

Quadrennial Review: PJM with (VC Barrow) PA PUC Joint Proposals

Markets and Reliability Committee
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BACKGROUND:

No later than every fourth delivery year, the Office of the Interconnection shall perform a review of:

1. Shape of the Variable Resource Requirement (VRR) Curve

- Reliability Pricing Model (RPM)
- Set of price and megawatt quantities that shape the curve

2. Cost of New Entry (CONE) for each Locational Deliverability Area (LDA)

- Selection of the Reference Resource for each LDA to set CONE
- Reference Resource may vary by LDA

3. Methodology for determining the Net Energy and Ancillary Services Revenue Offset (EAS Offset)

- Calculated for each zone in the PJM region
- EAS Offset is subtracted from the Gross CONE value to calculate Net CONE

Updated VRR Curve parameters will be effective with the 2028/2029 Delivery Year.

The proposed package represents PJM management's proposal for a solution to the Quadrennial Review

1. The PJM Board of Managers has not yet endorsed this proposal and seeks stakeholder feedback,
2. The proposal is focused on the defined scope of the Quadrennial Review, and
3. PJM has endeavored to strike the best balance of reliability and cost implications.

Additional potential market design changes raised during this review will need a separate stakeholder process to address.

PJM and the (VC Barrow) PA PUC have two joint proposals that replace PJM's initial proposal

Joint Proposal 1: PJM & PA PUC – CC

1. Adopt PA PUC VRR Curve which is a function of Gross CONE and Net EAS
2. Adopts Net EAS change of using the 67th percentile for each applicable area
3. Use the Brattle calculated Gross CONE values for CC for all CONE Areas

Joint Proposal 2: PJM & PA PUC – CT

- 1) Adopt PA PUC VRR Curve which is a function of Gross CONE and Net EAS
- 2) Adopts Net EAS change of using the 67th percentile for each applicable area
- 3) Use the Brattle calculated Gross CONE values for CT for all CONE Areas

The (VC Barrow) PA PUC VRR curve provided a reasonable alternative to account for the uncertainty separately around Gross CONE and Net EAS values that was adopted in these joint proposals.

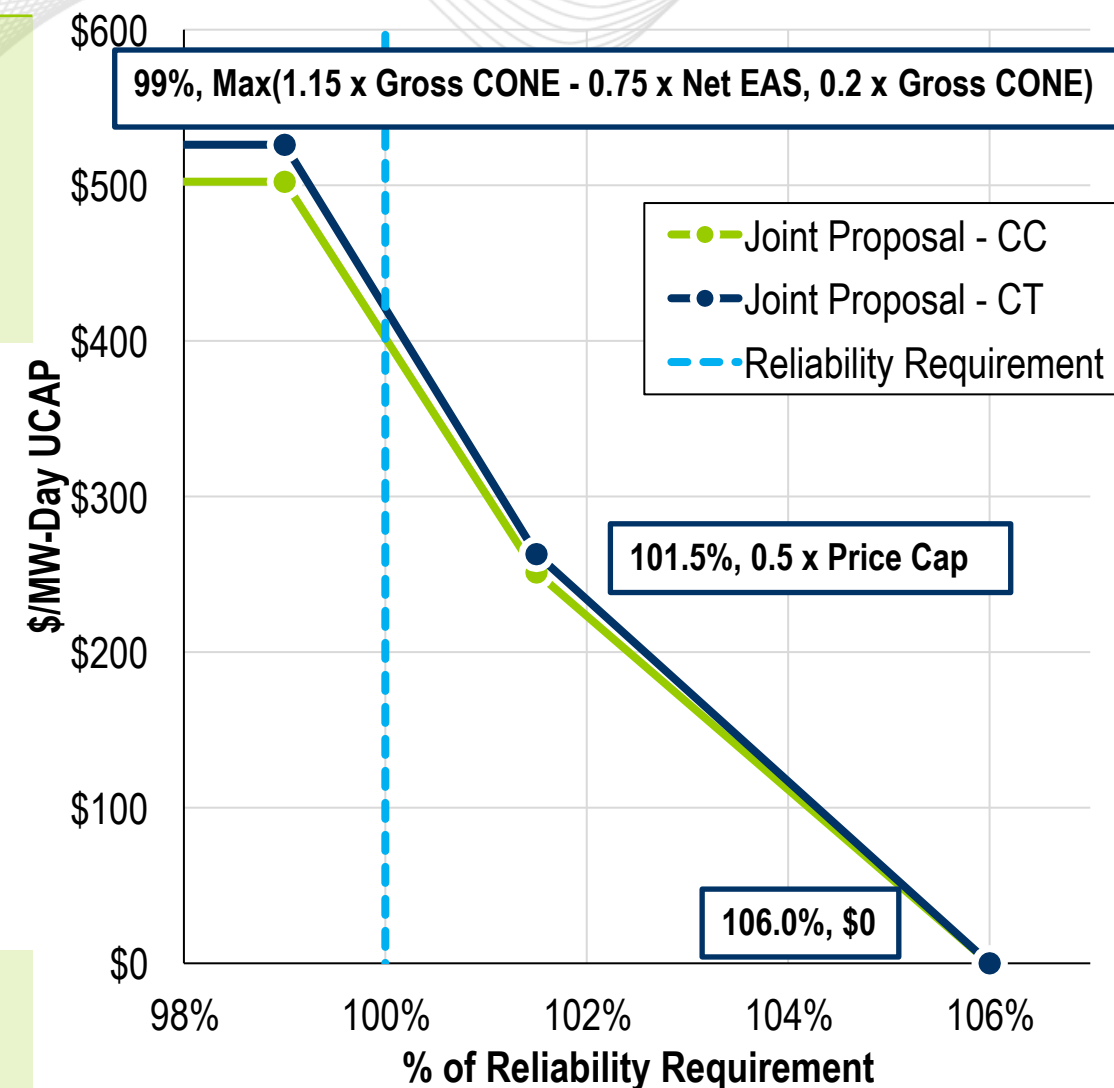
Reference Resource: Joint Proposal 1 recommends the Brattle calculated Combined Cycle for every CONE Area, and Joint Proposal 2 recommends the Brattle calculated Combustion Turbine for every CONE Area.

VRR Curve: PA PUC VRR Curve and lower safeguard

- Point A is updated to $\text{Max}(1.15 \times \text{Gross CONE} - 0.75 \times \text{Net EAS}, 0.2 \times \text{Gross CONE})$, to stabilize curve and decrease volatility
- Tie point B to 50% of Price Cap (Stability of VRR Curve)
- Extend point C to 106%

Same VRR shape for LDAs

EAS: Status Quo with updated Reference Resource parameters



PJM and VC Barrow PAPUC: Price Cap Comparison

Accounting for 75% of Net E&AS decreases the price cap volatility and lowers the price cap in high Net CONE areas (EMAAC and COMED)

The PA PUC curve is less likely to have a calculated price cap of \$0, even without a safeguard

The Joint Proposal has a 0.2 x Gross CONE safeguard

CONE Area	PJM and PA PUC Price Cap - CC (\$/MW-Day UCAP)	PJM and PA PUC Price Cap - CT (\$/MW-Day UCAP)
EMAAC: CONE Area 1	\$744	\$718
SWMAAC: CONE Area 2	\$520	\$560
Rest of RTO: CONE Area 3	\$463	\$483
WMAAC: CONE Area 4	\$550	\$557
COMED: CONE Area 5	\$841	\$785
RTO	\$502	\$526

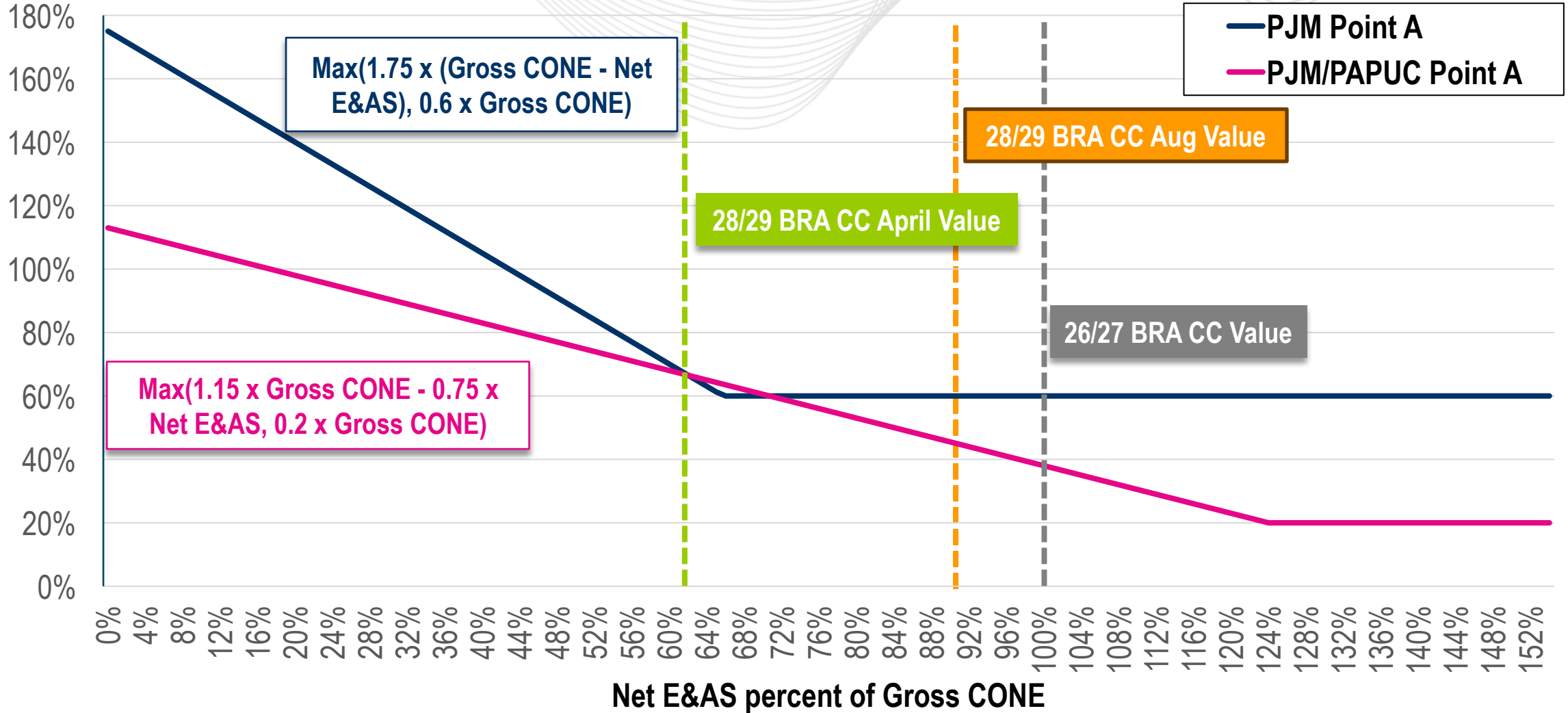
Net EAS is using the 67th percentile of Net EAS for the applicable area

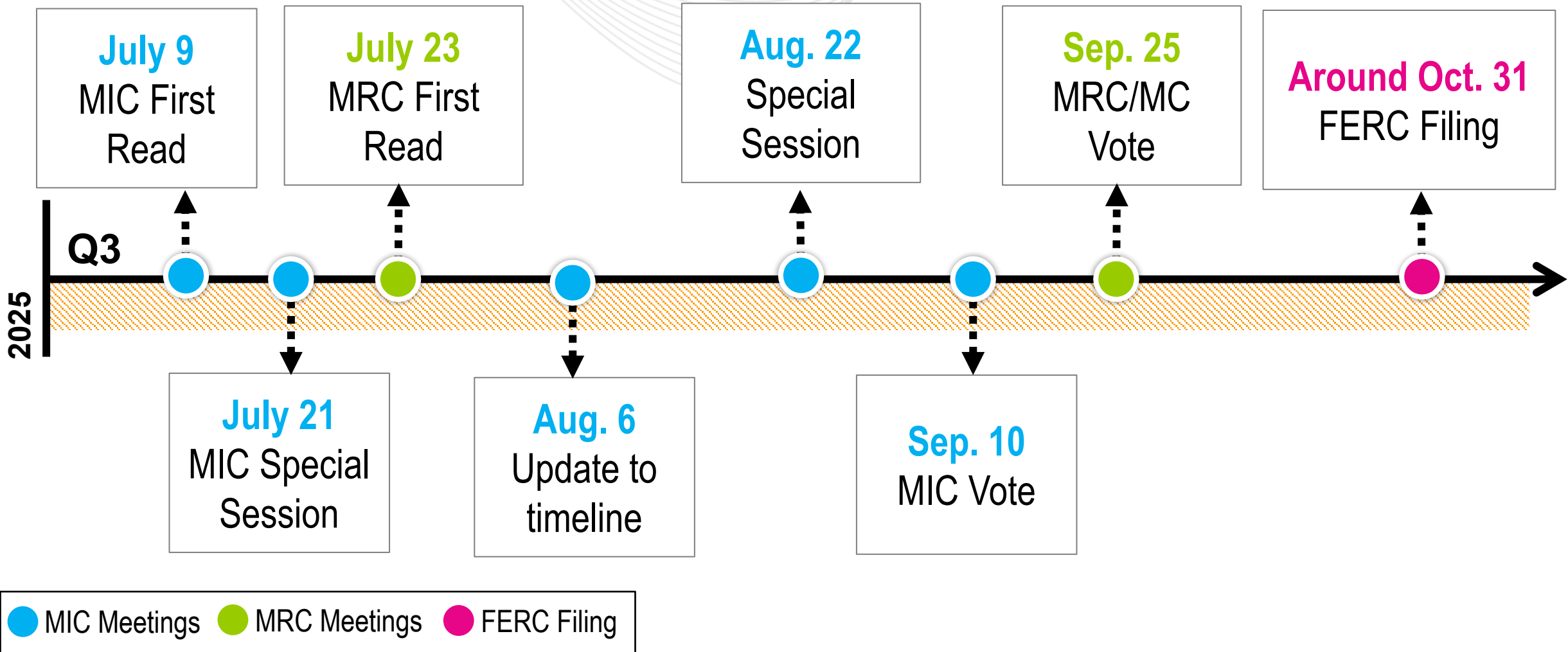
Price Caps are similar with a CC or CT as the Reference Resource.



Estimated Price Cap as a function of Net E&AS Relative to Gross CONE

Percent of Gross CONE





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Quadrennial Review:

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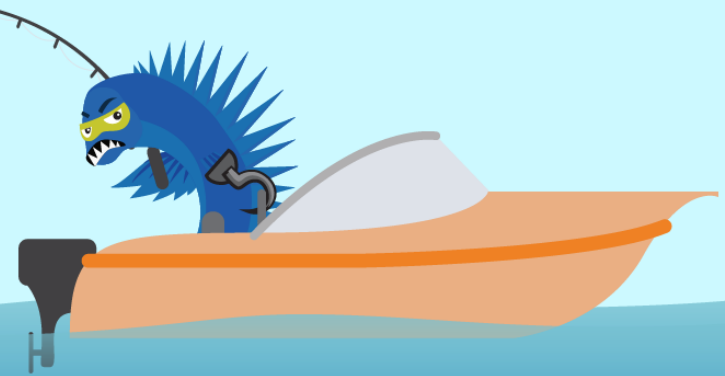
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