Monitoring Analytics

Supplemental Comments to the Maryland PSC Senate Bill 1 Co-location Study Administrative Docket PC 61

The Independent Market Monitor for PJM

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Table of Contents

Introduction

The Independent Market Monitor for PJM (IMM) submits an addendum to the comments previously submitted to the Maryland Public Service Commission (MD PSC) to assist the Public Service Commission in its evaluation of the issues related to co-located load in Maryland.

The IMM supports competitive markets in PJM. Competitive markets provide the lowest possible cost of power, but no lower. Competitive markets only work because the structure of the markets and the behavior of market participants are governed by rules.

Additional Analysis of Potential Impacts

Impact on RPM Revenues

The IMM did additional sensitivity analyses of the impacts of removing different levels of capacity in Maryland and PJM on capacity market prices in Maryland, based on the inputs for the 2025/2026 BRA, including PJM market parameters and the actual offers of capacity resources. The sensitivity analyses include: removing Peach Bottom nuclear plant in Pennsylvania; removing 10,000 MW of nuclear capacity across all PJM nuclear plants except for the Calvert Cliffs nuclear plant; and removing all nuclear capacity in PJM. The results include the increase in overall payments for capacity and the impacts to payments by customers in Maryland.

Table 1 shows the impact of removing the Peach Bottom nuclear plant in Pennsylvania on RPM revenues for the auction. Based on actual auction clearing prices and quantities and uplift MW, total RPM market revenues for the 2025/2026 RPM Base Residual Auction were $14,687,047,358. If Peach Bottom nuclear plant in Pennsylvania did not offer in the 2025/2026 RPM Base Residual Auction and everything else had remained the same, the total RPM market revenues for the 2025/2026 RPM Base Residual Auction would have been $21,867,647,998, an increase of $7,180,600,640, or 32.8 percent, compared to the actual results. From another perspective, inclusion of offers from Peach Bottom nuclear plant in Pennsylvania resulted in a 48.9 percent decrease in RPM revenues for the 2025/2026 RPM Base Residual Auction compared to what RPM revenues would have been had Peach Bottom nuclear plant in Pennsylvania was not offered (Scenario 6).

The cleared capacity for the entire RTO of 134,224.2 MW resulted in a reserve margin of 18.6 percent and a net excess of 870.9 MW over the reliability requirement adjusted for FRR and PRD of 133,353.3 MW.[1] If the Peach Bottom nuclear plant with more than 2,500 MW installed capacity did not offer in the capacity market, the RTO would be short of the reliability requirement. As a result, the clearing prices would be equal to the maximum price (the price coordinate of point A on the VRR curve). For the 2025/2026 RPM Base

[1] These reserve margin calculations do not consider Fixed Resource Requirement (FRR) load.

Residual Auction, the price coordinate of point A ranged between $438.47 per MW-day and $496.46 per MW-day.

The IMM did an additional sensitivity analysis to evaluate the impact of removing MW equal to the unforced capacity of Calvert Cliffs, located in the SWMAAC LDA, from the larger Peach Bottom site, located in the EMAAC LDA.[2] The impact of removing the equivalent of Calvert Cliffs UCAP MW from Peach Bottom was identical to the impact of removing Calvert Cliffs capacity directly (Scenario 2).[3]

The identical impact would not occur under all market conditions. In the 2025/2026 BRA, there was no price separation between the MAAC LDA and its child LDAs, EMAAC and SWMAAC. The MAAC LDA cleared as a single LDA, with the exception of the BGE LDA. In addition, the maximum price on the VRR curves for EMAAC and SWMAAC LDAs were identical. If the parameters and offers were different, the impact of removing the equivalent of Calvert Cliffs capacity from the Peach Bottom capacity could differ from removing the Calvert Cliffs capacity.

Table 2 shows the impact of removing 10,000 UCAP MW from all nuclear capacity in PJM except for the Calvert Cliffs nuclear plant on RPM revenues for the auction. Based on actual auction clearing prices and quantities and uplift MW, total RPM market revenues for the 2025/2026 RPM Base Residual Auction were $14,687,047,358. If 10,000 UCAP MW in total from all nuclear capacity in PJM except for Calvert Cliffs nuclear plant did not offer in the 2025/2026 RPM Base Residual Auction and everything else had remained the same, the total RPM market revenues for the 2025/2026 RPM Base Residual Auction would have been $20,850,062,537, an increase of $6,163,015,180, or 29.6 percent, compared to the actual results. From another perspective, inclusion of offers from 10,000 UCAP MW in total from all nuclear capacity in PJM except for Calvert Cliffs nuclear plant resulted in a 42.0 percent decrease in RPM revenues for the 2025/2026 RPM Base Residual Auction compared to what RPM revenues would have been had 10,000 UCAP MW in total from all nuclear capacity in PJM except for Calvert Cliffs nuclear plant was not offered (Scenario 7).

If 10,000 UCAP MW from all nuclear capacity did not offer in the capacity market, the RTO would be short of the reliability requirement. As a result, the clearing prices would be equal to the maximum price (the price coordinate of point A on the VRR curve). For the 2025/2026 RPM Base Residual Auction, the price coordinate of point A ranged between $438.47 per MW-day and $496.46 per MW-day. The total RPM market revenues for the 2025/2026 RPM Base Residual Auction under Scenario 7 would be lower than the total

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[2] The installed capacity of Calvert Cliffs nuclear resource is 1,770.2 MW. For this scenario, the offered unforced capacity of the Calvert Cliffs nuclear resource was removed from the Peach Bottom nuclear resource.

[3] See Comments to the Maryland PSC Senate Bill 1 Co-location Study Administrative Docket PC 61 (September 24, 2024).

RPM market revenues under Scenario 6 as a result of the reduced amount of capacity offered and cleared. Under Scenario 7, 133,258.3 UCAP MW would clear, while under Scenario 6 125,704.2 UCAP MW would clear the capacity market. If the price is equal to the maximum price, a reduction in offered and cleared MW results in a reduction in total market revenue and a reduction in reliability.

Table 3 shows the impact of removing all nuclear capacity in PJM on RPM revenues for the auction. Based on actual auction clearing prices and quantities and uplift MW, total RPM market revenues for the 2025/2026 RPM Base Residual Auction were $14,687,047,358. If all nuclear capacity in PJM did not offer in the 2025/2026 RPM Base Residual Auction and everything else had remained the same, the total RPM market revenues for the 2025/2026 RPM Base Residual Auction would have been $17,815,985,799, an increase of $3,128,938,441, or 42.1 percent, compared to the actual results. From another perspective, inclusion of offers from nuclear capacity in PJM resulted in a 21.3 percent decrease in RPM revenues for the 2025/2026 RPM Base Residual Auction compared to what RPM revenues would have been had nuclear capacity in PJM was not offered (Scenario 8).

If all nuclear capacity in PJM did not offer in the Capacity market, the RTO would be short of the reliability requirement. As a result, the clearing prices would be equal to the maximum price (the price coordinate of point A on the VRR curve). For the 2025/2026 RPM Base Residual Auction, the price coordinate of point A ranged between $438.47 per MW-day and $496.46 per MW-day. The total RPM market revenues for the 2025/2026 RPM Base Residual Auction under Scenario 8 would be lower than the total RPM market revenues under Scenario 6 and Scenario 7 as a result of the reduced amount of capacity offered and cleared. Under Scenario 7, 133,258.3 UCAP MW would clear, under Scenario 6 125,704.2 UCAP MW would clear and under Scenario 8, 107,226.9 UCAP MW would clear the capacity market. If the price is equal to the maximum price, a reduction in offered and cleared MW results in a reduction in total market revenue and a reduction in reliability.

Summary Results Tables

Table 1 Scenario summary for 2025/2026 RPM Base Residual Auction: Impact on RPM revenue due to the removal of nuclear generation

			Scenario Impact	Percent Change	
Scenario	Scenario Description	RPM Revenue ($ per Delivery Year)	RPM Revenue Change ($ per Delivery Year)	Scenario to Actual	Actual to Scenario
0	Actual results	$14,687,047,358	NA	NA	NA
6	Remove Peach Bottom Nuclear Resource	$21,867,647,998	($7,180,600,640)	(32.8%)	48.9%
7	Remove 10,000 UCAP MW in total from all nuclear resources offered in BRA except for Calvert Cliffs	$20,850,062,537	($6,163,015,180)	(29.6%)	42.0%
8	Remove all nuclear resources offered in BRA	$17,815,985,799	($3,128,938,441)	(17.6%)	21.3%

Table 2 Scenario summary for 2025/2026 RPM Base Residual Auction: Impacts on RPM cleared UCAP MW due to the removal of nuclear generation

		Scenario Impact			
				Percent Change	
Scenario	Scenario Description	Cleared UCAP (MW)	Cleared UCAP Change (MW)	Scenario to Actual	Actual to Scenario
0	Actual results	135,684.0	NA	NA	NA
6	Remove Peach Bottom Nuclear Resource	133,258.3	2,425.7	1.8%	(1.8%)
7	Remove 10,000 UCAP MW in total from all nuclear resources offered in BRA except for Calvert Cliffs	125,704.2	9,979.8	7.9%	(7.4%)
8	Remove all nuclear resources offered in BRA	107,226.9	28,457.1	26.5%	(21.0%)

Impact on Load Charges to Maryland

Table 3 shows the gross and net load charges to Maryland for the 2025/2026 BRA and for Scenario 6. The net load charges are net of the value of Capacity Transfer Rights (CTRs). The value of CTRs reflect the fact that customers pay the highest price only for local capacity and pay the lower price of imported capacity for the capacity imported from elsewhere in PJM.

Table 3 shows that, based on actual auction clearing prices and quantities, make whole MW and RPM zonal UCAP obligation, gross load charges for the 2025/2026 RPM BRA for Maryland were $1,484,226,706. In the 2025/2026 RPM BRA, only 612.9 UCAP MW of BGE capacity resources cleared. The BGE LDA imported 6,031 UCAP MW from the rest of the SWMAAC LDA. The clearing price for the BGE LDA was $196.43 per MW-day higher than the clearing price of the rest of the SWMAAC LDA. The load in the BGE Zone received CTR credits of $357,767,342. After accounting for CTRs, the net load charges for the 2025/2026 RPM BRA for Maryland were $1,126,459,364.

If the Peach Bottom nuclear plant in Pennsylvania was not offered in the 2025/2026 RPM BRA and if the capacity price for Maryland were equal to the weighted average of the Maryland LDAs' clearing prices in the BRA, the load charges for Maryland would have been $1,746,218,711, an increase of $619,759,347, or 55.0 percent higher than in the 2025/2026 BRA.

Table 3 Net load charges for Maryland (Scenario 6)

	Remove Peach Bottom Nuclear Resource					
	BRA ($/Year)			Scenario ($/Year)		
Zone	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation
APS	$165,790,906	$0	$165,790,906	$267,879,203	$0	$267,879,203
BGE	$1,026,536,627	$357,767,342	$668,769,284	$1,010,160,733	$18,109,192	$992,051,541
DPL	$113,156,485	$0	$113,156,485	$189,987,101	$252,040	$189,735,061
Pepco	$178,742,689	$0	$178,742,689	$296,552,905	$0	$296,552,905
Total Maryland	$1,484,226,706	$357,767,342	$1,126,459,364	$1,764,579,943	$18,361,232	$1,746,218,711

Table 4 shows the gross and net load charges to Maryland for the 2025/2026 BRA and for Scenario 2. The net load charges are net of CTRs.

Table 4 shows that, based on actual auction clearing prices and quantities, make whole MW and RPM zonal UCAP obligation, gross load charges for the 2025/2026 RPM BRA for Maryland were $1,484,226,706. In the 2025/2026 RPM BRA, only 612.9 UCAP MW of BGE capacity resources cleared. The BGE LDA imported 6,031 UCAP MW form the rest of the SWMAAC LDA. The clearing price for the BGE LDA was $196.43 per MW-day higher than the clearing price of the rest of the SWMAAC LDA. The load in the BGE Zone received CTR credits of $357,767,342. After accounting for CTRs, the net load charges for the 2025/2026 RPM BRA for Maryland were $1,126,459,364.

If 10,000 UCAP MW in total from all nuclear capacity in PJM except for Calvert Cliffs nuclear plant was not offered in the 2025/2026 RPM BRA and if the capacity price for Maryland were equal to the weighted average of the Maryland LDAs' clearing prices in the BRA, the load charges for Maryland would have been $1,652,555,068, an increase of $526,095,705, or 46.7 percent higher than in the 2025/2026 BRA.

Table 4 Net load charges for Maryland (Scenario 7)

	Remove 10,000 UCAP MW in total from all nuclear resources offered in BRA except Calvert Cliffs					
	BRA ($/Year)			Scenario ($/Year)		
Zone	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation
APS	$165,790,906	$0	$165,790,906	$256,227,824	$0	$256,227,824
BGE	$1,026,536,627	$357,767,342	$668,769,284	$952,904,357	$16,876,903	$936,027,454
DPL	$113,156,485	$0	$113,156,485	$181,024,336	$466,758	$180,557,579
Pepco	$178,742,689	$0	$178,742,689	$279,742,211	$0	$279,742,211
Total Maryland	$1,484,226,706	$357,767,342	$1,126,459,364	$1,669,898,729	$17,343,661	$1,652,555,068

Table 4 shows the gross and net load charges to Maryland for the 2025/2026 BRA and for Scenario 2. The net load charges are net of CTRs.

Table 5 shows that, based on actual auction clearing prices and quantities, make whole MW and RPM zonal UCAP obligation, gross load charges for the 2025/2026 RPM BRA for Maryland were $1,484,226,706. In the 2025/2026 RPM BRA, only 612.9 UCAP MW of BGE capacity resources cleared. The BGE LDA imported 6,031 UCAP MW from the rest of the SWMAAC LDA. The clearing price for the BGE LDA was $196.43 per MW-day higher than the clearing price of the rest of the SWMAAC LDA. The load in the BGE Zone received CTR credits of $357,767,342. After accounting for CTRs, the net load charges for the 2025/2026 RPM BRA for Maryland were $1,126,459,364.

If all nuclear capacity in PJM was not offered in the 2025/2026 RPM BRA and if the capacity price for Maryland were equal to the weighted average of the Maryland LDAs' clearing prices in the BRA, the load charges for Maryland would have been $1,410,735,066, an increase of $284,275,703, or 25.2 percent higher than in the 2025/2026 BRA.

Table 5 Net load charges for Maryland (Scenario 8)

	Remove all nuclear resources offered in BRA					
	BRA ($/Year)			Scenario ($/Year)		
Zone	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation	Zonal Obligation	Value of CTR Credits	Net Zonal Obligation
APS	$165,790,906	$0	$165,790,906	$219,114,238	$0	$219,114,238
BGE	$1,026,536,627	$357,767,342	$668,769,284	$812,908,847	$13,862,728	$799,046,119
DPL	$113,156,485	$0	$113,156,485	$154,416,729	$466,758	$153,949,971
Pepco	$178,742,689	$0	$178,742,689	$238,624,738	$0	$238,624,738
Total Maryland	$1,484,226,706	$357,767,342	$1,126,459,364	$1,425,064,552	$14,329,486	$1,410,735,066