2024/2025 RPM Base Residual Auction Planning Period Parameters

Introduction

The planning parameters for the 2024/2025 RPM Base Residual Auction (BRA) that is to be conducted in December of 2022 were updated on the PJM RPM website on October 24, 2022. This document describes the posted parameters and provides a comparison to the 2023/2024 BRA planning parameters.

PJM RTO Region Reliability Requirement

The PJM RTO forecast peak load, the PJM RTO Region Reliability Requirement and the parameters used to derive the requirement for the 2024/2025 BRA are shown and compared to the 2023/2024 BRA parameters in Table 1.

The forecast peak load for the PJM RTO for the 2024/2025 Delivery Year is 150,640 MW which increased by 960 MW, or 0.6% compared to the forecast peak load of 149,680 MW for the 2023/2024 BRA. The forecast PJM system peak load is reported in Table B-10 of the January 2022 RPM update of the PJM Load Forecast Report.[1] The PJM RTO Reliability Requirement for the 2024/2025 Delivery Year is 164,108 MW which increased by 941 MW, or 0.6% compared to the 2023/2024 BRA value prior to adjustment for FRR obligation of 163,166 MW.[2]

The Installed Reserve Margin (IRM) and Forecast Pool Requirement (FPR) represent the level of capacity reserves needed to satisfy the PJM reliability criterion of a Loss of Load Expectation not exceeding one occurrence in ten years. The IRM and FPR represent the same level of required reserves but are expressed in different terms of capacity value. The IRM expresses the required reserve level in terms of installed capacity MW (ICAP) as a percent of the forecast peak load, whereas the FPR expresses the required reserve level in terms of unforced capacity MW (UCAP) as a percent of the forecast peak load. The FPR is equal to (1 + IRM) times (1 - Pool-wide Average EFORd). The PJM RTO Reliability Requirement expressed in terms of unforced capacity is used as the basis of the target reserve level to be procured in each RPM BRA and is equal to the forecast RTO peak load, multiplied by the FPR.

[1] The 2022 RPM Forecast is located at https://www.pjm.com/-/media/library/reports-notices/load-forecast/2022-load-report.ashx.

[2] The total UCAP Obligation of all Fixed Resource Requirement (FRR) Entities is subtracted from the PJM RTO Reliability Requirement, and any applicable LDA Reliability Requirement, when determining the target reserve levels to be procured in each RPM BRA.

Table 1 – Reserve Requirement Parameters for 2023/2024 and 2024/2025 BRAs

Reserve Requirement Parameters	2023/2024 BRA	2024/2025 BRA	Change in Value	Change in Percent
Installed Reserve Margin (IRM)	14.80%	14.70%	-0.10%	-0.7%
Pool Wide 5-Year Average EFORd	5.04%	5.02%	-0.02%	-0.4%
Forecast Pool Requirement (FPR)	1.0901	1.0894	-0.0007	-0.1%
Forecast Peak Load (MW)	149,680	150,640	960	0.6%
PJM RTO Reliability Requirement (UCAP MW)	**163,166**	**164,108**	**941**	**0.6%**
FRR Obligation (UCAP MW)*	31,346	32,052	706.1	2.3%
PJM RTO Reliability Requirement adjusted for FRR (UCAP MW)	131,820	132,056	235.3	0.2%

Locational Deliverability Areas

Prior to each BRA, the Capacity Emergency Transfer Objective (CETO) and Capacity Emergency Transfer Limit (CETL) are calculated for each of twenty-seven potential Locational Deliverability Areas (LDAs) that are defined in Schedule 10.1 of the PJM Reliability Assurance Agreement.[3] Pursuant to Section 5.10 of Attachment DD of the PJM Open Access Transmission Tariff (OATT), for any Delivery Year, a separate Variable Resource Requirement (VRR) Curve is established for each LDA for which (1) the CETL is less than 1.15 times its CETO; (2) the LDA had a Locational Price Adder in any one or more of the three immediately preceding BRAs; and (3) the MAAC, EMAAC and SWMAAC LDAs are modeled in a BRA regardless of the outcome of the CETL/CETO test or prior BRA results. An LDA not otherwise qualifying under the above three tests may also be modeled if PJM finds that such LDA is determined to be likely to have a Locational Price Adder based on historic offer price levels or if such LDA is required to achieve an acceptable level of reliability consistent with the Reliability Principles and Standards.

Based on an application of the above criteria, a separate VRR Curve will be established for the 2024/2025 BRA for each of the LDAs listed in Table 2. The list includes the same LDAs that were modeled with a separate VRR Curve in the 2023/2024 BRA. Of the LDAs listed on Table 2, the MAAC, EMAAC, ATSI, BGE, COMED, DEOK, DPL-SOUTH and PS LDAs have cleared with a Locational Price Adder in one or more of the past three BRAs. While none of the other listed LDAs had a Locational Price Adder in any of the last three BRAs or had a CETL to CETO ratio less than 1.15, they will be modeled in order to maintain an acceptable level of reliability consistent with the Reliability Principles and Standards. Establishing a separate VRR Curve for an LDA does not predestine

[3] CETO and CETL values were calculated for each of the twenty-seven potential LDAs defined in Schedule 10.1 of the PJM RAA and these values are shown on the detailed planning parameters spreadsheet posted on the PJM RPM website.

the LDA to clear the BRA with a Locational Price Adder; an LDA will only clear at a higher clearing price if reliability constraints are reached when attempting to import capacity into the LDA in the auction clearing process.

A Reliability Requirement and a separate Variable Resource Requirement (VRR) Curve are established for each LDA that is modeled in the BRA and the LDA CETL acts as a maximum limit on the quantity of capacity that can be imported into the LDA. Table 2 shows the Reliability Requirement and the CETL for each LDA being modeled in the 2024/2025 BRA. For comparison purposes, the LDA Reliability Requirement and CETL values used in the 2023/2024 BRA are also shown in Table 2.

Changes in LDA reliability requirement are primarily driven by changes in the forecast peak load of the LDA and changes in the availability rate of capacity resources located in the LDA. The reliability requirement of an LDA will decrease for a decrease in the forecast peak load of the LDA and an increase in the availability rate of capacity resources located in the LDA. The reliability requirement of an LDA will increase for an increase in the forecast peak load of the LDA and a decrease in the availability rate of capacity resources located in the LDA.

Year-over-year changes in the CETL of an LDA are primarily driven by the addition or removal of transmission facilities, the magnitude and location of generation deactivations and generation additions, and changes in the load distribution profile within the LDA. LDA CETL values for the 2023/2024 BRA vary significantly in some cases from those of the 2022/2023 BRA in both the upward and downward direction but, in general, the magnitude of the changes for most regions lies within the year-to-year changes historically experienced.

Of those LDAs that had a Locational Price Adder in one or more of the last three BRAs, the ATSI LDA CETL had the largest increase as compared to 2023/2024 and the COMED LDA CETL had the largest decrease as compared to 2023/2024. The ATSI LDA CETL is 252 MW higher for the 2024/2025 BRA, a 2% increase from the 2023/2024 BRA CETL. The COMED LDA CETL is 1,141 MW lower for the 2024/2025 BRA, a 20% decrease from the 2023/2024 BRA CETL.

Table 2 – LDA Reliability Requirements and Capacity Import Limits for 2023/2024 and 2024/2025 BRAs

	2023/2024 BRA		2024/2025 BRA		Delta			
LDA	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	3,153.0	1,962.0	12.0	-46.0	0%	-2%
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%

Variable Resource Requirement Curves

A Variable Resource Requirement (VRR) curve is established for the RTO and for each LDA modeled in the BRA. The VRR curve is a downward-sloping demand curve used in the clearing of the BRA that defines the price for a given level of capacity resource commitment relative to the applicable reliability requirement. The VRR curves for the PJM Region and each LDA are based on a target level of capacity and the Net Cost of New Entry (Net CONE). As shown on the posted planning parameters and as discussed in

the Price Responsive Demand (PRD) section of this report, the VRR curve of the RTO and each affected LDA is shifted leftward along the horizontal axis to reflect any PRD that has elected to participate in the 2024/2025 Delivery Year BRA.

Target Level of Capacity
In the development of the VRR curve, the target level of capacity to be procured for the PJM RTO Region is the PJM RTO Region Reliability Requirement, and the target level of capacity for each LDA is the LDA Reliability Requirement.

Net Cost of New Entry (CONE)
The Net CONE (in UCAP terms) is used in the development of the RTO VRR Curve and the VRR Curve for each modeled LDA. Table 3 shows the Net CONE values, and the components used to determine the Net CONE, for the PJM RTO and each LDA to be modeled in the 2024/2024 BRA. For comparison purposes, the CONE values used in the 2023/2024 BRA are also shown in Table 3.

The Net CONE for the RTO and each LDA is equal to the gross CONE applicable to the RTO and each LDA minus the applicable net energy and ancillary services ("EAS") revenue offset. The Net CONE increased for the RTO and for all of the modeled LDAs. The Net CONE of the RTO increased by 6.6% and the increase in LDA Net CONE values ranged from 6.2% for the ATSI, ATSI-CLEVELAND, COMED, DAYTON and DEOK LDAs to 7.2% for the EMAAC, PS, PS NORTH and DPL-SOUTH LDAs. The increase in Net CONE across most LDAs is due to the escalation in Gross CONE values determined as part of the quadrennial review update and the historic EAS values increasing for all LDAs. The Gross CONE values increased in all LDAs, while the calculated Historic Net EAS also increased in all LDAs. The Net EAS values for the 2023/2024 and 2024/2025 Delivery Years are calculated using historic LMP data from calendar years 2019 through 2021.

Table 3 – Net CONE for PJM RTO and LDAs for 2023/2024 and 2024/2025 BRAs

	2023/2024 BRA				2024/2025 BRA				Change in Net CONE	
Location	Gross CONE ICAP Terms ($/MW-Year)	E&AS Offset ICAP Terms ($/MW-Year)	Net CONE ICAP Terms ($/MW-Year)	Net CONE UCAP Terms ($/MW-Day)	Gross CONE ICAP Terms ($/MW-Year)	E&AS Offset ICAP Terms ($/MW-Year)	Net CONE ICAP Terms ($/MW-Year)	Net CONE UCAP Terms ($/MW-Day)	Net CONE UCAP Terms ($/MW-Day)	Net CONE UCAP Terms (%)
RTO	$113,862	$18,300	$95,562	$274.96	$120,968	$19,327	$101,641	$293.19	$18.23	6.6%
MAAC	$114,590	$18,987	$95,603	$275.08	$118,505	$20,062	$98,443	$294.06	$18.98	6.9%
EMAAC	$115,311	$14,050	$101,261	$291.36	$123,118	$14,821	$108,297	$312.39	$21.03	7.2%
SWMAAC	$116,593	$31,540	$85,054	$244.72	$123,920	$33,412	$90,508	$261.07	$16.35	6.7%
PS, PS NORTH	$115,311	$11,182	$104,130	$299.61	$123,118	$11,762	$111,356	$321.21	$21.60	7.2%
DPL SOUTH	$115,311	$23,242	$92,070	$264.91	$123,118	$24,621	$98,496	$284.11	$19.20	7.2%
PEPCO	$116,593	$22,755	$93,839	$270.00	$123,920	$24,052	$99,868	$288.07	$18.07	6.7%
ATSI, Cleveland	$111,731	$20,299	$91,432	$263.07	$118,330	$21,485	$96,845	$279.35	$16.28	6.2%
COMED	$111,731	$12,690	$99,041	$284.97	$118,330	$13,371	$104,959	$302.76	$17.79	6.2%
BGE	$116,593	$40,325	$76,269	$219.44	$123,920	$42,772	$81,148	$234.07	$14.63	6.7%
PL	$111,814	$14,666	$97,147	$279.52	$118,505	$15,455	$103,050	$297.25	$17.73	6.3%
DAYTON	$111,731	$25,910	$85,821	$246.93	$118,330	$27,443	$90,887	$262.17	$15.24	6.2%
DEOK	$111,731	$23,928	$87,803	$252.63	$118,330	$25,330	$93,000	$268.26	$15.63	6.2%

Price Responsive Demand (PRD)

Price Responsive Demand is provided by a PJM Member that represents retail customers having the ability to automatically reduce consumption in response to changing wholesale prices. In the PJM Capacity Market, a PRD Provider may voluntarily make a firm commitment of the quantity of PRD that will reduce its consumption in response to real time energy price during a Delivery Year.

In order to commit PRD for a Delivery Year, a PRD Provider must submit a PRD Plan by August 12th preceding the BRA for such Delivery Year that demonstrates to PJM's satisfaction that the nominated amount of PRD will be available by the start of the Delivery Year and that the Plan satisfies all requirements as described in section 3A of PJM Manual 18: PJM Capacity Market.[4] A PRD Provider that is committing PRD in a BRA must also submit a PRD election in the Capacity Exchange system which indicates the Nominal PRD Value in MWs that the PRD Provider is willing to commit at different reservation prices ($/MW-day). The VRR curve of the RTO and each affected LDA is shifted leftward along the horizontal axis by the UCAP MW quantity of elected PRD where the leftward shift occurs only for the portion of the VRR Curve at or above the PRD Reservation price. Once committed in a BRA, a PRD

[4] PRD Providers must submit a PRD Plan by January 15th preceding the BRA for such Delivery Year during normal BRA scheduled auctions.

commitment cannot be replaced; the commitment can only be satisfied through the registration of price response load in the DR Hub system prior to or during the Delivery Year.

As shown in the 2024/2025 Planning Parameters, 305 MW of PRD across the RTO has elected to participate in the 2024/2025 BRA: 160 MW in the BGE LDA, 110 MW in the PEPCO LDA, and 35 MW in the EMAAC LDA (with 13 MW located in the DPL-SOUTH LDA). By comparison, 235 MW of PRD elected to participate in the 2023/2024 BRA: 110 MW in the BGE LDA, 110 MW in the PEPCO LDA, and 38 MW in the EMAAC LDA (with 15.4 MW located in the DPL-South LDA).

Summary

- The forecast peak load for the PJM RTO for the 2024/2025 Delivery Year is 150,640 MW which is 960 MW, or 0.6%, above the forecast peak load of 149,680 MW for the 2022/2023 BRA.

- The PJM RTO Reliability Requirement for the 2024/2025 Delivery Year is 164,108 MW which is 941 MW, or 0.6%, above the 2023/2024 BRA value prior to adjustment for FRR obligation.

- The MAAC, EMAAC, SWMAAC, PS, PSNORTH, PEPCO, DPL-SOUTH, ATSI, ATSI-CLEVELAND, COMED, BGE, PPL, DAYTON, and DEOK LDAs will be modeled in the 2024/2025 BRA. These are the same LDAs that were modeled in the 2023/2024 BRA.

- 305 MW of PRD across the RTO has elected to participate in the 2024/2025 BRA: 160 MW in the BGE LDA, 110 MW in the PEPCO LDA, and 35 MW in the EMAAC LDA (with 13 MW located in the DPL-SOUTH LDA).

- The Reliability Requirement of the RTO and each LDA will be increased by the total UCAP value of all EE Resources that clear in the auction in order to avoid double counting of cleared EE Resource MW since energy efficiency measures are already reflected in the peak load forecast.

- Adjustments to the CETL and Reliability Requirements for the DPL-SOUTH LDA were made as a result of the FERC decision on Docket ER23-729-000.