

EE Addback in Capacity Auction Clearing

Problem / Opportunity Statement

The current treatment of the Energy Efficiency (EE) add back in clearing the PJM Base Residual Auctions (BRA) does not require the EE add back to match the effect of EE on the demand curve (VRR curve) in the capacity market. The result is an artificial increase in the BRA clearing price. The problem statement includes a summary of the results for the last two BRAs, the 2021/2022 BRA and the 2022/2023 BRA.

The 2021/2022 RPM Base Residual Auction was the third BRA held using the EE add back mechanism. RPM rules allow Energy Efficiency Resources to participate on the supply side. An adjustment is made to the demand curve through the EE add back mechanism to avoid double counting the MW because EE, modeled as supply, actually reduces demand. The EE add back mechanism had a significant impact on the auction results.

Under the EE add back MW rules, the demand curve for the 2021/2022 RPM Base Residual Auction was shifted by an amount greater than the quantity of cleared EE, and the clearing price was increased as a result of the implementation of the EE add back mechanism. If adjustments to the EE add back MW had been made such that for each LDA the EE cleared MW were equal to the EE add back MW, and everything else had remained the same, total RPM market revenues for the 2021/2022 RPM Base Residual Auction would have been \$8,797,549,143, a decrease of \$503,327,963, or 5.4 percent, compared to the actual results. From another perspective, the inconsistency between the EE cleared MW and the adjustment to the demand with the EE add back MW resulted in a 5.7 percent increase in RPM revenues for the 2021/2022 RPM Base Residual Auction compared to what RPM revenues would have been if the EE add back MW were equal to the EE cleared MW for each LDA.

Based on actual auction clearing prices and quantities and make whole MW, total RPM market revenues for the 2022/2023 RPM Base Residual Auction were \$3,916,990,303. If adjustments to the EE add back MW had been made such that for each LDA the EE cleared MW were equal to the EE add back MW in the 2022/2023 RPM Base Residual Auction and everything else had remained the same, total RPM market revenues for the 2022/2023 RPM Base Residual Auction would have been \$3,860,278,311, a decrease of \$56,711,991, or 1.4 percent, compared to the actual results. From another perspective, the inconsistency between the EE cleared MW and the

adjustment to the demand with the EE add back resulted in a 1.5 percent increase in RPM revenues for the 2022/2023 RPM Base Residual Auction compared to what RPM revenues would have been if the EE add back MW were equal to the EE cleared MW for each LDA.

PJM Manual 18: PJM Capacity Market includes section 2.4.5, which defines the incorrect calculation of the EE add back:

After EE Providers propose EE Resource(s) in their EE Measurement and Verification (M&V) Plans, and PJM reviews and accepts the Nominated EE Value of the proposed EE Resource(s), PJM will use the resulting Nominated EE Value to: (1) create an EE Resource to be offered into the upcoming auction, and (2) increase the reliability requirement to be satisfied for the region and for any affected Zones (or sub-Zonal LDAs). For each Base Residual Auction, the Reliability Requirement of the RTO and each affected LDA will be increased by the total UCAP Value of all EE Resource(s) for which PJM accepted an EE M&V Plan for that auction, and upon which PJM created an EE Resource to be offered into that upcoming BRA. If a first-pass BRA solution shows that the ratio of the reliability requirement MW increase quantity to the cleared EE MW quantity exceeds a pre-determined threshold ratio (footnote omitted), then the Reliability Requirement increase will be set equal to the cleared EE MW quantity of the first-pass BRA solution times the threshold, and the second pass solution will be the final solution regardless of the resultant ratio. Application of the threshold ratio in the BRA maintains any resultant BRA add-back margin, as determined by the difference between the reliability requirement MW increase of the BRA and the actual cleared quantity of EE MW in the BRA, at a MW level equal to the quantity of EE Resources expected to clear in the Incremental Auctions for that Delivery Year. For each Incremental Auction, the Reliability Requirement of the RTO and each affected LDA will be adjusted by the total UCAP Value of all EE Resource(s) that clear in that auction, but not until and only to the extent that the total EE Resource UCAP quantity cleared in all auctions conducted for that Delivery Year exceeds the total Reliability Requirement increase applied in the Base Residual Auction for that Delivery Year. This adjustment may be a negative quantity in the Third Incremental Auction of each delivery year starting with the 2019/2020 Delivery Year, to ensure that the total MW quantity of EE add-back across all auctions for each delivery year is equal to the total MW quantity of cleared EE resources across all auctions for the delivery year. These reliability requirement increases will be considered in the development of the RTO/LDA Variable Resource Requirement Curves, Limited Resource Constraints and Sub-



Annual Resource Constraints, and Base Capacity Demand Resource Constraints
and Base Capacity Resource Constraints.

The Manual language could be rewritten to permit PJM to calculate the EE add back in the capacity market clearing engine such that it exactly offsets the level of cleared EE in the BRA. There is the opportunity to complete this work so that PJM can clear the upcoming 2023/2024 BRA in December with the correct EE add back.