



# FRR/RPM Capacity Obligation Education

Market Implementation Committee  
November 1, 2023

Acronym	Term & Definition
BRA	<b>Base Residual Auction</b>
DY	<b>Delivery Year</b> is defined as the 12 months beginning June 1 and extending through May 31 of the following year. Delivery Year may also be referred to as Planning Year or Planning Period.
EDC	<b>Electric Distribution Company</b>
FRR	<b>Fixed Resource Requirement</b> is defined as an alternative method for an eligible load-serving entity to meet a fixed resource requirement with its own capacity resources as opposed to having PJM procure capacity resources on the load-serving entity's behalf in RPM auctions.
IA	<b>Incremental Auction</b> is defined as First, Second and Third Incremental Auctions allow for capacity suppliers to purchase replacement capacity and for PJM to adjust previously committed capacity levels due to reliability requirement increases or decreases.
ICAP	<b>Installed Capacity</b> is defined as a MW value based on the summer net dependable capability of a unit and within the capacity interconnection right limits of the bus to which it is connected.

[PJM Glossary](#)

Acronym	Term & Definition
LLA	<b>Large Load Adjustment</b> is defined as adjustments to load outside of normal forecast procedures
LSE	<b>Load Serving Entity</b> is defined as any entity (or the duly designated agent of such an entity), including a load aggregator or power marketer that (a) serves end-users within the PJM Control Area, and (b) is granted the authority or has an obligation pursuant to state or local law, regulation or franchise to sell electric energy to end-users located within the PJM Control Area.
OPL	<b>Obligation Peak Load</b> is defined as the summation of the peak load contributions (PLCs) of end-use customers that an LSE is responsible to serve in a zone on an operating day.
PLC	<b>Peak Load Contribution</b> is defined as an end-use customer's contribution to the zone's weather normalized summer peak load, as determined by the zone's Electric Distribution Company.
RPM	<b>Reliability Pricing Model</b> is defined as PJM's capacity market design that includes a series of auctions to satisfy the reliability requirements of the PJM region for a Delivery Year.
UCAP	<b>Unforced Capacity</b> is defined as the MW value of a capacity resource in the PJM Capacity Market. For generating unit, the unforced capacity value is equal to installed capacity of unit multiplied by (1- unit's EFORd). For demand resources and energy efficiency resources, the unforced capacity value is equal to demand reduction multiplied by Forecast Pool Requirement.

[PJM Glossary](#)

- FRR/RPM split of obligation is not a reliability concern
  - Same MW are being shifted between FRR and RPM
  - No impact on reliability requirements
- Large Load Adjustments impact FRR and RPM Obligations equally
  - FRR obligations are subtracted from Total Zonal Peak Forecast to provide RPM Zonal Peak Forecast
  - Large Load Adjustments can be positive or negative, and impact the FRR/RPM split in equal ways

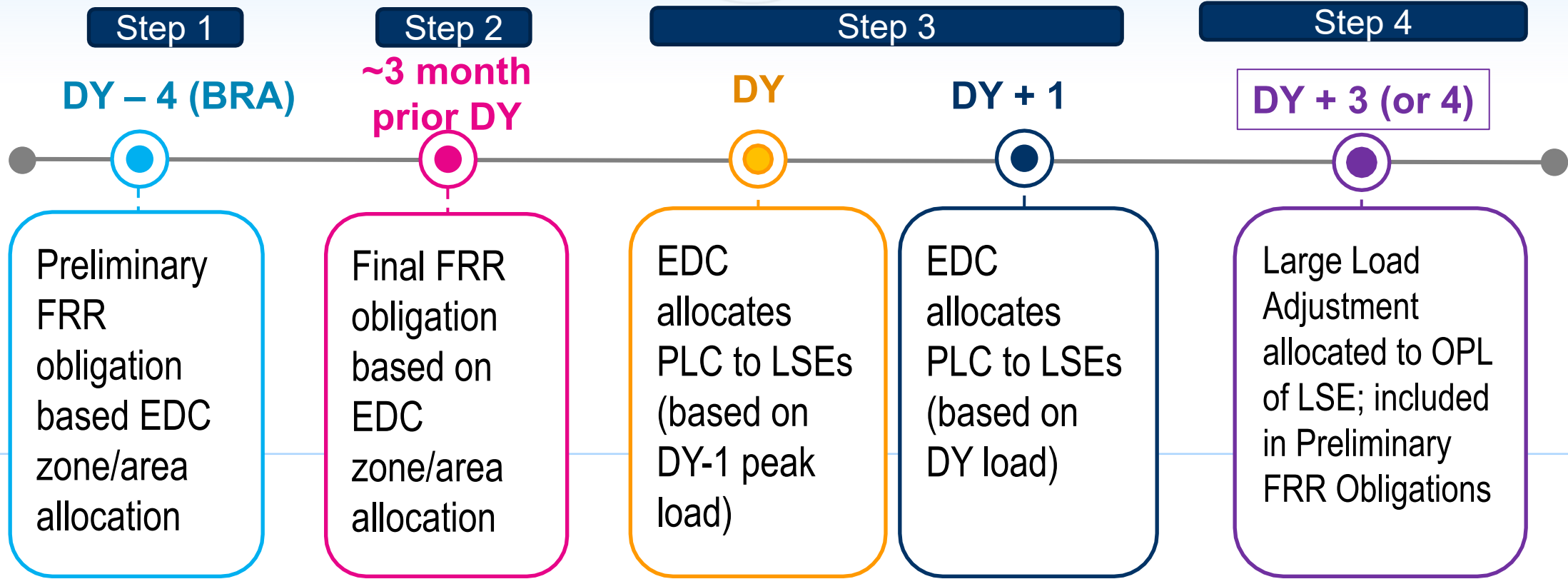
- The RAA describes the processes for an intra-zonal allocation of the total zonal capacity obligation with these allocations serving to determine:
  1. The Capacity obligation of each FRR Entity in the Zone
    - An intra-zonal allocation is not required for this purpose if all of the load in the zone is served by the same FRR Entity
  2. The UCAP obligation of Zonal RPM Load
    - Capacity procured in RPM on behalf of all zonal load served under RPM (i.e., the Zonal UCAP Obligation) is allocated to each LSE in the zone that has not elected the FRR Alternative

*Referenced RAA sections are included in the Appendix section*

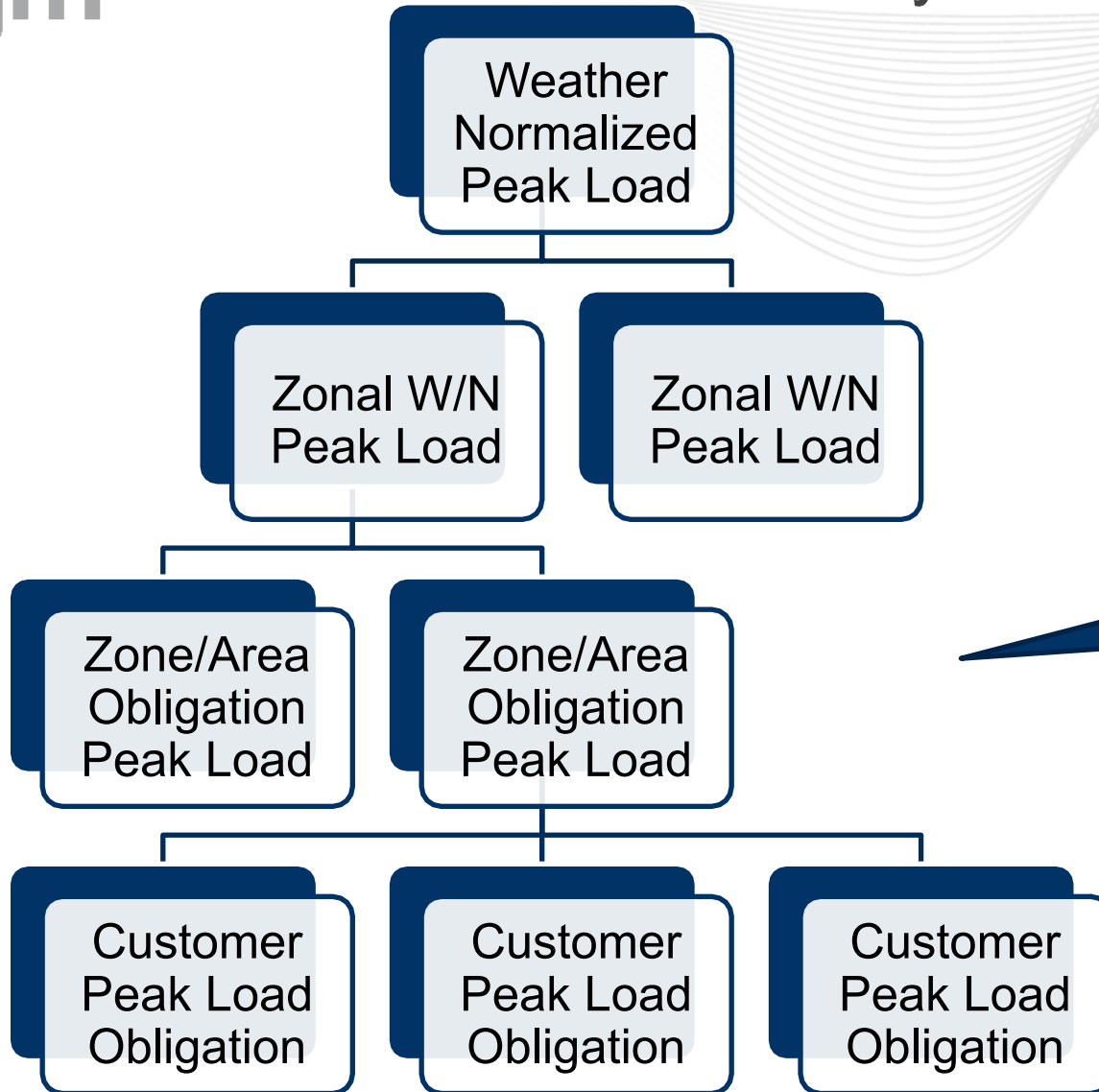
- The Zonal W/N Peak Load and each Area's allocated share of the Zonal W/N Peak Load form the basis for the allocation of the total capacity obligation of the zone to each of the Areas in the zone
- No later than 5 months prior to the start of each delivery year, the EDC of each zone allocates the Zonal W/N Peak Load (from the most recent summer period) to each of the Areas in the Zone:
  - Each Area's share of the Zonal W/N Peak Load is referred to as the Area's Obligation Peak Load ("OPL")
  - The Area's OPLs that are provided by the EDC must sum to the Zonal W/N Peak Load

- Each Area's OPLs that are determined 5 months prior to each delivery year for a given zone are used as the basis in determining:
  - The final capacity obligation of the upcoming delivery year for each FRR Entity in the zone
  - The final UCAP obligation of the upcoming delivery year for each Area in the zone for which capacity was procured in RPM Auctions
  - The preliminary capacity obligation for the delivery year of the upcoming BRA for each FRR Entity in the zone; which, in turn, determines the MW quantity of zonal load that is included as RPM load in the upcoming BRA

## FRR obligations are based on historic zone/area obligation peak loads







This is ICAP. To convert to UCAP must adjust for forecast, FPR and other

- RPM/FRR Scaling Factors – these factors scale the prior year’s W/N Load to target DY Forecast W/N Load
  - RPM Scaling factor also includes adjustment if amount of capacity procured is higher than the target.
    - **If RPM procured at target, both FRR and RPM scaling factors are equal**
- Only difference between Base (Preliminary) Scaling Factor and Final Scaling Factor is vintage of W/N Peak Load and associated Forecast Load
  - Base/Preliminary is calculated at time of BRA - W/N Load forecast for DY / W/N Load (or “Obligation Peak Load”) from DY-4
  - Final is calculated just before DY (3<sup>rd</sup> IA) - W/N Load forecast for DY / W/N Load (or “Obligation Peak Load”) from DY-1



# Step 1 (At time of BRA, or DY-4) Determine preliminary FRR UCAP obligation

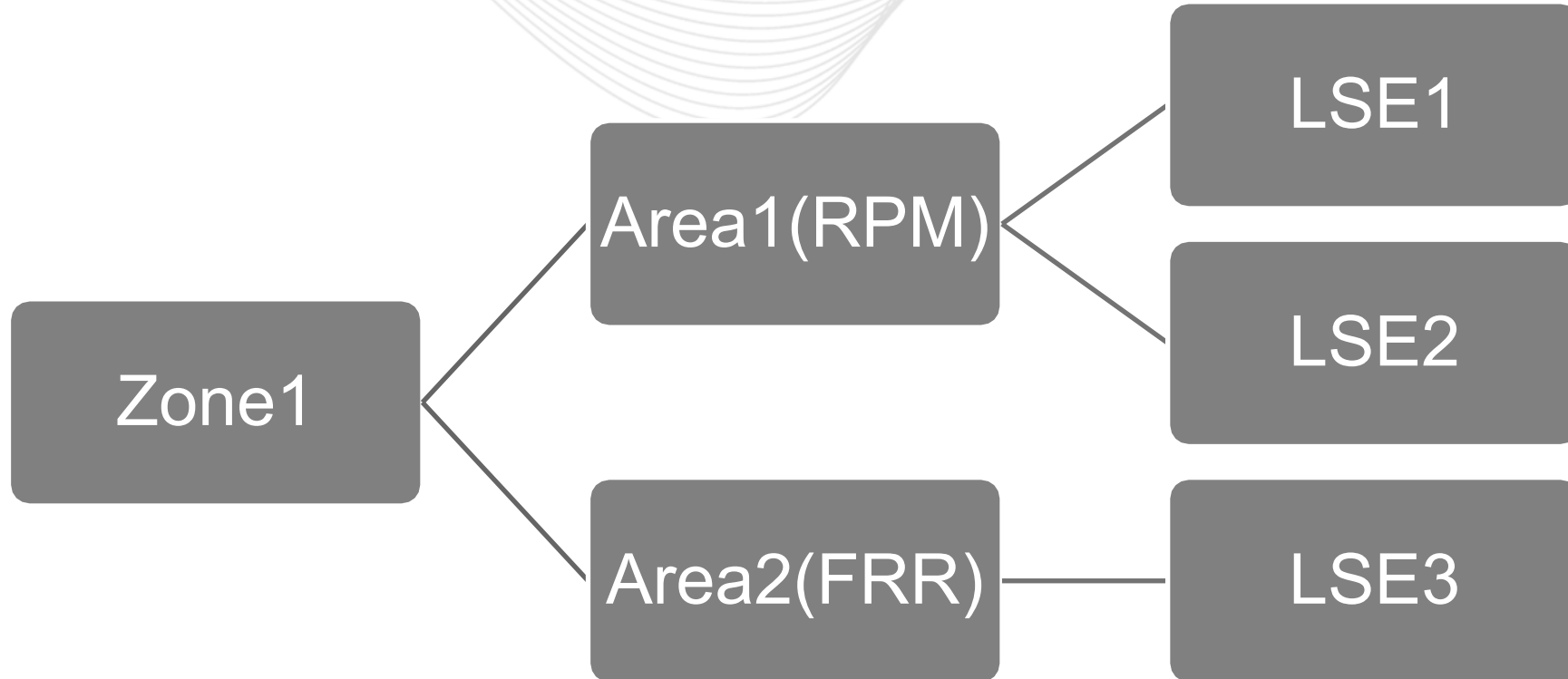
BRA for 2024/2025 DY					
FPR	1				
2020 Zonal W/N Peak (A)	1,000				
2024 Forecast (B)	1,100				
Large Load Adjustment (C) (Table B-9)	100				
Total 2024 Forecast (D=B+C) (Table B-10)	1,200				
Base Zonal Scaling Factor (E=D/A)	1.20				
RPM/FRR	Zone/Area	Obligation Peak Load (2021 based on 2020 load)*	FRR UCAP Obligation for 24/25 DY		
RPM	Zone1/A	100			
RPM	Zone1/B	200			
RPM	Zone1/C	300			
FRR	Zone1/D	100	120		
FRR	Zone1/E	300	360		
	Total RPM	600			
	Total FRR	400			
	Grand Total	1,000			
	2024/2025 UCAP Obligations				Large Load Adjustment
	RPM 24/25 Obligation		720	60%	60
	FRR 24/25 Obligation		480	40%	40
	Total		1,200		



# Step 2 (Prior to DY, or DY-1) Determine Final FRR UCAP obligation

Pre - 2024/2025 DY					
FPR		1			
2023 Zonal W/N Peak (A)		1,075			
2024 Forecast (B)		1,100			
Large Load Adjustment (C) (Table B-9)		100			
Total 2024 Forecast (D=B+C) (Table B-10)		1,200			
Final Zonal Scaling Factor (E=D/A)		1.12			
RPM/FRR	Zone/Area	Obligation Peak Load 2024 (based on 2023 load)	FRR UCAP Obligation for 24/25 DY		
RPM	Zone1/A	130			
RPM	Zone1/B	225			
RPM	Zone1/C	300			
FRR	Zone1/D	120	134		
FRR	Zone1/E	300	335		
	Total RPM	655			
	Total FRR	420			
	Grand Total	1,075			
	2024/2025 UCAP Obligations			Large Load Adjustment	
	RPM 24/25 Obligation		731	61%	61
	FRR 24/25 Obligation		469	39%	39
	Total		1,200		

Total UCAP Obligation will always be 1,200 MW, but will shift between FRR and RPM depending on LLA allocation



One RPM Zone/Area may have 1 or more LSEs where the LSE may change on any given day during the Delivery Year (deregulated retail market)

# Effect of large load adjustment on LSE UCAP Obligation

FRR/RPM	Zone/Area	LSE	OPL DY (24/25)	LSE UCAP Obligation (OPL*FPR*Final RPM/FRR Scaling Factor)
RPM	Zone1/A	Competitive LSE1	130	145
RPM	Zone1/B	Competitive LSE2	225	251
RPM	Zone1/C	Public Power LSE3	150	167
RPM	Zone1/C	EDC LSE4	150	167
FRR	Zone1/D	FRRLSE	120	134
FRR	Zone1/E	FRRLSE	300	335
		FRR Total	655	731
		RPM Total	420	469
		Total	1,075	1,200

Large Load Adjustment included in calculation of Final Zonal Scaling Factor

Assumes large load adjustment does not appear in DY, but may vary with EDC allocation methodology

## LLA included in calculation of Preliminary FRR Obligation

- Preliminary FRR obligation is calculated at time of corresponding BRA, and fixed until Final FRR obligation is calculated
  - Uses OPL of DY-4 (24/25 DY uses OPL of 2020)
- FRR/RPM obligations are impacted by any Large Load Adjustments at the time of the BRA
  - Addition of Large Load Adjustment to OPL depends on EDC allocation timing
- Large Load Adjustment will impact future Preliminary FRR obligation for multiple Delivery Years inclusion of the Large Load Adjustment in the OPL of DY-4
  - Final FRR obligation is calculated from OPL of DY-1



# Step 4(DY+3 or 4) Preliminary/Final Obligation Timeline

LLA included in calculation of Scaling Factor

LLA NOT included in calculation of Scaling Factor

DY commencement year	Delivery Year				
	24/25	25/26	26/27	27/28	28/29
2020	X	X	X	X	X
2021	Preliminary	X	X	X	X
2022		Preliminary	X	X	X
2023			X	X	X
2024 (LLA Reported in OPL)	Final	Preliminary	Preliminary	Preliminary	X
2025					Final
2026			Final	Preliminary	
2027					Final
2028					Final

- RPM and FRR Capacity procured at time of BRA will include LLA in Scaling Factors for 4 years
- Final capacity required for delivery including LLA first reflected in 25/26 DY
  - Final capacity for 24/25 DY uses 2023 OPL, so does not include LLA
- Procurement of Preliminary and Final RPM/FRR Capacity won't reflect LLA allocation until 28/29 DY (4 years after LLA is in service)



- FRR Scaling Factors: RAA 8.1.D & M18 Section 11.2
- RPM Scaling Factors: RAA Schedule 8 & M18 Section 7.3
- Load Obligations: Manual 18 Section 7

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