



PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403-2497

Chenchao Lu
Assistant General Counsel
T: (610) 666-2255 | F: (610) 666-8211
Chenchao.Lu@pjm.com

December 23, 2022

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: *PJM Interconnection, L.L.C.*, Docket No. ER22-____-000
Proposed Amendment to the Locational Deliverability Area Reliability Requirement Filed Pursuant to section 205 of the Federal Power Act, Request for Waiver of Notice Requirement, and Request for an **Extended Comment Period of 28 Days**.

Dear Secretary Bose:

PJM Interconnection, L.L.C. (“PJM”), pursuant to section 205 of the Federal Power Act (“FPA”), 16 U.S.C. § 824d, and section 35.13 of the regulations of the Federal Energy Regulatory Commission (“FERC” or the “Commission”), 18 C.F.R. part 35, hereby proposes to revise the definition of Locational Deliverability Area Reliability Requirement¹ in the PJM Open Access Transmission Tariff (“Tariff”). The proposed revisions herein would allow PJM, during the auction process, to exclude Planned Generation Capacity Resources from the calculation of the Locational Deliverability Area Reliability Requirement if the addition of such resources materially increases the reliability requirement and such resources do not participate in the Reliability Pricing Model

¹ Terms not otherwise defined herein shall have the same meaning as set forth in the Tariff and Amended and Restated Operating Agreement of PJM Interconnection, L.L.C.

(“RPM”) Auctions. This amendment is needed to allow the RPM Auctions to use an accurate Locational Deliverability Area Reliability Requirement in clearing the auctions.

In conducting the 2024/2025 Base Residual Auction (“BRA”), a significant amount of Planned Generation Capacity Resources that were expected to participate in the auction based on the expected in-service date of the resources’ Interconnection Service Agreements (“ISAs”) did not offer in the auction despite being included in the Locational Deliverability Area Reliability Requirement. As a result, as further explained below, the Locational Deliverability Area Reliability Requirement for one particular Locational Deliverability Area (“LDA”), Delmarva Power & Light South (“DPL-S”), was overstated for the 2024/2025 BRA. In short, the application of the Locational Deliverability Area Reliability Requirement in its present form involving small LDAs results in a mismatch with prices not reflecting the actual reliability requirements of the LDA. As the Commission has a statutory obligation to ensure that rates are just and reasonable, the narrow changes as proposed herein are necessary to ensure just and reasonable outcomes that are consistent with the reliability requirements of the LDA.

Based on preliminary auction data, as a result of the confluence of events in this small LDA, should PJM complete the auction and award capacity commitments, PJM estimates that the clearing price for the DPL-S LDA (and the revenues received by the Capacity Market Sellers in this small LDA) would be more than four times what the clearing price should be if the Planned Generation Capacity Resources that did not offer in the auction are excluded from the Locational Deliverability Area Reliability Requirement given that they did not offer into the BRA. To put that into perspective, the clearing price

for the DLP-S LDA from the 2023/2024 BRA was \$69.95/MW-day.² More important and fundamental to this filing, the potential auction outcome, absent the proposed amendment, would not reflect the actual reliability needs of the affected zone (in this case DPL-S) and would force Load Serving Entities in this LDA to procure more capacity than is needed to meet the area's actual reliability needs. Such an aberrant auction outcome must be avoided for the 2024/2025 BRA to ensure that the final auction results are just and reasonable rates and reflective of the actual reliability requirements in the affected LDA.

To address this issue, PJM proposes to update the Locational Deliverability Area Reliability Requirement based on the actual supply of resources that submitted offers into the auction to accurately reflect the actual reliability needs in the LDA. While PJM acknowledges that the deadline for submitting Sell Offers associated with the 2024/2025 BRA has passed, the auction itself has not concluded as PJM is still in the process of conducting the auction and has not awarded any capacity commitments. Specifically, the Tariff explicitly details the auction process after the bidding window closes, which requires PJM "to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction."³ As part of this clearing, PJM utilizes an optimization algorithm that considers various factors to "minimize the cost of satisfying the reliability requirements across the PJM Region."⁴ It is not until this clearing has concluded and Capacity Market Sellers are awarded capacity commitments for any cleared Capacity Resources that the 2024/2025 BRA is closed.

² *PJM 2023/2024 RPM Base Residual Auction Results*, PJM Interconnection, L.L.C. (June 21, 2022), <https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2023-2024/2023-2024-base-residual-auction-report.ashx>.

³ Tariff, Attachment DD, section 5.12.

⁴ Tariff, Attachment DD, section 5.12(a).

Here, PJM is not proposing any modifications to activities or deadlines associated with the 2024/2025 BRA that have already occurred or passed. Instead, PJM proposes to prospectively include an additional factor to be considered in the optimization algorithm when evaluating the Sell Offers and other inputs for the 2024/2025 BRA *before* the results are determined and capacity awards are made. Absent the ability to include this additional factor in the optimization algorithm, PJM would be forced to utilize a materially inaccurate Locational Deliverability Area Reliability Requirement that does not reflect the actual capacity needs of the particular LDA in question and would result in an unjust and unreasonable outcome. Such an outcome would be inconsistent with the Commission's statutory duty to ensure just and reasonable rates by precluding this additional factor (i.e., excluding resources that do not participate in the auction from the Locational Deliverability Area Reliability Requirement) from being considered *before* the auction closes and capacity commitments are made based on unjust and unreasonable results.

The proposed amendment to the Tariff is necessary because, as further explained below, the Locational Deliverability Area Reliability Requirement can be significantly increased by the inclusion of Planned Generation Capacity Resources in a small LDA because the planning models need to address the probability of forced outages of large Planned Generation Capacity Resources. Similarly, Planned Generation Capacity Resources that are Intermittent Resources can also increase the reliability requirement if they do not operate coincident with peak periods. However, if such Planned Generation Capacity Resources are not offered into the BRA, then the Locational Deliverability Area Reliability Requirement should be revised to reflect the actual reliability needs of the LDA

for the relevant Delivery Year so that both supply and demand are accurately reflected in the optimization algorithm.

This filing proposes a just and reasonable remedy that addresses a unique circumstance that was recently discovered during the auction process for the BRA associated with the 2024/2025 Delivery Year. The proposed Tariff amendment allows the RPM Auctions to provide correct price signals based upon actual reliability needs.

To provide for market certainty, PJM requests waiver of the Commission's 60-days' notice requirement⁵ to allow for the proposed revisions to become effective one day after the date of this filing (i.e., December 24, 2022). Courts have explained that "[t]he Commission, for good cause shown, may allow changes to take effect without requiring the sixty days' notice herein provided for by an order specifying the changes so to be made and the time when they shall take effect and the manner in which they shall be filed and published."⁶ Here, good cause exists for the Commission to allow for the proposed changes to become effective as soon as December 24, 2022, given that this filing would reduce charges that Load Serving Entities would otherwise have to pay absent these revisions.⁷ Indeed, in addition the Commission's prior notice requirements and as discussed further herein, the Tariff specifically authorizes PJM to make sure a filing on shortened notice to the stakeholders explicitly putting all customers on notice of PJM's right to seek prompt action to protect consumers.⁸

⁵ See 18 C.F.R. § 35.3(a)(1).

⁶ *Consol. Edison Co. of N.Y., Inc. v. FERC*, 347 F.3d 964, 969 (DC Cir. 2003) (quoting FPA, section 205(d)).

⁷ See *Central Hudson Gas & Elec. Corp.*, 60 FERC ¶ 61,106, at 61,338 ("We will generally grant waiver of the 60-day prior notice requirement in the following instances: . . . (2) filings that reduce rates and charges—such as rate decreases or new services that provide the customer of a utility with an opportunity to reduce its purchases of other, more expensive service from the same utility."), *reh'g denied*, 61 FERC ¶ 61,089 (1992).

⁸ See Tariff, section 9.2(b).

Lastly, given the upcoming holidays, PJM requests that the Commission establish a 28-day comment period to provide additional time for comments. In any event, PJM requests that comment period be aligned with the comment date set in the separate but related FPA section 206 filing submitted on this same date.

I. BACKGROUND

One of PJM's primary responsibilities as a regional transmission organization is to ensure that there is a sufficient amount of electrical capacity within its system to provide reliable electricity to its consumers during periods of peak demand. PJM accomplishes this objective through its capacity market by conducting auctions, referred to as the RPM Auctions,⁹ in which electricity suppliers submit offers to be available to provide capacity for a given Delivery Year, typically three years in the future.

The auction utilizes an administratively set demand curve—the Variable Resource Requirement Curve (“VRR Curve”)—which represents the prices that consumers should pay for varying quantities of capacity. In developing the demand curve, PJM forecasts the expected peak load for a particular Delivery Year and then sets a target level of capacity needed to reliability serve the load—also known as the Reliability Requirement—given the expected resource portfolio. Meanwhile, the auction's supply curve is based on Sell Offers for capacity that Capacity Market Sellers submit at a specific price and, together, the offers comprise the auction's supply curve.

The PJM capacity market is a locational market, meaning that there are defined areas within PJM that have limits on the amount of capacity they can import. Those areas

⁹ As defined in the Tariff, RPM Auctions include a BRA, and typically three Incremental Auctions, associated with each Delivery Year.

are referred to as LDAs, which recognize and quantify the locational value of capacity within the PJM region. The modeled LDAs are determined by, inter alia, comparing the import limit of a LDA (also known as the Capacity Emergency Transfer Limit or “CETL”) to the amount of capacity that needs to be imported into a LDA to meet the reliability criterion (also known as the Capacity Emergency Transfer Objective or “CETO”).¹⁰ Sell Offers are located in specific LDAs based on where those resources are located.

In conducting the RPM Auctions, PJM employs an optimization algorithm for each RPM Auction to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction. The optimization algorithm uses the supply curve and VRR Curve to determine the quantity of Capacity Resources that will be awarded a capacity commitment for each RPM Auction. Offers generally clear in order of price, starting with the lowest price offered, and continuing until the aggregate supply curve intersects the VRR Curve. All offers that clear for the PJM Region or a given LDA are then awarded a capacity commitment associated with a clearing price that is equal to the last offer (i.e., the highest offer) necessary to meet the applicable area’s reliability needs. In an LDA where the supply offers do not meet the demand curve, the cleared supply offers quantity is used to calculate the price on the demand curve,¹¹ which currently could be as high as the greater of the gross Cost of New Entry for the Reference Resource or 150% of the net Cost of New Entry for the Reference Resource.¹² In effect, when there is

¹⁰ An LDA is modeled when the CETL is less than 1.15 times the CETO of an area. See Reliability Assurance Agreement, Schedule 10.1, section B (“RAA”).

¹¹ See Tariff, Attachment DD, section 5.12(a).

¹² See Tariff, Attachment DD, section 5.10(a)(i).

insufficient supply to meet the reliability needs, the clearing price will rise significantly, up to a cap equal to the greater of the gross Cost of New Entry for the Reference Resource or 150% of the net Cost of New Entry for the Reference Resource, to provide a market signal that additional resources are needed in a particular area.¹³

Upon the completion of the auction process, final auction results are posted as soon as possible, which sets the clearing price that Capacity Market Sellers would be paid in the defined Delivery Year for their committed Capacity Resource, while also setting the price that Load Serving Entities in a given area that will pay in the defined Delivery Year for the capacity that is procured. Those costs are then passed down from the Load Serving Entities to individual end-use customers within the PJM Region.

II. THE AUCTION PROCESS REVEALED AN UNANTICIPATED AND IMPROPER CONSEQUENCE FROM THE INCLUSION OF PLANNED GENERATION CAPACITY RESOURCES

The BRA for the 2024/2025 Delivery Year commenced on December 7, 2022, and the auction offer window closed on December 13, 2022. While the window for capacity offers for this BRA has closed, PJM is still in the process of conducting the auction clearing before the results are posted for Market Participants and any capacity commitments are awarded. While the Tariff does not specify a deadline to complete the auction or a deadline to post final auction results, it does require PJM to “post the results of each auction as soon

¹³ The purpose of this cap is to help to guard against low reliability events in the event there are insufficient resources to meet the capacity needs of load in a particular area. The application of such a cap is appropriate and needed if an area is actually in need of additional supply. However, in the circumstance described herein, inclusion of Planned Generation Capacity Resources and planned Intermittent Resources that do not participate in the RPM Auction yields a Locational Deliverability Area Reliability Requirement that is not representative of the actual capacity needs of a particular LDA. Therefore, in such circumstances, an inaccurate Locational Deliverability Area Reliability Requirement does not represent the actual reliability needs of the LDA and would result in incorrect price signals potentially up to the cap if the quantity is sufficiently large.

thereafter as possible.”¹⁴ Here, under the circumstances described in further detail below (an overstated and inaccurate Locational Deliverability Area Reliability Requirement in a small LDA due to Planned Generation Capacity Resources not participating in the auction), it is not possible to complete the 2024/2025 BRA and post auction clearing prices prior to the resolution of these filings. As such, no Capacity Market Seller will be awarded a capacity commitment for the 2024/2025 BRA until the auction is completed.

In preliminary price calculations, PJM discovered that there could be an anomalous auction result in the DPL-S LDA where the clearing price may be approximately four times what it should be, despite the fact that the fundamentals (i.e., no new elections of Fixed Resource Requirement (“FRR”) Entities or significant change to demand, supply or transmission capabilities) of the LDA remain largely unchanged from prior years. To be clear, to the extent the LDA is tight on capacity, prices would be expected to separate and be higher than the rest of the RTO. However, in this case, as a result of this confluence of events (the application of the Locational Deliverability Area Reliability Requirement increasing the reliability requirement based on the expected participation of Planned Generation Capacity Resources in a small LDA that then did not actually offer into the auction) the prices become no longer linked to the actual reliability requirements of the LDA and the reliability needs of the LDA are not properly reflected in the auction results.

Upon further investigation, PJM discovered the primary driver of the anomaly: Certain Planned Generation Capacity Resources and planned Intermittent Resources in the DLP-S LDA did not offer into the 2024/2025 BRA despite such resources being included

¹⁴ Tariff, Attachment DD, section 5.11(e) requires PJM to “post the results of each auction as soon thereafter as possible.”

in the modeling assumptions that formed the Locational Deliverability Area Reliability Requirement. The absence of these resources from the 2024/2025 BRA resulted in an overstated Locational Deliverability Area Reliability Requirement that was greater than and inconsistent with the actual reliability needs for the LDA. Consequently, the BRA clearing price for the 2024/2025 Delivery Year would not yield a just and reasonable outcome absent accepting this filing or granting PJM's separate but related FPA section 206 filing. This is because the inclusion of Planned Generation Capacity Resources that do not participate in the RPM Auction yields a Locational Deliverability Area Reliability Requirement that is higher than actual conditions and therefore is not representative of the actual capacity needs of this particular LDA.

To prospectively remedy this issue, the Locational Deliverability Area Reliability Requirement should be revised to allow PJM to exclude from the reliability requirement calculation all Planned Generation Capacity Resources that did not participate in the auction in LDAs where the reliability requirement materially increases by more than one percent compared with the values used in the relevant RPM Auctions from the prior Delivery Year due to the addition of such Planned Generation Capacity Resources.

A. The Locational Deliverability Area Reliability Requirement Is One Component of the Variable Resource Requirement Curve Used in the Reliability Pricing Model Auction.

In conducting the RPM Auctions, PJM utilizes the VRR Curve for the PJM Region as well as for certain LDAs "to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability Principles and Standards."¹⁵ The Locational Deliverability Area Reliability Requirement plays a central role in shaping

¹⁵ Tariff, Attachment DD, section 5.10(a).

each of the three points on the VRR Curve, which in turn is ultimately used as the demand curve for the RPM Auctions.¹⁶

For the BRA associated with the 2024/2025 Delivery Year, the Locational Deliverability Area Reliability Requirement for one particular LDA appeared to significantly increase. More specifically, as shown in the table below, the Locational Deliverability Area Reliability Requirement DPL-S LDA, which is the smallest modeled LDA in PJM, increased by approximately 12% from the prior year. As further explained below, the primary cause of the increase to the Locational Deliverability Area Reliability Requirement for DPL-S was not load growth, but was instead due to a large quantity of Planned Generation Capacity Resources and new Intermittent Resources that were expected to be offered into the BRA associated with the 2024/2025 Delivery Year and were therefore modeled in the CETO calculation as if load would have relied on such resources as capacity.¹⁷

¹⁶ *See id.*

¹⁷ *PJM Manual 20: PJM Resource Adequacy Analysis*, PJM Interconnection, L.L.C., 32 (Aug. 25, 2021), <https://www.pjm.com/-/media/documents/manuals/m20.ashx> (Specifies that for purposes of determining what planned resources are included in the Locational Deliverability Area Reliability Requirement as projected internal capacity and the CETO modeling, any “planned generation resource addition or planned increase in rating that has executed an Interconnection Service Agreement (ISA) is modeled.”).

LDA Reliability Requirements and Capacity Import Limits for 2023/2024 and 2024/2025 BRAs

LDA	2023/2024 BRA		2024/2025 BRA		Delta			
	Reliability Requirement (UCAP MW)	CETL (MW)	Reliability Requirement (UCAP MW)	CETL (MW)	Reliability Requirement (UCAP MW)	CETL (MW)	Reliability Requirement (Percent)	CETL (Percent)
MAAC	63,819.0	6,381.0	63,518.0	5,965.0	-301.0	-416.0	0%	-7%
EMAAC	35,590.0	8,704.0	35,415.0	8,594.0	-175.0	-110.0	0%	-1%
SWMAAC	14,329.0	8,389.0	14,299.0	7,947.0	-30.0	-442.0	0%	-5%
PS	11,217.0	9,022.0	11,166.0	8,287.0	-51.0	-735.0	0%	-8%
PS NORTH	5,768.0	4,349.0	5,715.0	4,253.0	-53.0	-96.0	-1%	-2%
DPL SOUTH	3,141.0	2,008.0	3,514.0	2,009.0	373.0	1.0	12%	0%
PEPCO	7,163.0	7,160.0	7,151.0	7,033.0	-12.0	-127.0	0%	-2%
ATSI	14,649.0	10,213.0	14,434.0	10,465.0	-215.0	252.0	-1%	2%
ATSI-Cleveland	5,363.0	4,728.0	5,374.0	4,941.0	11.0	213.0	0%	5%
COMED	24,077.0	5,781.0	23,859.0	4,640.4	-218.0	-1,140.6	-1%	-20%
BGE	7,522.0	5,615.0	7,514.0	5,397.0	-8.0	-218.0	0%	-4%
PL	10,251.0	4,916.0	10,214.0	4,337.0	-37.0	-579.0	0%	-12%
DAYTON	3,924.0	4,022.0	3,922.0	3,918.0	-2.0	-104.0	0%	-3%
DEOK	6,847.0	5,632.0	6,881.0	4,999.0	34.0	-633.0	0%	-11%

B. PJM Includes Planned Internal Capacity and the Capacity Emergency Transfer Objective in the Calculation of the Locational Deliverability Area Reliability Requirement.

The increase to the Locational Deliverability Area Reliability Requirement for DPL-S caused by the Planned Generation Capacity Resources at issue was made consistent with the Tariff requirement. More particularly, the Locational Deliverability Area Reliability Requirement is defined, in relevant part, as “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.”¹⁸ In turn, the CETO is defined as “the amount of electric energy that a given area must be able to import in order to remain within a loss of load expectation of one event in 25 years when the area is experiencing a localized capacity emergency.”¹⁹ Based on these definitions, the Locational Deliverability Area Reliability Requirement is a function of the sum of the LDA’s internal load demand

¹⁸ Tariff, Definitions L-M-N (definition of Locational Deliverability Area Reliability Requirement).

¹⁹ RAA, Definitions (definition of Capacity Emergency Transfer Objective).

and the sum of (i) the CETO reductions triggered by including expected resources in the LDA and (ii) the total Unforced Capacity (“UCAP”) value assigned to all expected internal capacity resources in the LDA. In its basic form, the Locational Deliverability Area Reliability Requirement is expressed formulaically as:

$$\text{Internal Projected Capacity (expressed in UCAP) + CETO for the LDA}$$

Planned Generation Capacity Resources, which include planned Intermittent Resources, are included in the Locational Deliverability Area Reliability Requirement as projected internal capacity and offset by decreases in the CETO. The PJM Manuals specify that for purposes of determining what planned resources are included in the Locational Deliverability Area Reliability Requirement as projected internal capacity and the CETO modeling, any “planned generation resource addition or planned increase in rating that has executed an Interconnection Service Agreement (ISA) is modeled.”²⁰ Thus, consistent with this requirement, PJM includes all resources with an executed ISA that specifies a commercial operate date that falls on or before the first day of the Delivery Year (June 1) being analyzed in the Locational Deliverability Area Reliability Requirement prior to the auction.

At first glance, one may conclude that the increase in projected internal capacity should be entirely offset by a corresponding one-for-one decrease to the CETO value. In fact, this is the generally the case when a Planned Generation Capacity Resource is added

²⁰ See *PJM Manual 18: PJM Capacity Market*, PJM Interconnection, L.L.C., 28 n.7 (Sept. 21, 2022), <https://www.pjm.com/-/media/documents/manuals/m18.ashx>. (“PJM Manual 20: PJM Resource Adequacy Analysis, Section 4 PJM Capacity Emergency Transfer Objective Analysis, Subsection 4.3 Modeling Specifics for further details on the resources included in projected internal capacity.”) In turn, PJM Manual 20 explains that in modeling CETO, “planned generation resource addition or planned increase in rating that has executed an Interconnection Service Agreement (ISA) is modeled.” *PJM Manual 20: PJM Resource Adequacy Analysis*, PJM Interconnection, L.L.C., 32 (Aug. 25, 2021), <https://www.pjm.com/-/media/documents/manuals/m20.ashx>.

to a large LDA or when a planned solar resource is added to a summer peaking LDA. However, this is not the case when large Planned Generation Capacity Resources and planned solar resources are added to a relatively small LDA that is close to winter peaking such as DPL-S. That is because the reliability value of a large Planned Generation Capacity Resource or planned solar resource used to calculate the CETO for a small LDA is lower than the resource's projected internal capacity value, which is based on a class average forced outage rate ("EFOR_D") or Effective Load Carrying Capability value, respectively, derived from the PJM Region.

When a resource is significantly large relative to the size of the LDA in which it is located, the load in that LDA becomes much more dependent on the resource. Put another way, a large resource in a small LDA takes on an outsized share of that load's requirement. Thus, while such a resource is able to serve a significant portion of the load in the LDA, the possibility of a forced outage for a large resource greatly increases the reliability risk for such a small LDA. Similarly, Intermittent Resources can have a lower capacity value for an LDA than the RTO-wide average if the resources inability to produce energy aligns with the riskiest hours of the year for the LDA more so than it does for the PJM Region. This is particularly the case where a proportionately large quantity of solar resources are planned in a near-winter peaking LDA, such as DPL-S, because solar resources are not as productive in the winter than the summer periods.²¹

Due to the reduced reliability value that these resources have in a small LDA, the CETO value must be adjusted to account for large Planned Generation Capacity Resources

²¹ The winter requirements in the DPL-S may be driven by resistance heating load and the agricultural nature of this area given the sizable number of poultry farms in the region.

and Intermittent Resources to meet a loss of load expectation of one event in 25 years, consistent with the CETO definition.²² In short, the addition of a large Planned Generation Capacity Resource and planned Intermittent Resources in a small LDA reduces the CETO less than the projected internal capacity UCAP value of the addition. This is done to account for the greater dependence that the load in such LDA would have on an outsized resource or an Intermittent Resource, the output of which is misaligned with the riskiest hours of the year, which is not fully reflected in the UCAP value assigned in the projected internal capacity. As a result, a smaller CETO reduction value is associated with the added Planned Generation Capacity Resource than the projected internal capacity UCAP value of the added Planned Generation Capacity Resource. Simply put, the Planned Generation Capacity Resource creates a higher Locational Deliverability Area Reliability Requirement because the increase to the projected internal capacity is greater than the decrease to the overall CETO for the LDA.

C. Analysis of the Auction Submittals Revealed an Inconsistency with the CETO Assumptions for the DPL-S LDA.

Under normal circumstances, the Locational Deliverability Area Reliability Requirement, calculated consistent with the approach described above, results in just and reasonable outcomes as it accounts for the greater dependency of such resources in an LDA. As explained above, this is because the CETO allows the LDA to meet a loss of load expectation of one event in 25 years when a large Planned Generation Capacity Resource goes into service in a small LDA or when a planned Intermittent Resource is added to a winter peaking LDA.

²² See RAA, Definitions (definition of Capacity Emergency Transfer Objective).

In this instance, however, certain large Planned Generation Capacity Resource, which include a large quantity of planned Intermittent Resources, located in DPL-S and included in the modeling assumptions used to calculate the Locational Deliverability Area Reliability Requirement did not offer their capacity in the 2024/2025 BRA. As a result, the Locational Deliverability Area Reliability Requirement should not have been increased for the DPL-S LDA given that the large Planned Generation Capacity Resources and planned Intermittent Resources did not participate in the BRA for the 2024/2025 Delivery Year. This is because the load in that LDA would not be dependent on this resource for reliability. Put another way, certain large Planned Generation Capacity Resources and planned Intermittent Resources are not expected to be physically available to serve as capacity for the 2024/2025 Delivery Year so the Locational Deliverability Area Reliability Requirement should not include such resources. Otherwise, the inclusion of such resources would artificially inflate the clearing price for the LDA by signaling the need for additional capacity to meet the 1 in 25 loss of load expectation for resources that are not actually serving load as capacity (i.e., load is not dependent on such resources for reliability).

The consequence of including Planned Generation Capacity Resources in the Locational Deliverability Area Reliability Requirement when such resources do not actually participate in the RPM Auction is that the reliability requirement reflects a need for more resources than the actual reliability needs for the LDA. This in turn creates a VRR Curve in a small LDA that artificially reflects a higher demand for capacity than appropriate. This results in a fundamental mismatch between the actual load requirements and the resource supply stack, which ultimately yields an artificially inflated clearing price that is unjust and unreasonable. More particularly, based on preliminary auction data, PJM

estimates that the clearing price for the DPL-S LDA would be more than four times what it otherwise should be if the Locational Deliverability Area Reliability Requirement is updated to accurately reflect only those resources that actually participated in the BRA.

D. The Issue Identified in This Filing Cannot Be Fixed by the Incremental Auction Associated with the 2024/2025 Delivery Year.

PJM would not be able to correct the design flaw through sales of excess capacity commitments in the Incremental Auction. The majority of the capacity is cleared in the BRA so prices and quantities in Incremental Auctions are generally much lower than in BRAs. This is because there are generally a limited amount of resources that seek to procure replacement capacity or “buy back” their capacity commitments altogether. Thus, any revenues obtained from selling back excess capacity in the Incremental Auction would not prevent uneconomic, unjust and unreasonable results that unduly harm consumers.

E. The Issue Identified in This Filing Also Cannot Be Fixed by Having PJM Assess Whether Resources Might Be Offered into the Auction Before Including Resources in the Locational Deliverability Area Reliability Requirement.

Consistent with its Manuals, PJM includes any planned generation resource addition or planned increase in rating that has executed an ISA in the Locational Deliverability Area Reliability Requirement and the commercial operation date specified in such ISA is on or before the first day of the Delivery Year being analyzed.²³ It would not be appropriate for PJM to simply remove Planned Generation Capacity Resources that did not participate in the auction from the Locational Deliverability Area Reliability Requirement prior to the auction window closing based on PJM’s speculation of whether such resources would be offered into the RPM Auctions for a couple of reasons. First, the

²³ See *supra* note 20.

Capacity Market Seller and/or developer of the resource are best equipped to gauge whether the resource will be in-service by the Delivery Year and whether to take on the risks associated with being a committed Capacity Resource. Second, if PJM incorrectly assessed the viability of a resource and excluded such resource from the Locational Deliverability Area Reliability Requirement but the resource owner ended up submitting a Sell Offer for the resource, the reliability risk associated with that resource would not have been properly accounted. That could result in a loss of load expectation that is greater than 1 in 25 years for the LDA. This is why PJM is proposing a solution described below that does not require speculation from PJM to address the identified issue.

III. PROPOSED AMENDMENT TO THE LOCATIONAL DELIVERABILITY AREA RELIABILITY REQUIREMENT

To be clear, the Locational Deliverability Area Reliability Requirement appropriately accounts for all Planned Generation Capacity Resources, including planned Intermittent Resources, to meet the 1 in 25 loss of load expectation had those resources participated in the auction. Rather, the issue is simply a gap in the Tariff rules that address a circumstance where large Planned Generation Capacity Resources, which include planned Intermittent Resources, have an outsized impact to the reliability needs in a small LDA and those resources do not participate in the RPM Auction. This particular scenario has never occurred until the 2024/2025 BRA..

To address this recently identified issue, PJM proposes to remedy this issue by prospectively providing for the ability to amend the Locational Deliverability Area Reliability Requirement prior to the completion of the auction process in instances where Planned Generation Capacity Resources have the effect of materially increasing the reliability requirement for an LDA and do not participate in an RPM Auction. More

particularly, PJM proposes that during the auction process, it be required to exclude from the Locational Deliverability Area Reliability Requirement calculation Planned Generation Capacity Resources that do not participate in the BRA when the Locational Deliverability Area Reliability Requirement materially increased by more than one percent compared with the values used in the relevant RPM Auctions from the prior Delivery Year due to the addition of such Planned Generation Capacity Resources. To further clarify, the Locational Deliverability Area Reliability Requirement for the BRA would be compared with the Locational Deliverability Area Reliability Requirement from prior year's BRA. Meanwhile, the Locational Deliverability Area Reliability Requirement for the Incremental Auction would be compared with the Locational Deliverability Area Reliability Requirement from the applicable prior Base Residual or Incremental Auction from the same Delivery Year. For example, the Locational Deliverability Area Reliability Requirement for the 2024/2025 Base Residual Auction would be compared with the value used in the 2023/2024 Delivery Year, while the Third Incremental Auction for the 2026/2027 Delivery Year would be compared with the reliability requirement used in clearing the 2026/2027 Second Incremental Auction. This clarification is necessary given that PJM typically conducts multiple RPM Auctions throughout the year to procure capacity for different Delivery Years²⁴ so there are different sets of Locational Deliverability Area Reliability Requirements used for each Delivery Year.

It is reasonable to base the materiality threshold using one percent as the standard because it is the cumulative addition of sufficiently large Planned Generation Capacity Resources in a small LDA that causes the identified issue. Using a materiality standard of

²⁴ Tariff, Attachment DD, section 5.4.

one percent avoids having to arbitrarily define a MW value for what constitutes a small LDA.

The ability to update the Locational Deliverability Area Reliability Requirement during the auction process would allow the reliability requirement to reflect Planned Generation Capacity Resources, including planned Intermittent Resources, which will actually be counted on by load in the LDA for reliability. This would avoid circumstances where the Locational Deliverability Area Reliability Requirement is increased to account for Planned Generation Capacity Resources where load does not depend on such resources for reliability from a capacity perspective.

A. PJM's Proposed Tariff Language is Just and Reasonable.

As explained above, without the ability to reflect information gathered during the auction process, the Locational Deliverability Area Reliability Requirement would not accurately reflect the actual reliability needs of the LDA and ultimately produce a VRR Curve that results in improper market signals (i.e., signaling the need for additional capacity to account for potential forced outages associated with an outsized resource for a small LDA). Based on the foregoing, a viable solution to accurately reflect the Locational Deliverability Area Reliability Requirement before the auction results are finalized is by providing the ability to exclude Planned Generation Capacity Resources from the reliability requirement when such resources are not offered into the RPM Auctions. Accordingly, PJM proposes to revise the definition of Locational Deliverability Area Reliability Requirement in the Tariff, as shown in blackline below:

“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. Notwithstanding the foregoing, effective with the 2024/2025 Delivery Year, during the auction process, the Office of Interconnection shall exclude from the Locational Deliverability Area Reliability Requirement any Planned Generation Capacity Resource in an LDA that does not participate in the relevant RPM Auction as projected internal capacity and in the Capacity Emergency Transfer Objective model where the Locational Deliverability Area Reliability Requirement for the Base Residual Auction increases by more than one percent over the reliability requirement used from the prior Delivery Year's Base Residual Auction (for Incremental Auctions the Locational Deliverability Area Reliability Requirement would be compared with the reliability requirement used in the prior relevant RPM Auction associated with the same Delivery Year) for that LDA due to the cumulative addition of such Planned Generation Capacity Resources.

Additionally, PJM also proposes to prospectively include an additional factor to be considered in the optimization algorithm when evaluating the Sell Offers and other inputs during the auction process. Specifically, PJM proposes to specify that the optimization algorithm will also utilize the most updated Locational Deliverability Requirement Reliability Requirement when evaluating the Sell Offers and other inputs during the auction process. Accordingly, for the optimization algorithm used in the BRA, PJM proposes to amend Tariff, Attachment DD, section 5.12(a), as shown in blackline below:

a) Base Residual Auction

For each Base Residual Auction, the optimization algorithm shall consider:

...

- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement; ~~and~~
- For the 2024/2025 and subsequent Delivery Years, the Locational Deliverability Requirement Reliability Requirement, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Base Residual Auction; and
- For the 2020/2021 Delivery Year and subsequent Delivery Years, the requirement that the cleared quantity of Summer-Period Capacity Performance Resources equal the cleared quantity of Winter-Period Capacity Performance Resources for the PJM Region.

Likewise, for the optimization algorithm used in the Incremental Auctions, PJM proposes to amend Tariff, Attachment DD, section 5.12(b), as shown in blackline below:

b) Scheduled Incremental Auctions.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

...

- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement, and for the 2024/2025 Delivery Year and subsequent Delivery Years, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Incremental Auction;

Absent the proposed ability to include this additional factor in the optimization algorithm, PJM would be forced to utilize an inaccurate Locational Deliverability Area Reliability Requirement that does not reflect the actual capacity needs of the particular LDA in question and would result in an unjust and unreasonable outcome.

B. PJM's Proposed Remedy Can Prospectively Be Applied Beginning with the Current 2024/2025 BRA.

PJM's proposed solution to address this unique circumstance is prospective and can be applied beginning with the current 2024/2025 BRA. The Tariff requires PJM to "post the results of each auction as soon . . . as possible" after conducting the RPM Auctions. Thus, the Tariff implicitly acknowledges that there is an auction process where PJM produces a supply curve based on all of the valid Sell Offers and validates initial solutions before finalizing the auction results. It is only during this auction process that PJM would know whether Planned Generation Capacity Resources and planned Intermittent Resources that were modeled in developing the Locational Deliverability Area Reliability Requirement actually participated in the relevant RPM Auction. This auction process

remains ongoing given the issue that was discovered when clearing the auction for the 2024/2025 BRA. Thus, if the Commission accepts PJM's proposed modification, PJM could simply apply the new rule in the auction process before posting final auction results associated with the 2024/2025 BRA.

PJM anticipates that certain entities may argue this approach is flawed because Market Participants should be able to rely on the Locational Deliverability Area Reliability Requirements that are posted as part of the planning parameters. Such arguments, however, neglect to consider the fact that the Tariff already requires PJM to adjust the Locational Deliverability Area Reliability Requirement *after* the bidding window closes (but before the conclusion of the auction). Specifically, PJM is required to make "any adjustments to PJM Region or LDA Reliability Requirements to reflect Price Responsive Demand with a PRD Reservation Price equal to or less than the applicable Base Residual Auction clearing price."²⁵ In other words, when Price Response Demand clear an RPM Auction, the Locational Deliverability Area Reliability Requirement is adjusted to account for Price Responsive Demand on the demand side. This effectively means that any previously posted Locational Deliverability Area Reliability Requirement necessarily changes and is updated during the auction process after the bidding window closes whenever Price Responsive Demand clears the auctions. As a result, there is already no expectation that the Locational Deliverability Area Reliability Requirement is set in stone and cannot change after the bidding window closes.

²⁵ Tariff, Attachment DD, section 5.11(e).

IV. THIS PROPOSED AMENDMENT IS ENTIRELY CONSISTENT WITH THE FILED-RATE DOCTRINE AND THE RULE AGAINST RETROACTIVE RATEMAKING

This proposal is entirely consistent with the filed-rate doctrine and the rule against retroactive ratemaking. Specifically, as explained below, because PJM’s proposed tariff amendment: (i) does not violate any specific deadline or date contained within the text of the Tariff; (ii) effectuates an *existing* tariff provision providing prior notice to customers that PJM may seek Commission approval of tariff modifications where “imminent severe economic harm to electric consumers requires a prompt Section 205 filing;”²⁶ (iii) will only impact future actions not yet taken in the auction process—namely, the inclusion of the correct Locational Deliverability Area Reliability Requirement in the optimization algorithm used in conducting the 2024/2025 BRA; and (iv) because no capacity awards have been made or final results posted, there is not a final rate for which any entity has an entitlement or settled expectation at this time.

Notably, until the auction results are final and the auction results are validated, no Capacity Market Seller is awarded a capacity commitment for any resource that participated in the RPM Auction. In other words, the auction concludes only after Capacity Resources that clear an RPM Auction receive capacity commitments based on the posting of final auction results.

Undeniably, Capacity Market Sellers have submitted bids into the auction based on the planning parameters. But in this case, it was the action of certain Capacity Market

²⁶ Tariff, section 9.2(b) (“PJM may file with less than a full 7 day advance consultation in circumstances where imminent harm to system reliability or imminent severe economic harm to electric consumers requires a prompt Section 205 filing; provided that PJM shall provide as much advance notice and consultation with the Transmission Owners and the PJM Members Committee as is practicable in such circumstances, and no such emergency filing shall be made with less than 24 hours advance notice.”).

Sellers with planned resources in the DPL-S LDA that did not to participate in the auction, rather than the posted planning parameters, which gave rise to the unjust and unreasonable mismatch between prices and actual reliability conditions in this LDA. As a result, there was no specific planning parameter reliance let alone a capacity award that would trigger application of the filed-rate doctrine. Simply put, PJM is not proposing to change rates, or terms and conditions of service, relating to its past duties. Rather, PJM is only proposing to change the rules applicable to its future performance in completing the auction process. Thus, PJM's proposed Tariff provisions will have a limited prospective application only and thus not violate the filed-rate doctrine.

A. *The Circumstances Presented in this Filing Are Entirely Distinguishable from Prior Precedent.*

PJM's proposed Tariff amendment is consistent with the filed-rate doctrine and the rule against retroactive ratemaking because it does not violate any textually designated specific deadline. In *Oklahoma Gas*,²⁷ the United States Court of Appeals for the District of Columbia Circuit ("D.C. Circuit") affirmed the Commission's denial of a request for waiver of a specific provision of Southwest Power Pool, Inc.'s ("SPP") tariff, specifically on the basis that the provision at issue contained a clear and unambiguous deadline. While the applicable tariff provision explicitly required SPP to invoice certain charges *monthly*, and to make any adjustments within *one year*, SPP took *eight years* to implement the provision, during which time SPP did not invoice for the applicable charges. The court found that "[b]ecause the one-year time bar for billing is part of the filed rate, FERC could not retroactively waive it, even to remedy the arguable windfall for users of the upgraded

²⁷ *Okl. Gas & Elec. Co. v. FERC*, 11 F.4th 821 (D.C. Cir. 2021) ("*Oklahoma Gas*").

transmission networks.”²⁸ Clearly, the circumstances in the present case can be entirely distinguished from those in *Oklahoma Gas* given that PJM has not concluded the 2024/2025 BRA and because the Tariff expressly contemplates and provides notice of the ability of PJM to make emergency filings to address “imminent severe economic harm.”²⁹

The Commission similarly views a specific deadline or “date certain” as a relevant factor when applying the filed-rate doctrine, as noted by Commissioner Danly this month in *EDF Renewables, Inc.*, an order involving a request for waiver.³⁰

Allow me to draw the correct distinction between the two species of cases that the majority seeks to confuse. **I have either supported or concurred in orders in which tariffs contained prior notice requirements in advance of the closing of a transaction or in advance of a deactivation. Those cases are different. In those cases, a date-certain had not passed. Had the waiver requests been denied, the entity could have delayed the closing date or deactivation date such that no tariff violation would ever have occurred. If granted, the parties could provide notice shortly before closing, whenever that closing might happen. By granting the waiver, the Commission is informing all parties that the Commission will not require the advance notice specified in the tariff. Because no required deadline had passed, that actually is a prospective waiver request.** But those are not the facts here, nor are they the facts in cases cited by the majority.³¹

Here, rather than identifying a specific deadline, the Tariff requires PJM to “post the results of each auction as soon . . . as possible” after conducting the RPM Auctions, in acknowledgement that additional process is necessary before the full effectuation of the

²⁸ *Id.* at 825.

²⁹ Tariff, section 9.2(b).

³⁰ See *EDF Renewables, Inc.* 181 FERC ¶ 61,189, at Danly Dissent (2022).

³¹ *Id.* at Danly Dissent, P 6 (citing *CPV Fairview, LLC*, 174 FERC ¶ 61,029 (2021); *UGI Dev. Co.*, 172 FERC ¶ 61,196 (2020)).

filed-rate via validation and finalization of the results and the awarding of capacity commitments to Capacity Market Sellers.

Additionally, PJM's proposed Tariff amendment will only impact future actions not yet completed in the auction process—namely, the application of the correct Locational Deliverability Area Reliability Requirement for the DPL-S LDA. This is consistent with the Commission's June 15, 2020 order,³² which permitted PJM to use a revised updated PJM Region Peak Load Forecast for the Second Incremental Auction associated with the 2021/2022 Delivery Year, to reflect the impact of the unforeseeable economic consequences of the COVID-19 pandemic. In that case, PJM had timely posted (before February 1, 2020) an updated PJM Region Peak Load Forecast for the 2021/2022 delivery year, and complied with Tariff, Attachment DD, section 5.10(e). However, in light of the major forecasted economic consequences of the COVID-19 pandemic and their impact on forecast PJM Regional load levels during the 2021/2022 delivery year, PJM sought permission to use a revised updated PJM Region Peak Load Forecast (updated and different from the PJM Region Peak Load Forecast that had previously been posted). In granting the waiver, the Commission found that "PJM's waiver request is prospective," because "PJM is seeking a waiver of its future obligation to clear the Second Incremental Auction using the updated PJM Region Peak Load Forecast it posted before February 1, 2020" and "[i]nstead, PJM seeks to clear the auction in July 2020 using an updated forecast that reflects the significant economic impact of COVID-19."³³ Here, the Commission acceptance of PJM's proposed Tariff amendment would similarly apply because it allows

³² See *PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,208 (2020).

³³ *Id.* at P 15.

PJM to use an updated Locational Deliverability Area Reliability Requirement to clear the 2024/2025 BRA.

B. PJM’s Tariff Expressly Allows PJM to Propose Changes Where There Is Imminent Severe Economic Harm to Electric Consumers as Is the Case Here.

PJM’s proposed Tariff amendment effectuates an *existing* Tariff provision providing prior notice to customers that PJM may seek Commission approval of tariff modifications where “imminent severe economic harm to electric consumers requires a prompt Section 205 filing.” Specifically, Tariff, section 9.2(b) describes the “Rights of the Transmission Provider,” and explicitly states that:

PJM may file with less than a full 7 day advance consultation in circumstances where imminent harm to system reliability or imminent severe economic harm to electric consumers requires a prompt Section 205 filing; provided that PJM shall provide as much advance notice and consultation with the Transmission Owners and the PJM Members Committee as is practicable in such circumstances, and no such emergency filing shall be made with less than 24 hours advance notice.

In its 2012 order on PJM’s Order No. 719 compliance filing,³⁴ the Commission acknowledged the importance of Tariff, section 9.2(b), and specifically cited this provision as a basis for declining to require PJM to implement a “circuit breaker” to cap excessive charges during shortage pricing conditions. Specifically, the Commission found that “section 9.2(b) of the PJM [Tariff] gives PJM . . . the ability to respond to emergency circumstances, and [we] will not require PJM to implement, or rely on, circuit breaker provisions.”³⁵ In its subsequent order on rehearing, the Commission, citing Tariff, section 9.2(b), explained that “PJM has authority to act if it determines that an emergency requires

³⁴ *PJM Interconnection, L.L.C.*, 139 FERC ¶ 61,057 (2012).

³⁵ *Id.* at P 232.

the suspension of shortage pricing to address imminent harm to reliability or consumers,” and “[i]n its role as an RTO, PJM has a responsibility to determine when/if such an emergency filing should be made with the Commission and can apply for a waiver of the Commission’s 60-day prior notice requirement under such circumstances.”³⁶ Although in that case the issue involved shortage pricing in the energy market, the Tariff provision at issue is not so limited and applies across-the-board as an effective notice provision to stakeholders to address “imminent severe economic harm to electric consumers” across PJM markets.

Here, PJM is doing exactly what the Commission previously stated and expected when there is the risk of imminent severe economic harm to consumers. As explained below, PJM is submitting this filing pursuant to Tariff, section 9.2(b) given the “imminent severe economic harm to electric consumers” in the DPL-S LDA since load could incur capacity costs that are more than four times the amount that the load should pay if the Locational Deliverability Area Reliability Requirement accurately reflects the reliability needs of the LDA based on actual participation seen in the auction. Thus, this type of imminent severe economic harm is precisely what the Tariff allows PJM to fix *before* the auction results are finalized. Otherwise, Tariff, section 9.2(b) would be meaningless if PJM is not allowed to apply the revised rule that addresses the identified Tariff gap described above before the auction results are finalized for the 2024/2025 BRA. In other words, the authority provided under Tariff, section 9.2(b) places all Market Participants on notice that PJM has the ability to propose a remedy to outcomes that would otherwise be unjust and unreasonable *before* it is too late (i.e., before final auction results are posted).

³⁶ *PJM Interconnection, L.L.C.*, 141 FERC ¶ 61,096, at P 11 (2012).

Any other interpretation would make the inclusion of the term “imminent” meaningless as severe economic harm would have already resulted and there would be no reason to make an emergency filing at that point.

C. RPM Auction Results May Be Subject to Change by the Commission When There Are Errors.

In addition to the previously mentioned provision, PJM Tariff, Attachment DD, section 5.11(e) provides further notice to Market Participants and reinforces the Commission’s inherent authority pursuant to section 206 of the FPA to ensure just and reasonable results. Although the section in part discusses PJM’s ability to correct errors, it also places Market Participants on notice of the Commission’s inherent FPA section 206 authority to correct anomalous results before the market closes and capacity awards are made. This provision explicitly provides that the initially posted auction results may be “review[ed] by FERC[.]”³⁷ which would suspend all deadlines contained in this subsection. The only logical interpretation of this provision is that upon review of a potential error, the Commission may correct any such potential error from the initial posting of the auction results. Therefore, this Tariff language clearly places Market Participants on notice that the Commission may correct an error to the initial posting of auction results and change any such initial results to ensure just and reasonable rates.

Here, PJM discovered that there could be an unjust and unreasonable result if PJM were to procure an amount of capacity in excess of what is actually needed in the LDA based upon the non-participation of Planned Generation Capacity Resources. Specifically, the inclusion of Planned Generation Capacity Resources in the Locational Deliverability

³⁷ Tariff, Attachment DD, section 5.11(e).

Area Reliability Requirement that did not offer in the 2024/2025 BRA is not representative of the actual capacity needs of the DPL-S LDA. If this overstated reliability requirement is not corrected, the outcome of the auction would be in error because the optimization algorithm would not be “applied to calculate the overall clearing result to minimize the cost of satisfying the reliability requirements across the PJM Region.”³⁸

PJM itself does not have the ability to correct this situation, but the Commission can by accepting PJM’s proposed correction and directing PJM to finalize the results on that basis. Given that the Tariff, Attachment DD, section 5.11(e) places Market Participants on notice of potential changes to fix errors *after* the initial auction results are posted, the Tariff surely also allows the Commission to prospectively fix such errors prior to the completion of the auction and the actual awarding of capacity obligations, which is precisely what PJM is proposing through this filing.

V. STAKEHOLDER PROCESS

As noted, *supra*, absent acceptance of this filing, consumers in the DPL-S LDA would have to pay more than four times more for capacity in one Delivery Year than they otherwise should have paid if an accurate Locational Deliverability Area Reliability Requirement is used to clear the auction. Given this imminent severe economic harm to electric consumers in DPL-S if PJM were to complete the auction clearing process and award capacity commitments absent the proposed amendment, PJM did not seek stakeholder endorsement prior to submitting this proposed revision and is instead submitting this emergency filing pursuant to Tariff, section 9.2(b) and the Consolidated Transmission Owners Agreement (“CTOA”), section 7.5.1(ii). Consistent with those

³⁸ Tariff, Attachment DD, section 5.12(a).

provisions, PJM provided more than 24-hours' notice of the proposed revisions and the need to make this emergency filing to the Transmission Owners and the Members Committee of the proposed revisions on the December 21, 2022.³⁹ Accordingly, PJM fulfilled its consultation obligations under the Tariff and CTOA prior to the submission of this section 205 filing. Based on its review of the matter, the PJM Board of Managers also authorized PJM to submit the Tariff modifications pursuant to section 206 of the FPA along with this companion filing pursuant to section 205 of the FPA.

VI. WAIVER

To provide for market certainty as early as possible, PJM requests waiver of the Commission's 60-days' notice requirement⁴⁰ to allow for the proposed revisions to become effective one as soon as day after the date of this filing (i.e., December 24, 2022). Courts have explained that "[t]he Commission, for good cause shown, may allow changes to take effect without requiring the sixty days' notice herein provided for by an order specifying the changes so to be made and the time when they shall take effect and the manner in which they shall be filed and published."⁴¹ Here, good cause exists for the Commission to allow for the proposed changes to become effective as soon as December 24, 2022, given that

³⁹ See *Members Committee Agenda*, PJM Interconnection, L.L.C., item 3 (Dec. 21, 2022), <https://www.pjm.com/-/media/committees-groups/committees/mc/2022/20221221/agenda.ashx>, see also *2024/2025 BRA Update and PJM Notice of Consultation with the Members Committee pursuant to Tariff Section 9.2(b) and Transmission Owners pursuant to CTOA Section 7.5.1(ii)*, PJM Interconnection, L.L.C. (Dec. 21, 2022), <https://www.pjm.com/-/media/committees-groups/committees/mc/2022/20221221/item-03-2024-2025-bra-update-and-pjm-notice-of-consultation-with-the-members-committee.ashx>.

⁴⁰ See 18 C.F.R. § 35.3(a).

⁴¹ *Consol. Edison Co. of N.Y., Inc. v. FERC*, 347 F.3d 964, 969 (DC Cir. 2003) (quoting FPA, section 205(d)).

this filing would reduce charges that Load Serving Entities would otherwise have to pay absent these revisions.⁴²

Lastly, given that this filing proposes amendments to the Tariff that are identical to the proposed revisions in the separate 206 filing, PJM also requests that the Commission establish the same 28-day comment period to be applicable to both filings.

VII. 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:

Craig Glazer
Vice President–Federal Government Policy
PJM Interconnection, L.L.C.
1200 G Street, N.W., Suite 600
Washington, D.C. 20005
(202) 423-4743 (phone)
Craig.Glazer@pjm.com

Chenchao Lu
Assistant General Counsel
PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403
(610) 666-2255 (phone)
(610) 666-8211 (fax)
Chenchao.Lu@pjm.com

VIII. DOCUMENTS ENCLOSED

This filing consists of the following:

1. This transmittal letter; and
2. Revisions to the Tariff (in redlined and clean format (as Attachments A and B, respectively) and in electronic tariff filing format as required by Order No. 714).⁴³

⁴² See *Central Hudson Gas & Elec. Corp.*, 60 FERC ¶ 61,106 at 61,338 (1992) (“We will generally grant waiver of the 60-day prior notice requirement in the following instances: . . . (2) filings that reduce rates and charges—such as rate decreases or new services that provide the customer of a utility with an opportunity to reduce its purchases of other, more expensive service from the same utility.”).

⁴³ *Electronic Tariff Filings*, Order No. 714, 124 FERC ¶ 61,270 (2008), *final rule*, Order No. 714-A, 147 FERC ¶ 61,115 (2014).

IX. SERVICE

PJM has served a copy of this filing on all PJM members, the PJM Independent Market Monitor, and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,⁴⁴ PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx> with a specific link to the newly filed document, and will send an email on the same date as this filing to all PJM members and all state utility regulatory commissions in the PJM Region⁴⁵ alerting them that this filing has been made by PJM and is available by following such link. PJM also serves the parties listed on the Commission's official service list for this docket. 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 FERC's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

⁴⁴ See 18 C.F.R. §§ 35.2(e), 385.2010(f)(3).

⁴⁵ PJM already maintains, updates, and regularly uses email lists for all PJM members and affected state commissions.

X. CONCLUSION

For the reasons set forth herein, PJM respectfully requests that the Commission accept PJM's proposed amendment as a just and reasonable replacement rate.

Respectfully submitted,

/s/ Chenchao Lu

Chenchao Lu
Assistant General Counsel
PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403
(610) 666-2255 (phone)
(610) 666-8211 (fax)
Chenchao.Lu@pjm.com

**Attorney for
PJM Interconnection, L.L.C.**

Craig Glazer
Vice President–Federal Government Policy
PJM Interconnection, L.L.C.
1200 G Street, N.W., Suite 600
Washington, D.C. 20005
(202) 423-4743 (phone)
Craig.Glazer@pjm.com

December 23, 2022

Attachment A

Revisions to the PJM Open Access Transmission Tariff

(Marked/Redline Format)

Definitions – L – M – N

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 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. Notwithstanding the foregoing, effective with the 2024/2025 Delivery Year, during the auction process, the Office of Interconnection shall exclude from the Locational Deliverability Area Reliability Requirement any Planned Generation Capacity Resource in an LDA that does not participate in the relevant RPM Auction as projected internal capacity and in the Capacity Emergency Transfer Objective

model where the Locational Deliverability Area Reliability Requirement for the Base Residual Auction increases by more than one percent over the reliability requirement used from the prior Delivery Year's Base Residual Auction (for Incremental Auctions the Locational Deliverability Area Reliability Requirement would be compared with the reliability requirement used in the prior relevant RPM Auction associated with the same Delivery Year) for that LDA due to the cumulative addition of such Planned Generation Capacity Resources.

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.

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 Direct 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-Dispatched Charging Energy:

“Non-Dispatched Charging Energy” shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant 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-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.

5.12 Conduct of RPM Auctions

The Office of the Interconnection shall employ an optimization algorithm for each Base Residual Auction and each Incremental Auction to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction.

a) Base Residual Auction

For each Base Residual Auction, the optimization algorithm shall consider:

- all Sell Offers submitted in such auction;
- the Variable Resource Requirement Curves for the PJM Region and each LDA;
- any constraints resulting from the Locational Deliverability Requirement and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a);
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement; ~~and~~
- For the 2024/2025 and subsequent Delivery Years, the Locational Deliverability Requirement Reliability Requirement, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Base Residual Auction; and
- For the 2020/2021 Delivery Year and subsequent Delivery Years, the requirement that the cleared quantity of Summer-Period Capacity

Performance Resources equal the cleared quantity of Winter-Period Capacity Performance Resources for the PJM Region.

The optimization algorithm shall be applied to calculate the overall clearing result to minimize the cost of satisfying the reliability requirements across the PJM Region, regardless of whether the quantity clearing the Base Residual Auction is above or below the applicable target quantity, while respecting all applicable requirements and constraints, including any restrictions specified in any Credit-Limited Offers. Where the supply curve formed by the Sell Offers submitted in an auction falls entirely below the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all such Sell Offers. Where the supply curve consists only of Sell Offers located entirely below the Variable Resource Requirement Curve and Sell Offers located entirely above the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. In determining the lowest-cost overall clearing result that satisfies all applicable constraints and requirements, the optimization may select from among multiple possible alternative clearing results that satisfy such requirements, including, for example (without limitation by such example), accepting a lower-priced Sell Offer that intersects the Variable Resource Requirement Curve and that specifies a minimum capacity block, accepting a higher-priced Sell Offer that intersects the Variable Resource Requirement Curve and that contains no minimum-block limitations, or rejecting both of the above alternatives and clearing the auction at the higher-priced point on the Variable Resource Requirement Curve that corresponds to the Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. For the 2020/2021 Delivery Year and subsequent Delivery Years, the supply curve formed by the Sell Offers submitted within an LDA for which a separate VRR Curve is established, shall only consider the quantity of MW from Summer-Period Capacity Performance Resources that are equally matched with Winter-Period Capacity Performance Resources within the LDA, such that only the equally matched quantity of opposite-season Sell Offers are considered in satisfying the LDA's reliability requirement.

The Sell Offer price of a Qualifying Transmission Upgrade shall be treated as a capacity price differential between the LDAs specified in such Sell Offer between which CETL is increased, and the Import Capability provided by such upgrade shall clear to the extent the difference in clearing prices between such LDAs is greater than the price specified in such Sell Offer. The Capacity Resource clearing results and Capacity Resource Clearing Prices so determined shall be applicable for such Delivery Year. The Capacity Resource clearing results and Capacity Resource Clearing Prices determined for Summer-Period Capacity Performance Resources shall be applicable for the calendar months of June through October and the following May of such Delivery Year; and shall be applicable for Winter-Period Capacity Performance Resources for the calendar months of November through April of such Delivery Year.

b) Scheduled Incremental Auctions.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- Updated LDA Reliability Requirements taking into account any updated Capacity Emergency Transfer Objectives;
- The Capacity Emergency Transfer Limit used in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement, and for the 2024/2025 Delivery Year and subsequent Delivery Years, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Incremental Auction;
- For Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each LDA for which PJM is required to establish a separate VRR Curve for the Base Residual Auction for the relevant Delivery Year; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a);
- For the 2020/2021 Delivery Year and subsequent Delivery Years, the requirement that the cleared quantity of Summer-Period Capacity Performance Resources equal the cleared quantity of Winter-Period Capacity Performance Resources for the PJM Region;
- A demand curve consisting of the Buy Bids submitted in such auction and, if indicated for use in such auction in accordance with the provisions below, the Updated VRR Curve Increment;

- The Sell Offers submitted in such auction; and
- The Unforced Capacity previously committed for such Delivery Year.

(i) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by Tariff, Attachment DD, section 5.4(c)(2), the Office of the Interconnection shall employ in the clearing of such auction the Updated VRR Curve Increment.

(ii) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by Tariff, Attachment DD, section 5.4(c)(1), and the conditions stated in Tariff, Attachment DD, section 5.4(c)(2) do not apply, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year plus any amount required by section 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of Tariff, Attachment DD, sections 5.14B, 5.14C, 5.14E, *and 5.5A(c)(i)(B)* and RAA, Schedule 6, section L.9, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 and 2017/2018 Delivery Years associated with the transition provisions in Tariff, Attachment DD, section 5.14D where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, with exception for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. In seeking to sell back such quantity for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a curve represented by a straight line connecting two points with the first point located at 0 megawatts and at a price set to the lowest price point of the Updated VRR Curve Decrement and the second point located at a megawatt amount corresponding to the negative quantity defined above and at a price set to the Resource Clearing Price of the 2017/2018 Base Residual Auction.

(iii) When the possible need to seek agreements to release capacity commitments in any Scheduled Incremental Auction is indicated for the PJM Region or any

LDA by Tariff, Attachment DD, section 5.4(c)(3)(i), the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year minus any capacity sell-back amount determined by PJM to be required for the PJM Region or such LDA by Tariff, Attachment DD, section 5.4(c)(3)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of Tariff, Attachment DD, sections 5.14B, 5.14C, 5.14E, *and* 5.5A(c)(i)(B) and RAA, Schedule 6, section L.9, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 and 2017/2018 Delivery Years associated with the transition provisions in Tariff, Attachment DD, section 5.14D where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E; provided, however, that the amount sold in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade may not exceed the amounts purchased in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, with exception for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. In seeking to sell back such quantity for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a curve represented by a straight line connecting two points with the first point located at 0 megawatts and at a price set to the lowest price point of the Updated VRR Curve Decrement and the second point located at a megawatt amount corresponding to the negative quantity defined above and at a price set to the Resource Clearing Price of the 2017/2018 Base Residual Auction.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from

the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection shall not seek to procure the Short-Term Resource Procurement Target Applicable Share more than once for such region or area for such auction

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) then the Minimum Annual Resource Requirement for such Auction will be equal to the updated Minimum Annual Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity from Annual Resources, and the Minimum Extended Summer Resource Requirement for such Auction will be equal to the updated Minimum Extended Summer Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years from Annual Resources and Extended Summer Demand Resources. If PJM seeks to release prior committed capacity due to a triggering of the test in subsection (iii) then PJM may not release prior committed capacity from Annual Resources or Extended Summer Demand Resources below the updated Minimum Annual Resource Requirement and updated Minimum Extended Summer Resource Requirement, respectively.

(vi) If the above tests are triggered for an LDA and for another LDA wholly located within the first LDA, the Office of the Interconnection may adjust the amount of any Sell Offer or Buy Bids otherwise required by subsections (i), (ii), or (iii) above in one LDA as appropriate to take into account any reliability impacts on the other LDA.

(vii) The optimization algorithm shall calculate the overall clearing result to minimize the cost to satisfy the Unforced Capacity Obligation of the PJM Region to account for the updated PJM Peak Load Forecast and the cost of committing replacement capacity in response to the Buy Bids submitted, while satisfying or honoring such reliability requirements and constraints, in the same manner as set forth in subsection (a) above.

(viii) Load Serving Entities may be entitled to certain credits ("Excess Commitment Credits") under certain circumstances as follows:

- (A) For either or both of the Delivery Years commencing on June 1, 2010 or June 1, 2011, if the PJM Region Reliability Requirement used for purposes of the Base Residual Auction for such Delivery Year exceeds the PJM Region Reliability Requirement that is based on the last updated load forecast prior to such Delivery Year, then such excess will be allocated to Load Serving Entities as set forth below;

- (B) For any Delivery Year beginning with the Delivery Year that commences June 1, 2012, the total amount that the Office of the Interconnection sought to sell back pursuant to subsection (b)(iii) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such auctions, less the total amount that the Office of the Interconnection sought to procure pursuant to subsections (b)(i) and (b)(ii) above in the Scheduled Incremental Auctions for such Delivery Years that does not clear such auctions, will be allocated to Load Serving Entities as set forth below;
- (C) the amount from (A) or (B) above for the PJM Region shall be allocated among Locational Deliverability Areas pro rata based on the reduction for each such Locational Deliverability Area in the peak load forecast from the time of the Base Residual Auction to the time of the Third Incremental Auction; provided, however, that the amount allocated to a Locational Deliverability Area may not exceed the reduction in the corresponding Reliability Requirement for such Locational Deliverability Area; and provided further that any LDA with an increase in its load forecast shall not be allocated any Excess Commitment Credits;
- (D) the amount, if any, allocated to a Locational Deliverability Area shall be further allocated among Load Serving Entities in such areas that are charged a Locational Reliability Charge based on the Daily Unforced Capacity Obligation of such Load Serving Entities as of June 1 of the Delivery Year and shall be constant for the entire Delivery Year. Excess Commitment Credits may be used as Replacement Capacity or traded bilaterally.

c) Conditional Incremental Auction

For each Conditional Incremental Auction, the optimization algorithm shall consider:

- The quantity and location of capacity required to address the identified reliability concern that gave rise to the Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction; and
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity and location of capacity required to address the identified reliability violation at a Buy Bid price equal to 1.5 times Net CONE.

The optimization algorithm shall calculate the overall clearing result to minimize the cost to address the identified reliability concern, while satisfying or honoring such reliability requirements and constraints.

d) Equal-priced Sell Offers

If two or more Sell Offers submitted in any auction satisfying all applicable constraints include the same offer price, and some, but not all, of the Unforced Capacity of such Sell Offers is required to clear the auction, then the auction shall be cleared in a manner that minimizes total costs, including total make-whole payments if any such offer includes a minimum block and, to the extent consistent with the foregoing, in accordance with the following additional principles:

1) as necessary, the optimization shall clear such offers that have a flexible megawatt quantity, and the flexible portions of such offers that include a minimum block that already has cleared, where some but not all of such equal-priced flexible quantities are required to clear the auction, pro rata based on their flexible megawatt quantities; and

2) when equal-priced minimum-block offers would result in equal overall costs, including make-whole payments, and only one such offer is required to clear the auction, then the offer that was submitted earliest to the Office of the Interconnection, based on its assigned timestamp, will clear.

Attachment B

Revisions to the PJM Open Access Transmission Tariff

(Clean Format)

Definitions – L – M – N

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 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. Notwithstanding the foregoing, effective with the 2024/2025 Delivery Year, during the auction process, the Office of Interconnection shall exclude from the Locational Deliverability Area Reliability Requirement any Planned Generation Capacity Resource in an LDA that does not participate in the relevant RPM Auction as projected internal capacity and in the Capacity Emergency Transfer Objective

model where the Locational Deliverability Area Reliability Requirement for the Base Residual Auction increases by more than one percent over the reliability requirement used from the prior Delivery Year's Base Residual Auction (for Incremental Auctions the Locational Deliverability Area Reliability Requirement would be compared with the reliability requirement used in the prior relevant RPM Auction associated with the same Delivery Year) for that LDA due to the cumulative addition of such Planned Generation Capacity Resources.

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.

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 Direct 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-Dispatched Charging Energy:

“Non-Dispatched Charging Energy” shall mean all Direct Charging Energy that an Energy Storage Resource Model Participant 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-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.

5.12 Conduct of RPM Auctions

The Office of the Interconnection shall employ an optimization algorithm for each Base Residual Auction and each Incremental Auction to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction.

a) Base Residual Auction

For each Base Residual Auction, the optimization algorithm shall consider:

- all Sell Offers submitted in such auction;
- the Variable Resource Requirement Curves for the PJM Region and each LDA;
- any constraints resulting from the Locational Deliverability Requirement and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a);
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- For the 2024/2025 and subsequent Delivery Years, the Locational Deliverability Requirement Reliability Requirement, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Base Residual Auction; and
- For the 2020/2021 Delivery Year and subsequent Delivery Years, the requirement that the cleared quantity of Summer-Period Capacity

Performance Resources equal the cleared quantity of Winter-Period Capacity Performance Resources for the PJM Region.

The optimization algorithm shall be applied to calculate the overall clearing result to minimize the cost of satisfying the reliability requirements across the PJM Region, regardless of whether the quantity clearing the Base Residual Auction is above or below the applicable target quantity, while respecting all applicable requirements and constraints, including any restrictions specified in any Credit-Limited Offers. Where the supply curve formed by the Sell Offers submitted in an auction falls entirely below the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all such Sell Offers. Where the supply curve consists only of Sell Offers located entirely below the Variable Resource Requirement Curve and Sell Offers located entirely above the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. In determining the lowest-cost overall clearing result that satisfies all applicable constraints and requirements, the optimization may select from among multiple possible alternative clearing results that satisfy such requirements, including, for example (without limitation by such example), accepting a lower-priced Sell Offer that intersects the Variable Resource Requirement Curve and that specifies a minimum capacity block, accepting a higher-priced Sell Offer that intersects the Variable Resource Requirement Curve and that contains no minimum-block limitations, or rejecting both of the above alternatives and clearing the auction at the higher-priced point on the Variable Resource Requirement Curve that corresponds to the Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. For the 2020/2021 Delivery Year and subsequent Delivery Years, the supply curve formed by the Sell Offers submitted within an LDA for which a separate VRR Curve is established, shall only consider the quantity of MW from Summer-Period Capacity Performance Resources that are equally matched with Winter-Period Capacity Performance Resources within the LDA, such that only the equally matched quantity of opposite-season Sell Offers are considered in satisfying the LDA's reliability requirement.

The Sell Offer price of a Qualifying Transmission Upgrade shall be treated as a capacity price differential between the LDAs specified in such Sell Offer between which CETL is increased, and the Import Capability provided by such upgrade shall clear to the extent the difference in clearing prices between such LDAs is greater than the price specified in such Sell Offer. The Capacity Resource clearing results and Capacity Resource Clearing Prices so determined shall be applicable for such Delivery Year. The Capacity Resource clearing results and Capacity Resource Clearing Prices determined for Summer-Period Capacity Performance Resources shall be applicable for the calendar months of June through October and the following May of such Delivery Year; and shall be applicable for Winter-Period Capacity Performance Resources for the calendar months of November through April of such Delivery Year.

b) Scheduled Incremental Auctions.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- Updated LDA Reliability Requirements taking into account any updated Capacity Emergency Transfer Objectives;
- The Capacity Emergency Transfer Limit used in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement, and for the 2024/2025 Delivery Year and subsequent Delivery Years, including any revised Locational Deliverability Area Reliability Requirement based on the actual participation of Planned Generation Capacity Resources in the relevant Incremental Auction;
- For Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each LDA for which PJM is required to establish a separate VRR Curve for the Base Residual Auction for the relevant Delivery Year; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a); and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by Tariff, Attachment DD, section 5.10(a);
- For the 2020/2021 Delivery Year and subsequent Delivery Years, the requirement that the cleared quantity of Summer-Period Capacity Performance Resources equal the cleared quantity of Winter-Period Capacity Performance Resources for the PJM Region;
- A demand curve consisting of the Buy Bids submitted in such auction and, if indicated for use in such auction in accordance with the provisions below, the Updated VRR Curve Increment;

- The Sell Offers submitted in such auction; and
- The Unforced Capacity previously committed for such Delivery Year.

(i) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by Tariff, Attachment DD, section 5.4(c)(2), the Office of the Interconnection shall employ in the clearing of such auction the Updated VRR Curve Increment.

(ii) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by Tariff, Attachment DD, section 5.4(c)(1), and the conditions stated in Tariff, Attachment DD, section 5.4(c)(2) do not apply, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year plus any amount required by section 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of Tariff, Attachment DD, sections 5.14B, 5.14C, 5.14E, and 5.5A(c)(i)(B) and RAA, Schedule 6, section L.9, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 and 2017/2018 Delivery Years associated with the transition provisions in Tariff, Attachment DD, section 5.14D where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, with exception for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. In seeking to sell back such quantity for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a curve represented by a straight line connecting two points with the first point located at 0 megawatts and at a price set to the lowest price point of the Updated VRR Curve Decrement and the second point located at a megawatt amount corresponding to the negative quantity defined above and at a price set to the Resource Clearing Price of the 2017/2018 Base Residual Auction.

(iii) When the possible need to seek agreements to release capacity commitments in any Scheduled Incremental Auction is indicated for the PJM Region or any

LDA by Tariff, Attachment DD, section 5.4(c)(3)(i), the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year minus any capacity sell-back amount determined by PJM to be required for the PJM Region or such LDA by Tariff, Attachment DD, section 5.4(c)(3)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the transition provisions of Tariff, Attachment DD, sections 5.14B, 5.14C, 5.14E, and 5.5A(c)(i)(B) and RAA, Schedule 6, section L.9, minus (E) the quantity of new Unforced Capacity commitments for the 2016/2017 and 2017/2018 Delivery Years associated with the transition provisions in Tariff, Attachment DD, section 5.14D where this quantity is assumed to have been procured in the form of non-Capacity Performance Resources for purposes of this paragraph E; provided, however, that the amount sold in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade may not exceed the amounts purchased in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, with exception for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. In seeking to sell back such quantity for the Third Incremental Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall employ in the clearing of the auction a curve represented by a straight line connecting two points with the first point located at 0 megawatts and at a price set to the lowest price point of the Updated VRR Curve Decrement and the second point located at a megawatt amount corresponding to the negative quantity defined above and at a price set to the Resource Clearing Price of the 2017/2018 Base Residual Auction.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection first shall determine the total quantity of (A) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from

the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection shall not seek to procure the Short-Term Resource Procurement Target Applicable Share more than once for such region or area for such auction

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) then the Minimum Annual Resource Requirement for such Auction will be equal to the updated Minimum Annual Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity from Annual Resources, and the Minimum Extended Summer Resource Requirement for such Auction will be equal to the updated Minimum Extended Summer Resource Requirement (based on the latest DR Reliability Targets) minus the amount of previously committed capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years from Annual Resources and Extended Summer Demand Resources. If PJM seeks to release prior committed capacity due to a triggering of the test in subsection (iii) then PJM may not release prior committed capacity from Annual Resources or Extended Summer Demand Resources below the updated Minimum Annual Resource Requirement and updated Minimum Extended Summer Resource Requirement, respectively.

(vi) If the above tests are triggered for an LDA and for another LDA wholly located within the first LDA, the Office of the Interconnection may adjust the amount of any Sell Offer or Buy Bids otherwise required by subsections (i), (ii), or (iii) above in one LDA as appropriate to take into account any reliability impacts on the other LDA.

(vii) The optimization algorithm shall calculate the overall clearing result to minimize the cost to satisfy the Unforced Capacity Obligation of the PJM Region to account for the updated PJM Peak Load Forecast and the cost of committing replacement capacity in response to the Buy Bids submitted, while satisfying or honoring such reliability requirements and constraints, in the same manner as set forth in subsection (a) above.

(viii) Load Serving Entities may be entitled to certain credits ("Excess Commitment Credits") under certain circumstances as follows:

- (A) For either or both of the Delivery Years commencing on June 1, 2010 or June 1, 2011, if the PJM Region Reliability Requirement used for purposes of the Base Residual Auction for such Delivery Year exceeds the PJM Region Reliability Requirement that is based on the last updated load forecast prior to such Delivery Year, then such excess will be allocated to Load Serving Entities as set forth below;

- (B) For any Delivery Year beginning with the Delivery Year that commences June 1, 2012, the total amount that the Office of the Interconnection sought to sell back pursuant to subsection (b)(iii) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such auctions, less the total amount that the Office of the Interconnection sought to procure pursuant to subsections (b)(i) and (b)(ii) above in the Scheduled Incremental Auctions for such Delivery Years that does not clear such auctions, will be allocated to Load Serving Entities as set forth below;
- (C) the amount from (A) or (B) above for the PJM Region shall be allocated among Locational Deliverability Areas pro rata based on the reduction for each such Locational Deliverability Area in the peak load forecast from the time of the Base Residual Auction to the time of the Third Incremental Auction; provided, however, that the amount allocated to a Locational Deliverability Area may not exceed the reduction in the corresponding Reliability Requirement for such Locational Deliverability Area; and provided further that any LDA with an increase in its load forecast shall not be allocated any Excess Commitment Credits;
- (D) the amount, if any, allocated to a Locational Deliverability Area shall be further allocated among Load Serving Entities in such areas that are charged a Locational Reliability Charge based on the Daily Unforced Capacity Obligation of such Load Serving Entities as of June 1 of the Delivery Year and shall be constant for the entire Delivery Year. Excess Commitment Credits may be used as Replacement Capacity or traded bilaterally.

c) Conditional Incremental Auction

For each Conditional Incremental Auction, the optimization algorithm shall consider:

- The quantity and location of capacity required to address the identified reliability concern that gave rise to the Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a Conditional Incremental Auction; and
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity and location of capacity required to address the identified reliability violation at a Buy Bid price equal to 1.5 times Net CONE.

The optimization algorithm shall calculate the overall clearing result to minimize the cost to address the identified reliability concern, while satisfying or honoring such reliability requirements and constraints.

d) Equal-priced Sell Offers

If two or more Sell Offers submitted in any auction satisfying all applicable constraints include the same offer price, and some, but not all, of the Unforced Capacity of such Sell Offers is required to clear the auction, then the auction shall be cleared in a manner that minimizes total costs, including total make-whole payments if any such offer includes a minimum block and, to the extent consistent with the foregoing, in accordance with the following additional principles:

1) as necessary, the optimization shall clear such offers that have a flexible megawatt quantity, and the flexible portions of such offers that include a minimum block that already has cleared, where some but not all of such equal-priced flexible quantities are required to clear the auction, pro rata based on their flexible megawatt quantities; and

2) when equal-priced minimum-block offers would result in equal overall costs, including make-whole payments, and only one such offer is required to clear the auction, then the offer that was submitted earliest to the Office of the Interconnection, based on its assigned timestamp, will clear.