

# Capacity Obligations for Large Load Adjustments (COLA)

*Second Read of Solution Package*

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Markets Implementation Committee

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# Summary of Issue

- New data centers, and other emerging large-load industries, are driving significant forecasted load growth in certain areas of PJM.
  - These forecasted large load additions are incremental to the PJM Load Forecast.
- These forecasted large load additions are leading to **an issue with the assignment of capacity obligations within a zone for future delivery years.**
  - Under the existing process, the capacity obligation is spread to all entities across the zone.
  - This can create a misalignment in the capacity obligations and associated cost impacts of the forecasted load addition.
- As sponsors of the Problem Statement and Issue Charge, AEP and Dominion Energy present the following solution package for stakeholder consideration.
  - *This solution package has been adjusted versus the version presented for First Read at the March 2024 MIC to provide additional clarifications based on stakeholder feedback that do not materially change the proposal.*

# Summary of Solution Package Clarifications

- More specificity added to the Status Quo and Solution Package around the roles of parties in reporting and verifying forecasts of Large Load Adjustments.
- More specificity added to the Solution Package regarding the calculations PJM will perform to implement the proposed solution; these are consistent with PJM's presentation at the March 2024 MIC.
  - Selected slides from PJM's presentation are included in the Appendix.
- Added new design components 11 and 12 to clarify how PJM will provide transparency.

# Review of Interest Identification

- Ensures an unbiased, transparent, traceable process to receive inputs and easily administered calculation of LSE UCAP Obligation.
- Ensure solutions are applicable across all zones for any large load adjustment.
- Send appropriate signals to market participants; prior to the BRA, ensure accurate assignment of Large Load Adjustments between RPM (VRR Curve) and FRR Obligations within a single zone.
- Accurately assign large load adjustments capacity obligations to the appropriate entity.
- Ensure an unbiased, transparent, traceable process to receive inputs to the LSE UCAP Obligation.

# Potential Solution Options for Identified Interests and Design Elements

- **Solution Design Component - Definition of Large Load Adjustment**: Any MW quantity reported and processed through the Load Analysis Subcommittee and subsequently reported in Table B-9 at the Zone/Area level. An Electric Distribution Company (EDC) within the zone will report the forecasted LLAs by Zone/Area unless another Load Serving Entity (LSE; coops; munis) elects to report the LLA forecast itself.
- **Identified Interest**: ensure an unbiased, transparent, traceable process to receive inputs
  - Process for determining data reported in Table B-9 defined in Manual 19 Attachment B that states that the intention of these guidelines is to ensure that any adjustments made to PJM's load forecast model are **properly identified, estimated, and reviewed** prior to incorporation into the forecast; verification methods recently strengthened by Load Analysis Subcommittee.
  - Adjustment Review – each proposed load forecast adjustment will be reviewed with the Load Analysis Subcommittee prior to inclusion in the load forecast. Each requesting EDC and/or LSE will be expected to present on their adjustment request including backup documentation at a September/October LAS meeting. **The final decision on any load adjustment is made by PJM** and will be reflected in the Load Forecast.
  - Any clarification needed to Attachment B falls under Key Work Activity 4 of the Issue Charge: “Ensure rules and business processes associated with load forecasting are in alignment with such revision.”
    - *Approval of AEP/Dominion solution may require codification in Attachment B to further confirm LSE's right if they choose, to control the forecast of their large load adjustments that are submitted to PJM.*

# Potential Solution Options for Identified Interests and Design Elements



- Largely retain status quo in determining Base Zonal Scaling Factors for FRR and RPM LSEs, but excludes the LLA in the Base Zonal Scaling Factor determination if there is an LLA projected within the zone at time of the BRA.
- Largely retain status quo in determining Final Zonal Scaling Factors for FRR and RPM LSEs, but excludes the LLA in the Final Zonal Scaling Factor determination if there is an LLA projected within the zone at the time of Delivery Year.
- Method developed to include a new step to add the LLA to the UCAP Obligations of the appropriate Zone/Area, which consequently adds the LLA to the UCAP obligation of the appropriate LSE based upon the EDC's protocol.

# AEP and Dominion Energy Proposal Matrix

#	Design Components	Priority	Status Quo	AEP/Dominion Package - April MIC
*	Implementation			In 2024, solution in effect for applicable activities associated with the 2026/27 Delivery Year Base Residual Auction (i.e. use of Base FRR/RPM Scaling Factors). In 2025 and beyond, solution in effect for all applicable activities, including those associated with the 2025-26 Delivery Year (i.e. use of Final FRR/RPM Scaling Factors).
1	Definition of Large Load Adjustment	High	No definition exists. <u>Process for determining data reported in Table B-9 defined in Manual 19 Attachment B, but Table B-9 is not specifically referenced and will require further codification of the AEP/Dom solution package.</u>	Any MW quantity reported and processed through the Load Analysis Subcommittee and subsequently reported in Table B-9 at the Zone/Area level. An Electric Distribution Company (EDC) within the zone will report the forecasted LLAs by Zone/Area unless another Load Serving Entities (LSE; coops; munis) elects to report the LLA forecast itself.
2	Definition of Preliminary Zonal Peak Load Forecast used for the calculation of the scaling factors	High	Includes reported large load adjustments by zone, <u>which is currently reported at PJM's discretion in Table B-9. submitted by TO EDC.</u>	Status quo
3	Definition of Final Zonal Peak Load Forecast used for the calculation of the scaling factors	High	Includes reported large load adjustments by zone, <u>which is currently reported at PJM's discretion in Table B-9. submitted by TO EDC.</u>	Status quo
4	Calculation of Base Zonal FRR Scaling Factor	High	FRR = Preliminary Zonal Peak Load Forecast divided by Zonal W/N Summer Peak Load. Calculated at time of BRA  Defined in RAA Schedule 8.1 and Manual 18, Section 11	LLAs will be excluded from the scaling factors and PJM shall calculate an Adjusted Base Zonal FRR Scaling Factor as follows: Adjusted ZPLSF = (Preliminary Zonal Forecast Peak Load - total zonal LLA MWs) divided by Zonal W/N Summer Peak Load.
5	Calculation of Base Zonal RPM Scaling Factor	High	RPM = Preliminary Zonal Peak Load Forecast divided by Zonal W/N Summer Peak Load * OPL Scaling Factor; OPL Scaling Factor = RTO UCAP Obligation for BRA divided by (RTO Preliminary Peak Load Forecast * FPR). Calculated with BRA clearing results.;  Defined in RAA Schedule 8 and Manual 18, Section 7	LLAs will be excluded from the scaling factors and PJM shall calculate an Adjusted Base Zonal RPM Scaling Factor as follows: Adjusted ZPLSF = (Preliminary Zonal Forecast Peak Load - total zonal LLA MWs) divided by Zonal W/N Peak Load.

# AEP and Dominion Energy Proposal Matrix, continued...

#	Design Components	Priority	Status Quo	AEP/Dominion Package - April MIC
6	Calculation of Final Zonal FRR Scaling Factor	High	FRR = Final Zonal Peak Load Forecast divided by Zonal W/N Summer Peak Load. Calculated prior to DY.  Defined in RAA Schedule 8.1 and Manual 18, Section 11	LLAs will be excluded from the scaling factors and PJM shall calculate an Adjusted Final Zonal FRR Scaling Factor as follows: Adjusted ZPLSF = (Preliminary Zonal Forecast Peak Load - total zonal LLA MWs) divided by Zonal W/N Peak Load.
7	Calculation of Final Zonal RPM Scaling Factor	High	RPM = Final Zonal UCAP Obligation/(FPR*Zonal W/N Summer Peak Load) = Final Zonal Peak Load Forecast divided by Zonal W/N Summer Peak Load * OPL Scaling Factor; OPL Scaling Factor = Final RTO UCAP Obligation divided by (RTO Final Peak Load Forecast * FPR). Calculated with 3rd IA clearing results.  Defined in RAA Schedule 8 and Manual 18, Section 7	LLAs will be excluded from the scaling factors and PJM shall calculate an Adjusted Final Zonal RPM Scaling Factor as follows: Adjusted ZPLSF = (Preliminary Zonal Forecast Peak Load - total zonal LLA MWs) divided by Zonal W/N Peak Load.
8	Calculation of Obligation Peak Load (OPL)	High	Sum of Peak Load Contributions by LSE as submitted by EDC for the operating day, where sum must equal Zonal W/N Forecast	LLAs will be reflected in the OPL of the appropriate Zone/Area. PJM shall calculate an adjusted OPL for each Zone/Area as follows: Adjusted OPL MWs = Zone/Area OPL MWs added to result of dividing the Zone/Area's LLA MWs by the adjusted ZPLSF.
9	Use of FRR Scaling Factors in determining preliminary and final daily FRR LSE UCAP Obligation	High	OPL * Final Zonal FRR Scaling Factor * FPR;  Defined in RAA Schedule 8.1 and Manual 18, Section 11	For each FRR Zone/Area: Adjusted OPL MWs for that Zone/Area multiplied by adjusted Final Zonal FRR Scaling Factor multiplied by FPR. EDC allocate to LSE based on EDC protocol.
10	Use of RPM Scaling Factors in determining preliminary and final daily RPM LSE UCAP Obligation	High	OPL * Final Zonal RPM Scaling Factor * FPR  Defined in RAA Schedule 8 and Manual 18, Section 7	For each RPM Zone/Area: Adjusted OPL MWs for that Zone/Area multiplied by adjusted Final Zonal RPM Scaling Factor multiplied by FPR multiplied by OPL Scaling Factor. EDC allocate to LSE based on EDC protocol.
11	Planning Parameter Posting	High	Defined in Section 5.11 of Attachment DD and further enumerated in Manual 18, Section 5.3	PJM will post identified LLAs and adjusted RPM and FRR scaling factors.
12	Planning Parameter Posting Timeline	High	Defined in Section 5.11 of Attachment DD and further enumerated in Manual 18, Section 5.3	PJM will align posting with pre-auction process for planning parameters.



# How do the potential solution options address the identified interest?

Does the following...	By doing...
Ensures an unbiased, transparent, <u>traceable process to receive inputs and easily administered calculation of LSE UCAP Obligation.</u>	Clearly defines LLA as any MW quantity reported in the load forecast Table B-9; PJM will post identified LLAs and adjusted RPM and FRR scaling factors with planning parameters.
Ensure solutions are applicable across all zones for any large load adjustment.	Applies to all zones to appropriate allocation and account for LLA between Zone/Areas.
Send appropriate signals to market participants; prior to the BRA, ensure accurate assignment of Large Load Adjustments between RPM (VRR Curve) and FRR Obligations within a single zone.	Allocates the LLA to the appropriate Zone/Area prior to the Base Residual Auction for the applicable delivery year.
Accurately assign large load adjustments capacity obligations to the appropriate entity.	PJM will assign and account for LLAs to the appropriate Zone/Areas after applying adjusted Zonal Scaling Factors, which consequently adds the LLA to the UCAP obligation of the appropriate LSE based upon the EDC's protocol.

# Stakeholder Process / Schedule

## Schedule & Implementation:

2024

- MIC First Read

March

April

- MIC Second Read & Voting
- MRC First Read

May

- MRC Second Read & Voting

June

- MC Voting

July

- FERC 205 Filing

August

September

- FERC Order

October

- Effective Date for Solution

November

- Solution in Effect for 2026/27 Delivery Year Activities (i.e. use of Base Zonal Scaling Factors)

December

- 2026/27 Delivery Year Base Residual Auction

2025+

- Solution in Effect for All Applicable Activities, including for the 2025/26 Delivery Year (i.e. use of Final Zonal Scaling Factors)

MIC     MRC/MC

March-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31


September-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December-24						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

# APPENDIX: Slides from PJM Presentation at March 2024 MIC



## Zone/Area Capacity Obligations Status Quo vs Proposed


- The table of the next slide shows the equations used to determine the capacity obligation of each zone/area for the status quo, as well as, for under the proposal
  - Examples of the application of these equations is provided in Appendix B
- The table shows an equation for a zone/area served under FRR and separate equation for a zone/area served by RPM. While a zone may contain both FRR and RPM load, the load of a zone/area can only be one or the other:
  - If zone/area is FRR, the capacity obligation MW represents the MW quantity that must be satisfied by the FRR Entity's Capacity Plan.
  - If zone/area is RPM, the capacity obligation MW is multiplied by the OPLSF to determine the UCAP Obligation MW of the zone/area. The UCAP Obligation MW of a zone/area is multiplied by the Final Zonal Capacity Price to determine the daily RPM charge to the load of the zone/area.

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9

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# APPENDIX: Slides from PJM Presentation at March 2024 MIC



## Zone/Area Capacity Obligation Determination SQ versus AEP/DOM Proposal

	Status Quo Capacity Obligation MW Determinations	AEP/Dominion Proposal Capacity Obligation MW Determinations
<b>FRR Zone/Area</b>	(OPL MW * ZPLSF * FPR)	(Adj. OPL MW * Adj. ZPLSF * FPR)
<b>RPM Zone/Area</b>	(OPL MW * ZPLSF * FPR * OPLSF)	(Adj. OPL MW * Adj. ZPLSF * FPR * OPLSF)

**OPL MW** : the "Obligation Peak Load MW" of the zone/area as determined by the EDC as the zone/area's MW share of the Zonal W/N Peak Load.

**ZPLSF** : the Zonal Peak Load Scaling Factor is equal to the Zonal Forecast Peak Load divided by the Zonal W/N Peak Load.

**FPR** : the Forecast Pool Requirement of the relevant delivery year.

**OPLSF** : the Obligation Peak Load Scaling Factor is equal to the total UCAP MW procured across the RTO in RPM auctions for the delivery year divided by the target RTO reliability requirement of the delivery year.

**Adj. OPL MW**: the Adjusted OPL MW of a zone/area is equal to [the zone/area OPL MW plus (the LLA MW of the zone/area divided by the Adjusted Zonal Peak Load Scaling Factor)].

**Adj. ZPLSF** : the Adjusted Zonal Peak Load Scaling Factor is equal to the [(Zonal Forecast Peak Load minus the total LLA MW of the zone) divided by the Zonal W/N Peak Load].

**LLA MW**: the MW specified in Table B-9 by zone/area.

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10
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