects of the load reduction, as specified in Operating Agreement, Schedule 1, section 3.3A.4 and the parallel provisions of Tariff, Attachment K-Appendix, section 3.3A.4.

Net Cost of New Entry:

"Net Cost of New Entry" shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset.

Net Obligation:

"Net Obligation" shall mean the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under Tariff, Parts II and III , and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

Net Sell Position:

"Net Sell Position" shall mean the amount of Net Obligation when Net Obligation is negative.

Network Customer:

"Network Customer" shall mean an entity receiving transmission service pursuant to the terms of the Transmission Provider's Network Integration Transmission Service under Tariff, Part III.

Network External Designated Transmission Service:

"Network External Designated Transmission Service" shall have the meaning set forth in Reliability Assurance Agreement, Article I.

Network Integration Transmission Service:

"Network Integration Transmission Service" shall mean the transmission service provided under Tariff, Part III.

Network Load:

"Network Load" shall mean the load that a Network Customer designates for Network Integration Transmission Service under Tariff, Part III. The Network Customer's Network Load shall include all load (including losses, Non-Dispatched Charging Energy, and Load Serving Charging Energy) served by the output of any Network Resources designated by the Network Customer. A Network Customer may elect to designate less than its total load as Network Load but may not designate only part of the load at a discrete Point of Delivery. Where an Eligible Customer has elected not to designate a particular load at discrete points of delivery as Network Load, the Eligible Customer is responsible for making separate arrangements under Tariff, Part II for any Point-To-Point Transmission Service that may be necessary for such non-designated load. Network Load shall not include Dispatched Charging Energy.

Network Operating Agreement:

"Network Operating Agreement" shall mean an executed agreement that contains the terms and conditions under which the Network Customer shall operate its facilities and the technical and operational matters associated with the implementation of Network Integration Transmission Service under Tariff, Part III.

Network Operating Committee:

"Network Operating Committee" shall mean a group made up of representatives from the Network Customer(s) and the Transmission Provider established to coordinate operating criteria and other technical considerations required for implementation of Network Integration Transmission Service under Tariff, Part III.

Network Resource:

"Network Resource" shall mean any designated generating resource owned, purchased, or leased by a Network Customer under the Network Integration Transmission Service Tariff. Network Resources do not include any resource, or any portion thereof, that is committed for sale to third parties or otherwise cannot be called upon to meet the Network Customer's Network Load on a non-interruptible basis, except for purposes of fulfilling obligations under a reserve sharing program.

Network Service User:

"Network Service User" shall mean an entity using Network Transmission Service.

Network Transmission Service:

"Network Transmission Service" shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Tariff, Part III, or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner.

Network Upgrades:

"Network Upgrades" shall mean modifications or additions to transmission-related facilities that are integrated with and support the Transmission Provider's overall Transmission System for the general benefit of all users of such Transmission System. Network Upgrades shall include:

(i) **Direct Connection Network Upgrades** which are Network Upgrades that are not part of an Affected System; only serve the Customer Interconnection Facility; and have no impact or potential impact on the Transmission System until the final tie-in is complete. Both Transmission Provider and Interconnection Customer must agree as to what constitutes Direct Connection Network Upgrades and identify them in the Interconnection Construction Service Agreement, Schedule D. If the Transmission Provider and Interconnection Customer disagree about whether a particular Network Upgrade is a Direct Connection Network Upgrade, the Transmission Provider must provide the Interconnection Customer a written technical explanation outlining why the Transmission Provider does not consider the Network Upgrade to be a Direcct Connection Network Upgrade within 15 days of its determination.

(ii) **Non-Direct Connection Network Upgrades** which are parallel flow Network Upgrades that are not Direct Connection Network Upgrades.

Neutral Party:

"Neutral Party" shall have the meaning provided in Tariff, Part I, section 9.3(v).

New Entry Capacity Resource with State Subsidy:

"New Entry Capacity Resource with State Subsidy" shall mean (1) starting with the 2022/2023 Delivery Year, the MWs (in installed capacity) comprising a Capacity Resource with State

Subsidy that have not cleared in an RPM Auction pursuant to its Sell Offer at or above its resource-specific MOPR Floor Offer Price or the applicable default New Entry MOPR Floor Offer Price or (2) starting with the Base Residual Auction for the 2022/2023 Delivery Year, any of those MWs (in installed capacity) comprising a Capacity Resource with State Subsidy that was not included in an FRR Capacity Plan at the time of the Base Residual Auction or the subject of a Sell Offer in a Base Residual Auction occurring for a Delivery Year after it last cleared an RPM Auction and since then has yet to clear an RPM Auction pursuant to its Sell Offer at or above its resource-specific MOPR Floor Offer Price or the applicable default New Entry MOPR Floor Offer Price. Notwithstanding the foregoing, any Capacity Resource that previously cleared an RPM Auction before it became entitled to receive a State Subsidy shall not be deemed a New Entry Capacity Resource, unless, starting with the Base Residual Auction for the 2022/2023 Delivery Year, the Capacity Resource with State Subsidy was not the subject of a Sell Offer in a Base Residual Auction or included in an FRR Capacity Plan at the time of the Base Residual Auction for a Delivery Year after it last cleared an RPM Auction.

New PJM Zone(s):

"New PJM Zone(s)" shall mean the Zone included in the Tariff, along with applicable Schedules and Attachments, for Commonwealth Edison Company, The Dayton Power and Light Company and the AEP East Operating Companies (Appalachian Power Company, Columbus Southern Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company and Wheeling Power Company).

New Service Customers:

"New Service Customers" shall mean all customers that submit an Interconnection Request, a Completed Application, or an Upgrade Request that is pending in the New Services Queue.

New Service Request:

"New Service Request" shall mean an Interconnection Request, a Completed Application, or an Upgrade Request.

New Services Queue:

"New Services Queue" shall mean all Interconnection Requests, Completed Applications, and Upgrade Requests that are received within each six-month period ending on March 31 and September 30 of each year shall collectively comprise a New Services Queue.

New York ISO or NYISO:

"New York ISO" or "NYISO" shall mean the New York Independent System Operator, Inc. or any successor thereto.

Nodal Reference Price:

The "Nodal Reference Price" at each location shall mean the 97th percentile price differential between day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. Reference periods will be Jan-Feb, Mar-Apr, May-Jun, Jul-Aug, Sept-Oct, Nov-Dec. For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

No-load Cost:

"No-load Cost" shall mean the hourly cost required to theoretically operate a synchronized unit at zero MW. It consists primarily of the cost of fuel, as determined by the unit's no load heat (adjusted by the performance factor) times the fuel cost. It also includes operating costs, Maintenance Adders, and emissions allowances.

Nominal Rated Capability:

"Nominal Rated Capability" shall mean the nominal maximum rated capability in megawatts of a Transmission Interconnection Customer's Customer Facility or the nominal increase in transmission capability in megawatts of the Transmission System resulting from the interconnection or addition of a Transmission Interconnection Customer's Customer Facility, as determined in accordance with pertinent Applicable Standards and specified in the Interconnection Service Agreement.

Nominated Demand Resource Value:

"Nominated Demand Resource Value" shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

Nominated Energy Efficiency Value:

"Nominated Energy Efficiency Value" shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

Non-Curtailment Charge:

"Non-Curtailment Charge" shall mean the charge applicable to Demand Resources and Price Responsive Demand as defined in Tariff, Attachment DD, section 10B(b).

Non-Dispatched Charging Energy:

"Non-Dispatched Charging Energy" shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant or Open-Loop Hybrid Resource receives from the electric grid that is not otherwise Dispatched Charging Energy.

Non-Firm Point-To-Point Transmission Service:

"Non-Firm Point-To-Point Transmission Service" shall mean Point-To-Point Transmission Service under the Tariff that is reserved and scheduled on an as-available basis and is subject to Curtailment or Interruption as set forth in Tariff, Part II, section 14.7. Non-Firm Point-To-Point Transmission Service is available on a stand-alone basis for periods ranging from one hour to one month.

Non-Firm Sale:

"Non-Firm Sale" shall mean an energy sale for which receipt or delivery may be interrupted for any reason or no reason, without liability on the part of either the buyer or seller.

Non-Firm Transmission Withdrawal Rights:

"No-Firm Transmission Withdrawal Rights" shall mean the rights to schedule energy withdrawals from a specified point on the Transmission System. Non-Firm Transmission Withdrawal Rights may be awarded only to a Merchant D.C. Transmission Facility that connects the Transmission System to another control area. Withdrawals scheduled using Non-Firm Transmission Withdrawal Rights have rights similar to those under Non-Firm Point-to-Point Transmission Service.

Non-PAI Event:

"Non-PAI Event" shall mean, effective for the 2028/2029 Delivery Year and subsequent Delivery Years, any intervals when a Demand Resource is dispatched or when Price Responsive Demand is required to respond and a Performance Assessment Interval is not in effect for such intervals for the same registration.

Non-Performance Charge:

"Non-Performance Charge" shall mean the charge applicable to Capacity Performance Resources as defined in Tariff, Attachment DD, section 10A(e).

Nonincumbent Developer:

"Nonincumbent Developer" shall have the same meaning provided in the Operating Agreement.

Non-Regulatory Opportunity Cost:

"Non-Regulatory Opportunity Cost" shall mean the difference between (a) the forecasted cost to operate a specific generating unit when the unit only has a limited number of starts or available run hours resulting from (i) the physical equipment limitations of the unit, for up to one year, due

to original equipment manufacturer recommendations or insurance carrier restrictions, (ii) a fuel supply limitation, for up to one year, resulting from an event of Catastrophic Force Majeure; and, (b) the forecasted future Locational Marginal Price at which the generating unit could run while not violating such limitations. Non-Regulatory Opportunity Cost therefore is the value associated with a specific generating unit's lost opportunity to produce energy during a higher valued period of time occurring within the same period of time in which the unit is bound by the referenced restrictions, and is reflected in the rules set forth in PJM Manual 15. Non-Regulatory Opportunity Costs shall be limited to those resources which are specifically delineated in Operating Agreement, Schedule 2.

Non-Retail Behind The Meter Generation:

"Non-Retail Behind The Meter Generation" shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, or electric distribution companies to serve load.

Non-Synchronized Reserve:

"Non-Synchronized Reserve" shall mean the reserve capability of non-emergency generation resources that can be converted fully into energy within ten minutes of a request from the Office of the Interconnection dispatcher, and is provided by equipment that is not electrically synchronized to the Transmission System.

Non-Synchronized Reserve Event:

"Non-Synchronized Reserve Event" shall mean a request from the Office of the Interconnection to generation resources able and assigned to provide Non-Synchronized Reserve in one or more specified Reserve Zones or Reserve Sub-zones, within ten minutes to increase the energy output by the amount of assigned Non-Synchronized Reserve capability.

Non-Variable Loads:

"Non-Variable Loads" shall have the meaning specified in Operating Agreement, Schedule 1, section 1.5A.6, and the parallel provisions of Tariff, Attachment K-Appendix, section 1.5A.6.

Non-Zone Network Load:

"Non-Zone Network Load shall mean Network Load that is located outside of the PJM Region.

Normal Maximum Generation:

"Normal Maximum Generation" shall mean the highest output level of a generating resource under normal operating conditions.

Normal Minimum Generation:

“Normal Minimum Generation” shall mean the lowest output level of a generating resource under normal operating conditions.

28.2 Transmission Provider Responsibilities:

A. In order to provide the Network Customer with Network Integration Transmission Service over the Transmission Provider's Transmission Systems: (a) the Transmission Provider will plan and operate the Transmission System in accordance with Good Utility Practice and its planning obligations in Operating Agreement, Schedule 6; and (b) the Transmission Owners will be obligated to construct and maintain the Transmission System in accordance with the terms and conditions of the Tariff, the Operating Agreement, and Good Utility Practice. Each Transmission Owner, on behalf of its Native Load Customers, shall be required to designate resources and loads in the same manner as any Network Customer under Tariff, Part III. This information must be consistent with the information used by the Transmission Provider to calculate available transfer capability. The Transmission Provider shall include the Network Customer's Network Load in the Transmission System planning and the Transmission Owners shall, consistent with the terms and conditions of the Tariff, the Operating Agreement, and Good Utility Practice, endeavor to construct and place into service sufficient transfer capability to deliver the Network Customer's Network Resources to serve its Network Load on a basis comparable to the delivery of each Transmission Owner's own generating and purchased resources to its Native Load Customers.

Starting on March 15, 2028, and annually each year thereafter on March 15 or the closest Business Day after March 15 if that day is a day in which the Federal Reserve System is not open for business or is a scheduled PJM holiday, Transmission Provider shall post on the PJM website a report containing information about the demand for and use of: (1) Network Integration Transmission Service to the extent Interim Network Integration Transmission Service was also requested; (2) Interim Network Integration Transmission Service; (3) Firm Contract Demand Service; and (4) Non-Firm Contract Demand Service. The contents of such annual report shall reflect the information described in Paragraph 580 of 195 FERC ¶ 61,209 (2026), as further described in the PJM Manuals. PJM will provide an explanation in this annual report if its contents deviate from the information described in Paragraph 580 of 195 FERC ¶ 61,209 (2026), and the reasons for any deviations.

B. Large Computational Load Ride-Through Requirements

Transmission Provider shall establish minimum voltage ride-through and frequency ride-through requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals. Such requirements shall establish the minimum performance criteria necessary to support the reliable operation of the Transmission System and Bulk Electric System during voltage disturbances and frequency disturbances.

Each Eligible Customer (or Transmission Owner) shall establish voltage ride-through and frequency ride-through requirements applicable to Eligible Customers taking transmission service on behalf of Large Computational Load. Such requirements shall be no less stringent than the minimum requirements established by Transmission Provider in the PJM Manuals.

An Eligible Customer (or Transmission Owner) may establish requirements that are more stringent than the minimum requirements established by Transmission Provider where the Transmission Owner determines that such requirements are necessary to maintain the reliability, security, or operational performance of its transmission facilities or the Transmission System.

The requirements established by an Eligible Customer (or Transmission Owner) shall be based upon reliability, planning, operational, stability, protection coordination, voltage performance, frequency performance, restoration, balancing, reserve management or other reliability-related considerations and shall be applied in a not unduly discriminatory manner to Eligible Customers serving similarly situated Large Computational Load.

Nothing in this section shall preclude an Eligible Customer (or Transmission Owner) from modifying its voltage ride-through or frequency ride-through requirements applicable to Eligible Customers serving Large Computational Load as necessary to address changes in system conditions, reliability needs, applicable NERC Reliability Standards or Transmission Provider operating requirements, provided such requirements continue to meet or exceed the minimum requirements established by Transmission Provider in the PJM Manuals.

Notwithstanding the above, where an Eligible Customer is taking transmission service on behalf of Transitional Large Computational Load for purposes of these requirements, the Eligible Customers shall achieve compliance with respect to the Transitional Large Computational Load no later than [61 days from filing plus one year], or within one (1) year of its Commercial Operation Date, whichever is later.

C. Large Computational Load Ramp Rate Requirements

Transmission Provider shall establish ramp rate requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals.

D. Large Computational Load EMT Performance Requirements

Transmission Provider shall establish requirements with respect to Electromagnetic Transient ("EMT") performance requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals.

E. Large Computational Load Auxiliary Equipment, Control Technologies, and Protection Systems Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to the operation,

coordination, and maintenance of necessary auxiliary equipment, control technologies and protection systems approved by the Transmission Provider to limit withdrawals from the Transmission System.

F. Large Computational Load Maintenance Outage Procedures and Scheduled Maintenance Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to maintenance outage procedures and the timing of scheduled maintenance of Large Computational Loads and associated auxiliary equipment.

G. Large Computational Load Remote Disconnection Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, which shall be set forth in the PJM Manuals, with respect to: (1) the ability of Eligible Customers taking transmission service on behalf of Large Computational Loads to remotely disconnect such loads from the Transmission System, and (2) the Eligible Customer making available to the Transmission Provider the ability to remotely disconnect such loads from the Transmission System.

H. Large Computational Load Necessary Control Technology Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, and which shall be set forth in the PJM Manuals, with respect to the ability of Eligible Customers taking transmission service on behalf of Large Computational Loads to have necessary control technologies, which shall also include telemetry, data exchange, and metering technology to allow Transmission Provider to monitor the Eligible Customer's use of the Transmission System, limit withdrawals if and as appropriate, and ensure relay settings are consistent with necessary control technologies and/or protection systems.

I. Large Computational Load Data and Communication Requirements

Transmission Provider shall establish requirements with which Eligible Customers taking transmission service on behalf of Large Computational Load must comply, and which shall be developed in accordance with and set forth in the PJM Manuals, with respect to: (1) hourly forecasts, (2) telemetry data, and (3) other data needed for reliable system operations; and (4) communication requirements between PJM and the Eligible Customer taking transmission service on behalf of Large Computational Load.

35.1 Operation under The Network Operating Agreement:

The Network Customer shall plan, construct, operate and maintain its facilities in accordance with Good Utility Practice and in conformance with the Network Operating Agreement. Eligible Customer taking transmission service to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in the PJM Manuals.

718.2 Large Computational Load Requirements and PJM Annual Transmission Services Report

Eligible Customer taking Transmission Service under Part XI to serve Large Computational Load shall ensure compliance with all the requirements established in accordance with Tariff, Part III, section 28.2, and set forth in in the PJM Manuals. Transmission Provider shall prepare the annual report consistent with Tariff, Part III, section 28.2.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, LLC	**)**	**Docket No. ER27-522-000**
	)	

DECLARATION OF DAVID EGAN ON BEHALF OF PJM INTERCONNECTION, L.L.C.

I. INTRODUCTION

1. My name is David Egan. I am employed by PJM Interconnection, L.L.C. ("PJM") as Sr. Manager, Generation Modeling and Dynamics Studies in the Planning Division. My business address is PJM Interconnection, L.L.C., 2750 Monroe Blvd., Audubon, Pennsylvania, 19403.

II. QUALIFICATIONS AND EXPERIENCE

2. My primary role at PJM is to manage and oversee the activities of the Generation Modeling and Dynamics Studies Department. In that capacity, I am responsible for directing the development, maintenance, and application of the power system models used to evaluate the reliability, stability, and performance of the PJM transmission system.

3. My department coordinates with Generation Owners to obtain and maintain the data necessary to represent generation resources in PJM's power flow, short-circuit, dynamic, and electromagnetic transient models. We also coordinate with Transmission Owners to obtain and maintain load modeling data in accordance with PJM's Tariff, planning procedures, and applicable reliability requirements. These models support PJM's Regional Transmission Expansion Planning process, generator interconnection studies, operational planning assessments, and PJM's participation in regional and industry-wide reliability modeling activities.

4. My staff also perform generator model verification and validation activities and develop and maintain the dynamic study cases used throughout PJM. Using these models, my department performs and supports a broad range of power system reliability and stability assessments, including transient stability, voltage stability, protection and remedial action scheme performance, underfrequency load shedding performance, and contingency analyses used to evaluate the reliable operation of the Bulk Electric System.

5. In connection with Large Computation Load ("LCL") facilities, my department is responsible for obtaining load model data, developing and validating dynamic representations of those facilities, and assessing their performance during system disturbances. These assessments evaluate the impact of LCL behavior on overall system reliability and stability and support the development, technical evaluation, and implementation of PJM's LCL ride-through requirements and other reliability-related

requirements intended to ensure that such facilities do not adversely affect the reliable operation of the Bulk Electric System.

6. I have worked in the electric power industry for more than thirty years, including over twenty years at PJM and prior experience at nuclear generating facilities. Throughout my career, my responsibilities have included power system planning, generation interconnection, system modeling, reliability assessments, construction and project management, power plant engineering, and regulatory compliance.

7. From 2019 through 2025, I served as Senior Manager of PJM's System Planning Modeling and Support Department. In that role, I supervised a team responsible for developing and maintaining the power flow, short-circuit, and dynamic stability models used throughout PJM and the electric industry. My responsibilities included overseeing compliance with industry modeling and model quality standards, directing model data verification activities, managing generator modeling initiatives, and supporting transmission planning and reliability assessments.

8. Prior to that, from 2014 through 2018, I served as Manager of PJM's Interconnection Projects Department. I oversaw the staff, analytical processes, and tariff compliance requirements associated with generation and merchant transmission interconnection requests. My responsibilities included coordinating with Transmission Owners regarding interconnection studies and required network upgrades, supporting PJM's legal proceedings and expert testimony efforts, and providing guidance on jurisdictional matters involving wholesale and retail interconnections.

9. Since joining PJM in 2004, I have also served as an Interconnection Project Manager, Senior Lead Engineer, and Infrastructure Coordination Project Manager. In those roles, I managed the engineering evaluation and implementation of generation and transmission interconnection projects, coordinated reliability-related transmission upgrades, led transmission service analyses, and worked extensively with Generation Owners, Transmission Owners, engineering consultants, and legal representatives throughout the interconnection process.

10. In addition, from 2005 through 2014, I served as Secretary of PJM's Transmission and Substation Subcommittee, where I coordinated stakeholder meetings, developed technical documentation, and presented subcommittee activities through PJM's stakeholder process.

11. Before joining PJM, I worked at Oyster Creek and Three Mile Island nuclear generating stations from 1991 through 2004. During that period, I held positions of increasing responsibility, including Systems Manager, Project Manager for Turbine, Generator and Auxiliary System Overhauls, Maintenance Rule Coordinator, and Performance Engineer. My responsibilities included maintaining and improving the performance and reliability of turbine-generator systems, managing major outage and maintenance projects, implementing Nuclear Regulatory Commission maintenance programs, performing equipment root-cause analyses, and supporting safe and reliable plant operations.

12. I hold a Bachelor of Science degree in Mechanical Engineering from Binghamton University received in 1990.

13. The purpose of my Declaration is to support PJM's proposal to implement ride-through requirements for Eligible Customers taking transmission on behalf of LCL. Specifically, my Declaration explains (1) why voltage and frequency ride-through requirements on Eligible Customers taking transmission on behalf of Large Computational Load are necessary to support reliable operation of the Bulk Electric System; (2) how PJM has defined Large Computation Load; and (3) the technical basis for PJM's proposed Tariff revisions developed in response to FERC's Show Cause Order. As part of that effort, PJM presented its proposed requirements to stakeholders for review and feedback and conducted educational sessions involving PJM planning and operations subject matter experts to explain the July 22, 2026 event, the associated reliability concerns, and the basis for the proposed requirements.

III. DISCUSSION

A. Establishing Voltage and Frequency Ride-Through Requirements for Eligible Customers taking transmission on behalf of Large Computational Loads Are Necessary to Maintain Load Connectivity During Expected Transmission System Disturbances and to Prevent Significant and Unexpected Large Load Transfers That Could Exacerbate Reliability Events

14. On July 22, 2026, the PJM system experienced a significant large load transfer event involving approximately 4,000 MW of load. The event demonstrated how large amounts of load can disconnect in a very short period of time in response to transmission system conditions. While transmission system faults and other disturbances are anticipated as part of the design and operation of the Bulk Electric System, unexpected load loss can unnecessarily introduce additional dynamic impacts and exacerbate the underlying disturbance.

15. From a planning and reliability perspective, power systems are designed and evaluated based on assumptions regarding the expected response of generators, transmission facilities, and loads during system disturbances. Transmission systems are designed to experience and clear faults and other contingencies through the operation of protection systems and associated equipment. As a result, temporary voltage and frequency excursions are an expected consequence of certain disturbances and fault-clearing operations. While it is reasonable for load owners to seek to protect their equipment from harmful operating conditions, reliability criteria are necessary to ensure that loads remain connected during expected system events and do not unnecessarily disconnect before transmission protection systems have performed their intended function. When a large block of load disconnects unexpectedly, the actual system response may differ substantially from the conditions anticipated by planners and operators. Such disconnects can alter power flows, voltage profiles, frequency response, and system dynamics across a broad geographic area.

16. Large and sudden load disconnections can also create operational and dynamic challenges for generating resources. Generator control systems respond to terminal voltage and system frequency in accordance with their design and control settings. When several thousand megawatts of load disconnect within a short period of time, the resulting changes in voltage, frequency, and power flows can alter the response of generators throughout the interconnected system. These changes can affect the operation of excitation systems, voltage regulators, turbine-governor controls, and other plant control systems that are responding to system conditions. As the magnitude and concentration of load transfers increase, so does the potential for these impacts to affect the broader interconnected system and complicate the restoration of stable system conditions following a disturbance.

17. The July 22 event illustrates why voltage and frequency ride-through requirements are necessary for Large Computation Load facilities. Ride-through requirements help ensure that loads remain connected during transient voltage and frequency excursions that are expected to occur during transmission system disturbances and fault-clearing operations. By reducing the likelihood of unnecessary load disconnection, ride-through requirements support a more predictable and stable system response, reduce operational challenges for generation resources, and reduce the risk that a system disturbance will be amplified by the loss or transfer of large amounts of load.

B. PJM's Definition of Large Computational Load was Developed Reviewing Standards Developed by NERC and Definitions Approved by the Commission in MISO, ERCOT, and SPP

18. PJM has proposed to define "Large Computational Load" to mean "Large Load containing 25 MW or greater of maximum load served through power electronic conversion equipment." The definition of Large Computational Load includes new, materially modified, and existing Large Computational Load. LCL is a subset of Large Load—a defined class of load defined by PJM and accepted by the Commission, effective October 12, 2026. As set forth in PJM's Reliability Assurance Agreement, Large Load is "end-use customer(s) load that has a cumulative peak load of 50 [MW] or greater at a single electrical site behind one or more points of interconnection, where for configurations involving multiple affiliated load facilities or multiple points of interconnection with affiliated load facilities behind them, all affiliated load facilities within a one-mile radius will be considered a single electrical site as further described in the PJM Manuals."

19. Consistent with these industry developments, PJM's proposed LCL definition identifies facilities containing substantial computational load that may create material reliability impacts if they respond to transmission disturbances in a coordinated manner. PJM's proposed criteria were informed by these industry efforts, the Commission-accepted Large Load framework, PJM's own reliability assessments, operational experience, planning studies, and analyses of Large Computation Load behavior on the PJM system. As such, PJM's proposed definition is consistent with the broader industry trend toward recognizing computational loads as a distinct category of load for reliability purposes while tailoring the specific criteria to the reliability needs of the PJM region.

20. PJM reviewed emerging computational load definitions being developed by industry organizations and transmission providers, including NERC, MISO, ERCOT, and SPP. These industry efforts reflect a common recognition that certain computational loads present reliability considerations that differ from those associated with traditional commercial and industrial loads.

21. NERC has proposed registration criteria applicable to computational load entities and has recognized that computational loads may warrant reliability requirements distinct from those applicable to traditional loads. NERC has proposed to define Computational Load as "Load comprised of electric power demand from information technology equipment, such as servers, storage, and networking hardware."[1] Likewise, MISO has proposed a framework that distinguishes computational loads from other large loads based on their operating characteristics and potential reliability impacts. MISO proposes a definition of Computational Load to encompass "Large Load comprised of 25 MW or more of Demand from information technology equipment, such as servers, storage, and networking hardware."

20. The "25 MW or greater of power electronic conversion equipment" threshold evolved from PJM's experience evaluating large co-located loads, stakeholder feedback on earlier draft language, and a review of approaches being developed by other regions, particularly MISO.

21. But unlike MISO and NERC, PJM concluded that the relevant reliability characteristic of LCLs for purposes of managing operational risk and the reliability of the PJM Region is not limited to servers or computational facilities, but rather the presence of large quantities of power electronic conversion equipment capable of exhibiting similar disturbance-response characteristics. Power electronic conversion equipment is broad enough to encompass data centers within the definition of Large Computational Load while also remaining applicable to other emerging load types that rely heavily on power-electronic conversion technologies, such as certain hydrogen production facilities and other future industrial processes.[2]

22. PJM observed through its co-location and large load analyses that Large Computational Load facilities generally consist of two primary categories of load: (1) cooling and support infrastructure loads used to remove heat and maintain facility operation, and (2) electronics-based loads supplied through power electronic conversion equipment, including the AC-to-DC systems that serve information technology equipment and similar technologies. The reliability concern underlying PJM's proposed requirements is primarily associated with the electronics-based portion of the load, as these systems can rapidly alter their demand or transfer off the Bulk Electric System during disturbance conditions. While the proportion of facility load attributable to cooling versus electronics varies across facility vintages and designs, PJM concluded that the defining reliability

[1] https://www.nerc.com/globalassets/who-we-are/rules-of-procedure/proposed/computational-load-entity-summary-of-changes-april-2026-posting.pdf

[2] *Midcontinent Indep. Sys. Op., Inc.*, Interconnection Reliability Requirements for Large Loads, Transmittal Letter, Docket No. ER26-3650-000, at 11 (Aug. 28, 2026).

characteristic is the presence of substantial power electronic conversion equipment rather than the specific end use served by that equipment.

IV. SUMMARY AND CONCLUSION

23. Based on my experience in power system modeling, stability analysis, and reliability assessments, it is my opinion that PJM's proposed Large Computation Load ride-through requirements are necessary to support the reliable operation of the Bulk Electric System.

24. As demonstrated by the July 22, 2026 load transfer event, large and coordinated load disconnections can introduce significant operational and reliability challenges by altering system voltages, frequency response, power flows, and generator behavior during transmission system disturbances. Because temporary voltage and frequency excursions are an expected consequence of certain transmission faults and fault-clearing operations, reliability requirements are necessary to ensure that Large Computation Load facilities remain connected during conditions that are anticipated as part of normal Bulk Electric System operation.

25. PJM's proposed Large Computation Load definition is consistent with the direction of emerging industry initiatives and frameworks being developed by NERC, MISO, ERCOT, and SPP. While PJM's proposal reflects the specific reliability needs of the PJM region, it is founded upon industry-recognized principles that large computational facilities may present reliability considerations distinct from those associated with traditional load.

26. For these reasons, I believe PJM's proposed ride-through requirements represent a technically justified and reasonable means of reducing the reliability risks associated with Large Computation Load facilities while supporting the reliable operation of the Bulk Electric System.

27. This concludes my Declaration.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	**)**	**Docket Nos. ER27-522-000**
	)	

DECLARATION

David Egan, being duly sworn deposes and states that I prepared the testimony to which this declaration is attached with the assistance of the staff of PJM Interconnection, L.L.C., and that the statements contained therein are true and correct to the best of my knowledge and belief.

/s/ David Egan
David Egan
Senior Manager
PJM Interconnection, L.L.C.

Dated: November 16, 2026

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, LLC	**)**	**Docket No. ER27-522-000**
	)	

DECLARATION OF BYOUNGKON CHOI
ON BEHALF OF PJM INTERCONNECTION, L.L.C.

I. INTRODUCTION

1. My name is Byoungkon Choi. I am employed by PJM Interconnection, L.L.C. ("PJM") as a Principal Engineer, Generator Modeling and Dynamic Studies in the Planning Division. I have been working at PJM for more than 18 years. My business address is PJM Interconnection, L.L.C., 2750 Monroe Blvd., Audubon, Pennsylvania, 19403.

II. QUALIFICATIONS AND EXPERIENCE

2. My primary role at PJM is to perform power system stability and dynamic performance assessments to support the reliable planning and operation of the Bulk Electric System. As a Principal Engineer in the Generator Modeling and Dynamic Studies Department within the Planning Division, I conduct NERC reliability compliance studies, including analyses required under TPL-001-5.1, to evaluate the system's ability to withstand a wide range of contingencies while maintaining acceptable stability performance. I also perform dynamic studies supporting inverter-based resource (IBR) repowering projects and other qualified facility modifications under FAC-002, assessing their impact on system reliability and compliance with PJM and NERC requirements. In response to the increasing deployment of large data center and computational loads within the PJM footprint, I have been actively involved in the evaluation of co-located data center load projects, analyzing their effects on transient, voltage, and frequency stability. In addition, I support PJM's Regional Transmission Expansion Plan (RTEP) process by assessing transmission upgrade projects from a stability perspective and providing technical recommendations to ensure the continued reliable operation of the interconnected power system.

3. Prior to joining my current department, I worked in PJM's Transmission Planning and Transmission Coordination and Analysis departments as a Planning Engineer. In these roles, my primary responsibilities included performing a wide range of power system analyses, including N-1 and N-1-1 contingency analyses, load deliverability studies supporting PJM's Reliability Pricing Model (RPM), and Regional Transmission Expansion Plan (RTEP) assessments, as well as various power system dynamic and stability studies. In addition, I was responsible for the development, enhancement, and maintenance of several in-house planning applications, including tools for power flow case creation, load deliverability analysis, and contingency analysis automation. These responsibilities provided extensive experience in transmission planning, power system reliability

assessment, and the development of analytical software solutions to support large-scale power system studies.

4. Prior to joining PJM, I conducted advanced research in power systems at Cornell University as a Visiting Scientist (post-doc.) from 2004 to 2007 and at the University of Wisconsin-Milwaukee as a Postdoctoral Fellow from 2007 to 2008. My research focused on power system dynamic load modeling using measurement-based approaches, excitation system model reduction, the development of energy-function-based methods for transient stability analysis, and parameter estimation techniques utilizing TRUST-TECH-based optimization. I published multiple first-author papers in leading peer-reviewed journals, including IEEE Transactions on Power Systems, based on the results of this research. These accomplishments provided me with deep technical expertise in power system stability, dynamic load modeling, and advanced analytical methods for power system performance assessment.

5. Prior to my academic research activities, I worked for LG CNS (formerly LG-EDS Systems) as a Senior Consultant from 2000 to 2003. In that role, I led and supported a variety of information technology and business strategy planning projects for clients in the financial services, automotive, and electronics manufacturing sectors. This experience strengthened my analytical, project management, and consulting skills while providing broad exposure to large-scale enterprise systems and strategic planning initiatives.

6. I hold a Ph.D. degree in Electrical and Computer Engineering from Yonsei University in Seoul, South Korea. During my doctoral studies, I conducted research in several areas of power system analysis and stability, including the development of damping-reflected energy functions for transient stability assessment, voltage stability analysis using continuation power flow techniques to estimate voltage collapse margins, and the development of fast transient simulation algorithms that account for generator saliency effects. The results of my doctoral research were published in *Automatica*, a leading international journal in control systems and automation. These research activities provided a strong theoretical foundation in power system dynamics, stability analysis, and advanced computational methods for power system modeling and simulation.

7. The purpose of my Declaration is to provide support for PJM's proposal to implement ride-through requirements for Large Computational Load. Specifically, my Declaration will explain (1) why voltage and frequency ride-through requirements are necessary for existing and new computational load; (2) why PJM needs flexibility to update the implementation details for these requirements in its Manuals.

III. DISCUSSION

A. The Definition of Large Computational Loads and Corresponding Ride-Through Requirements Must Include Existing Large Computational Loads to Prevent Reliability Risk

8. Because PJM already has approximately 10 GW of existing computational load, exempting existing facilities would exempt a substantial portion of the current

reliability risk from the proposed requirements. Unlike regions where the existing installed base is relatively small, PJM has already experienced several large, load-transfer events due to voltage ride-through performance issues, including approximately 1,500 MW on July 10, 2024, 1,800 MW on February 17, 2025, and 3,900 MW on July 22, 2026. These events demonstrate that the risk is not hypothetical and that computational loads can produce adverse system reliability impacts comparable to the loss of multiple large generating units in terms of voltage and frequency. As a result, exempting existing facilities would leave a significant portion of the load population with demonstrated reliability impacts outside the scope of the proposed requirements, substantially reducing the reliability benefits of the ride-through and recovery provisions. Therefore, unlike ERCOT and MISO, exempting existing facilities is not appropriate in PJM because the magnitude of existing computational load and its demonstrated operational impacts warrant consistent application of the requirements to both existing and new facilities.

B. PJM Requires the Flexibility to Update the Implementation Details in the Manual as More Information Becomes Available.

9. Dominion's event analysis indicates that most LCL tripping during the July 22, 2026 event occurred within PJM's proposed voltage ride-through envelope. This suggests that the current ride-through parameters would likely mitigate a significant portion of the load transfers observed during that event. However, the July 22 event is only one example, and future disturbances may reveal different tripping behaviors, technologies, or operating conditions that are not adequately addressed by the initial ride-through bands. Given the rapid growth of computational load in PJM, the ride-through requirements may need to evolve based on operating experiences and future event analysis. Therefore, PJM should have the flexibility to adjust the voltage and frequency ride-through parameters in a timely manner, without having to rely on a lengthy stakeholder process and subsequent FERC approval, which could delay implementation of necessary reliability improvements by months.

C. These Requirements Represent a Necessary First Step Towards Avoiding Reliability Concerns from the Unexpected Transfer of Large Loads But More Will Be Necessary to Safeguard the System

10. Future revisions may address ramp-rate limit and design-envelope requirements as reliability needs and system impacts become better understood. PJM is not proposing specific requirements at this time because further analysis is needed to define appropriate performance expectations, verify implementation feasibility, and assess potential impacts on existing and planned facilities.

IV. SUMMARY AND CONCLUSION

11. Based on my review of the available operating data, event analyses, engineering evaluations, and reliability assessments, it is my opinion that PJM's proposed ride-through requirements represent a necessary and reasonable first step toward mitigating the reliability risks associated with large and unexpected computational load transfers. The proposal addresses demonstrated reliability concerns that have already occurred on the

PJM system, establishes consistent performance expectations for both existing and future Large Computation Load facilities, and provides a framework that can be refined as additional operating experience and technical information become available.

12. This concludes my declaration.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	**)**	**Docket Nos. ER27-522-000**
	)	

DECLARATION

Byoungkon Choi, being duly sworn deposes and states that I prepared the testimony to which this declaration is attached with the assistance of the staff of PJM Interconnection, L.L.C., and that the statements contained therein are true and correct to the best of my knowledge and belief.

/s/ Byoungkon Choi
Byoungkon Choi
Principal Engineer
PJM Interconnection, L.L.C.

Dated: November 16, 2026