2021/2022 RPM Third Incremental Auction Results

Introduction

The 2021/2022 Third Incremental Auction opened on February 22, 2021 and the results were posted on March 5, 2021. This document provides information for PJM stakeholders regarding the results of the 2021/2022 Third Incremental Auction. Incremental Auctions provide both a forum for capacity suppliers to sell and purchase capacity, and a means for PJM to adjust previously committed capacity levels due to Reliability Requirement increases or decreases.

Summary of 2021/2022 RPM Third Incremental Auction Results

Table 1 summarizes the clearing prices and cleared participant activity of the 2021/2022 Third Incremental Auction. The resource clearing price for Capacity Performance (CP) resources located in the rest of RTO is $20.55/MW-day. EMAAC, PSEG and BGE were constrained LDAs in the 2021/2022 Third Incremental Auction with resource clearing prices of $26.36/MW-day, $31.00/MW-day and $39.00/MW-day, respectively.

By comparison, the resource clearing price for CP resources located in the rest of RTO in the 2021/2022 BRA was $140.00/MW-day. The EMAAC, PSEG, BGE, ATSI and COMED were constrained LDAs in the 2021/2022 BRA with resource clearing prices of $165.73/MW-day, $204.29/MW-day, $200.30/MW-day, $171.33/MW-day and $195.55/MW-day respectively

Across the entire RTO, total cleared participant sell offers (5,235.0 MW) exceeded total cleared participant buy bids (4,515.9 MW) by 719.1 MW; thus, participants sold a total net capacity amount of 719.1 MW. PJM effectively procured a total net capacity amount of 719.1 MW, comprised of cleared PJM sell offers totaling 84.0 MW and cleared PJM buy bids totaling 803.1 MW. The cleared PJM buy bid quantity of 803.1 MW reflects an increase in the reliability requirement of the RTO and each applicable LDA and includes 775.2 MW of PJM buy bids associated with an increase in the RTO reliability requirement set equal to the MW value of Energy Efficiency (EE) Resources that cleared in the auction above the EE add-back margin remaining from all prior auctions. The cleared MW quantity of EE Resources above the EE add-back margin remaining from all prior auctions must be offset by a PJM buy bid in order to avoid double-counting of cleared EE Resource MW since energy efficiency measures are directly reflected in each peak load forecast.

2021/2022 RPM Third Incremental Auction Results

Table 1 – Summary of 2021/2022 Third Incremental Auction Results

Region	Clearing Price ($/MW-Day)	Cleared Participant Sell Offers (UCAP MW)(4)	Cleared Participant Buy Bids (UCAP MW)	Net Cleared Participant Buy Bids (UCAP MW)
RTO (minus MAAC) (1)	$20.55	3,193.8	2,415.5	(778.3)
MAAC (minus EMAAC) (2)	$20.55	395.3	607.7	212.4
EMAAC (minus PSEG) (3)	$26.36	929.3	805.7	(123.6)
PSEG	$31.00	472.5	442.9	(29.6)
BGE	$39.00	244.1	244.1	-
RTO Total	--	**5,235.0**	**4,515.9**	**(719.1)**

(1) Comprised of AEP, APS, ATSI,COMED, Dayton, DEOK, DOM, EKPC, Duquesne and External Zones

(2) Comprised of MET-ED, PENELEC, PEPCO and PPL Zones

(3) Comprised of AECO, DPL, JCPL, PECO and RECO Zones

(4) Cleared Participant Sell Offers include Annual and matched Seasonal Capacity Performance cleared sell offers

Participant Sell Offers and Buy Bids

Table 2 shows the offered and cleared quantities for participant sell offers. A total of 14,337.1[1] MW of supply was offered into the Third Incremental Auction composed of uncleared capacity from prior 2021/2022 auctions and new capacity in the form of uprates or new resources that were not previously capacity resources in PJM. Across the entire RTO, 5,235.5 MW of participant sell offers cleared, of which 5,234.5 MW were annual Capacity Performance and 0.5 MW were matched seasonal Capacity Performance.

[1] The total offered supply quantity was determined using the annual Capacity Performance, summer Capacity Performance and winter Capacity Performance sell offers.

2021/2022 RPM Third Incremental Auction Results

Table 2 – Participant Sell Offers (Offered and Cleared Quantities)

LDA	Sell Offers (UCAP MW)*	Cleared Sell Offers (UCAP MW)*
DPL-SOUTH	18.6	18.3
PS-NORTH	333.7	244.8
PSEG (rest of)	269.8	227.7
EMAAC (rest of)	1,531.7	911.0
EMAAC Total	**2,153.8**	**1,401.8**
PEPCO	79.5	67.2
BGE	1,098.1	244.1
SWMAAC (rest of)	31.8	31.8
SWMAAC Total	**1,209.4**	**343.1**
PPL	153.6	62.9
MAAC (rest of)	562.5	233.9
MAAC Total	**4,079.3**	**2,041.7**
ATSI (rest of)	1,344.7	457.7
ATSI-Cleveland	590.9	485.0
COMED	4,793.0	221.7
DAY	85.4	81.4
DEOK	455.2	159.2
RTO (rest of)	2,988.6	1,788.8
RTO Total	**14,337.1**	**5,235.5**

*Values include annual, summer and winter offered and cleared by LDA where the resource is modeled

There were 0.5 MW of seasonal capacity resources cleared in an aggregated manner to form a year-round commitment. 0.5 MW of summer CP resources comprised of 0.3 MW of summer DR and 0.2 MW of intermittent resources cleared along with 0.5 MW of winter CP resources comprised of winter capability from wind resources. Total cleared summer-period sell offers must exactly equal total cleared winter-period sell offers across the entire RTO to ensure that seasonal CP sell offers clear to form annual CP commitments. Table 3 shows a breakdown of the seasonal resources offered and cleared in the 2021/2022 Third Incremental Auction.

Table 3 – Breakdown of Annual and Seasonal Capacity Performance Resources by Resource Type and Season that Offered and Cleared in the 2021/2022 Third Incremental Auction

	Offered MW (UCAP)			Cleared MW (UCAP)		
Resource Type	Annual Capacity Performance	Summer Capacity Performance	Winter Capacity Performance	Annual Capacity Performance	Summer Capacity Performance	Winter Capacity Performance
GEN	13,395.6	30.5	5.3	4,451.7	0.2	0.5
DR	7.6	14.3	0.0	7.6	0.3	0.0
EE	775.2	108.6	0.0	775.2	0.0	0.0
Grand Total	**14,178.4**	**153.4**	**5.3**	**5,234.5**	**0.5**	**0.5**

Table 4 provides a further breakdown of the capacity offered and cleared in the 2021/2022 Third Incremental Auction.

Table 4 - 2021/2022 Third Incremental Auction Supply Resource Mix

Resource Type	Type	Total Sell Offers (MW UCAP)*	Cleared Sell Offers (MW UCAP)*
DEMAND	DEMAND	21.9	7.9
EE	EE	883.8	775.2
GEN	New Generation (including Uprates)	1,638.8	227.5
	Uncleared from Prior Auction	11,792.6	4,224.9
		14,337.1	**5,235.5**

*Values include annual, summer and winter offered and cleared MW

Participant demand in an Incremental Auction is composed of buy bids submitted by participants seeking replacement capacity for a previously committed capacity resource. The buy bids are specified in UCAP terms and, if cleared, are binding commitments to purchase capacity for the entire Delivery Year. Across the RTO participants submitted a total of 12,231.6 MW buy bids, of which 4,515.9 MW cleared. The bid and cleared quantities of participants buy bids are further illustrated by location in Table 5.

Table 5 – Participant Buy Bids (Bid and Cleared Quantities)

LDA	Buy Bids (UCAP MW)	Cleared Buy Bids (UCAP MW)
DPL-SOUTH	134.4	73.5
PS-NORTH	214.7	212.6
PSEG (rest of)	231.7	230.3
EMAAC (rest of)	1,090.6	732.2
EMAAC Total	**1,671.4**	**1,248.6**
PEPCO	231.6	198.6
BGE	328.3	244.1
SWMAAC (rest of)	0.5	0.5
SWMAAC Total	**560.4**	**443.2**
PPL	1,853.8	148.3
MAAC (rest of)	1,186.9	260.3
MAAC Total	**5,272.5**	**2,100.4**
ATSI (rest of)	670.3	296.9
ATSI-Cleveland	683.5	664.4
COMED	2,528.7	327.7
DAY	44.5	39.5
DEOK	151.7	73.8
RTO (rest of)	2,880.4	1,013.2
RTO Total	**12,231.6**	**4,515.9**

PJM Sell Offers and Buy Bids

The total net amount of capacity procured or released by PJM is a function of the clearing of the PJM sell offers and buy bids. Tables 6a and 6b show the offered and cleared quantities of PJM sell offers and PJM buy bids, respectively, employed in the 2021/2022 Third Incremental Auction. Across the entire RTO region, PJM cleared sell offers totaled 84.0 MW, while the PJM cleared buy bid quantity was 803.1 MW; therefore, PJM procured a total net capacity of 719.1 MW.

The cleared PJM buy bid quantity of 803.1 MW includes 775.2 MW of PJM buy bids associated with an increase in the RTO reliability requirement set equal to the MW quantity of EE Resources that cleared in the auction above the EE add-back margin that remained coming into the auction. In the 2021/2022 Third Incremental Auction, 775.2 MW of EE cleared across the entire RTO region relative to the 0 MW EE add-back margin that remained coming into the auction. The cleared MW quantity of EE Resources above the EE add-back margin remaining from all prior auctions must be offset by a PJM buy bid in order to avoid double-counting of cleared EE Resource MW since energy efficiency measures are directly reflected in each peak load forecast.

2021/2022 RPM Third Incremental Auction Results

Table 6a – PJM Sell Offers (Offered and Cleared Quantities)

LDA	Sell Offers (UCAP MW)	Cleared Sell Offers (UCAP MW)
DPL-SOUTH	0.0	0.0
PS-NORTH	0.0	0.0
PSEG (rest of)	61.9	0.0
EMAAC (rest of)	444.0	0.0
EMAAC Total	**505.9**	**0.0**
PEPCO	23.2	23.2
BGE	21.0	0.0
SWMAAC (rest of)	1.7	0.0
SWMAAC Total	**45.9**	**23.2**
PPL	0.0	0.0
MAAC (rest of)	9.0	0.0
MAAC Total	**560.8**	**23.2**
ATSI (rest of)	15.1	0.0
ATSI-Cleveland	0.0	0.0
COMED	60.8	60.8
DAY	0.0	0.0
DEOK	6.3	0.0
RTO (rest of)	0.0	0.0
RTO Total	**643.0**	**84.0**

2021/2022 RPM Third Incremental Auction Results

Table 6b – PJM Buy Bids (Offered and Cleared Quantities)

LDA	Buy Bids (UCAP MW)	Cleared Buy Bids (UCAP MW)
DPL-SOUTH	10.1	10.1
PS-NORTH	28.8	28.8
PSEG (rest of)	0.8	0.8
EMAAC (rest of)	113.5	113.5
EMAAC Total	**153.2**	**153.2**
PEPCO	62.5	62.5
BGE	0.0	0.0
SWMAAC (rest of)	0.0	0.0
SWMAAC Total	**62.5**	**62.5**
PPL	44.7	44.7
MAAC (rest of)	29.0	29.0
MAAC Total	**289.4**	**289.4**
ATSI (rest of)	67.9	67.9
ATSI-Cleveland	22.0	22.0
COMED	87.7	87.7
DAY	27.6	27.6
DEOK	20.7	20.7
RTO (rest of)	287.8	287.8
RTO Total	**803.1**	**803.1**

2021/2022 RPM Third Incremental Auction Configuration

Participant Buy Bids and Sell Offers

RPM Incremental Auctions provide capacity suppliers with an opportunity to sell or purchase capacity for the Delivery Year through a PJM-administered auction process. Resource-specific sell offers are submitted into this auction by suppliers with available, uncommitted capacity. All sell offers into an Incremental Auction from Existing Generation Capacity Resources are subject to market power mitigation through the application of the Market Structure Test.

Any party that desires to purchase replacement capacity for the Delivery Year may do so by submitting a buy bid into the Incremental Auction. Participants submitting a buy bid must specify a MW quantity, price and LDA-specific location. All buy bids in Incremental Auctions for Delivery Years 2021/2022 and forward are of the annual Capacity Performance product type. Cleared buy bids purchased in an Incremental Auction may be used as replacement capacity to cover a Delivery Year commitment provided the cleared buy bid has the same locational characteristics as the resource that it replaces.

PJM Buy Bids and Sell Offers

Sections 5.4 and 5.12 of Attachment DD of the Tariff define the Incremental Auction requirements regarding the procurement or sale of capacity by PJM. Section 5.4 describes the triggering tests used by PJM prior to an Incremental Auction to determine the need for the procurement and/or sale of capacity by PJM in relation to updates of the Reliability Requirement and capacity already procured. Section 5.12 describes the determination of the MW quantities and prices of buy bids and/or sell offers that PJM will submit when the various tests in section 5.4 are triggered.

Prior to each Incremental Auction, PJM recalculates the Reliability Requirement based on an updated peak load forecast, updated Installed Reserve Margin and other updated planning information. For the RTO and each LDA, PJM sums the following component quantities to determine the total quantity that it will seek to procure or release in each Incremental Auction:

- the Updated Reliability Requirement minus the Reliability Requirement utilized in the most recent prior auction conducted for that Delivery Year. Note that this quantity is negative if the Updated Reliability Requirement is less than the Reliability Requirement utilized in the most recent prior auction. For a First or Third Incremental Auction, this difference is only considered if the change in Reliability Requirement is greater than the lesser of 500 MW or 1% of the prior auction's Reliability Requirement,
- plus/minus the amount of committed capacity that PJM sought to procure/release that did not clear in previous Incremental Auctions for the same Delivery Year,

- minus any capacity PJM seeks to release in a parent LDA as a result of any Conditional Incremental Auction commitments for the same Delivery Year.

If the result of such summation is a positive quantity, PJM will seek to procure such quantity by employing a PJM buy bid. The price of the PJM buy bid is based on the Updated VRR Curve Increment which is the portion of the Updated VRR Curve located to the right of the point representing all capacity already procured for the Delivery year. If the result of such summation is a negative quantity, PJM will seek to release such quantity by employing a PJM sell offer. The price of the PJM sell offer is based on the Updated VRR Curve Decrement which is the portion of the Updated VRR curve to the left of the point representing all capacity already procured for the Delivery year.

Based on an application of the Incremental Auction requirements of Sections 5.4 and 5.12 of Attachment DD of the Tariff and summarized above, PJM submitted the sell offers shown in Table 7 into the Third Incremental Auction for the 2021/2022 Delivery Year[2]. Note that a PJM sell offer is indicated by a negative PJM buy bid in Table 7. PJM submitted sell offers for the Third Incremental Auction for the 2021/2022 Delivery totaling 615.1 MW across the RTO. All PJM sell offers were for the annual Capacity Performance product type. Table 7 also defines the pricing points associated with the PJM sell offers.

[2] The determination of the PJM buy bid and sell offer quantities is detailed in the 2021/2022 Third Incremental Auction Planning Parameters located at https://www.pjm.com/-/media/markets-ops/rpm/rpm-auction-info/2021-2022/2021-2022-third-ia-planning-parameters.ashx.

2021/2022 RPM Third Incremental Auction Results

Table 7 – PJM Buy Bids and PJM Sell Offers for 2021/2022 Third Incremental Auction

Location	PJM Buy Bid (MW)(1)	Price Points for PJM Buy Bids and PJM Sell Offers					
		Point 1		Point 2		Point 3	
		x-axis (MW)	y-axis ($/MW-Day)	x-axis (MW)	y-axis ($/MW-Day)	x-axis (MW)	y-axis ($/MW-Day)
RTO (Rest of)	0.0	--	--	--	--	--	--
MAAC (Rest of)	-9.0	0.0	$73.85	9.0	$74.44	--	--
EMAAC (Rest of)	-444.0	0.0	$103.73	444.0	$160.29	--	--
SWMAAC (Rest of)	-1.7	0.0	$41.27	1.7	$41.70	--	--
PS (Rest of)	-61.9	0.0	$191.85	61.9	$217.37	--	--
PS NORTH	27.9	0.0	$234.97	27.9	$213.22	--	--
DPL SOUTH	0.0	--	--	--	--	--	--
PEPCO	-23.2	0.0	$0.00	23.2	$0.00	--	--
ATSI (Rest of)	-15.1	0.0	$99.39	15.1	$103.90	--	--
ATSI-CLEVELAND	0.0	--	--	--	--	--	--
COMED	-60.8	0.0	$0.00	7.2	$0.00	60.8	$11.20
BGE	-21.0	0.0	$179.22	6.0	$181.95	21.0	$198.05
PL	0.0	--	--	--	--	--	--
DAYTON	0.0	--	--	--	--	--	--
DEOK	-6.3	0.0	$78.04	6.3	$82.12	--	--
TOTAL	-615.1						

(1) A PJM Sell Offer is indicated by a negative PJM Buy Bid.

Incremental Auction Clearing

Participant sell offers and buy bids are combined with the PJM sell offers and buy bids shown in Table 7 to form the supply and demand curves. The solution algorithm clears all buy bids and sell offers in a least-cost manner while respecting the capacity import limits into each LDA. Total cleared summer-period sell offers must exactly equal total cleared winter-period sell offers across the entire RTO to ensure that seasonal CP sell offers clear to form annual CP commitments.

Mitigation in the 2021/2022 Third Incremental Auction

All regions of the RTO, including the RTO as a whole, failed the Market Structure Test. As a result, mitigation was applied to Existing Generation Capacity Resources of all jointly pivotal suppliers in the execution of the RPM auction clearing. Therefore, in the event a price-based sell offer exceeded the calculated offer cap of a pivotal supplier's Existing Generation Capacity Resource, the cost-based sell offer was utilized in the RPM auction clearing[3]. Demand Resources and Energy Efficiency Resources are not subject to market power mitigation.

[3] Furthermore, mitigation is only applied to sell offers that would, absent mitigation, increase the Capacity Resource Clearing Price.