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5.12 Conduct of RPM Auctions

The Office of the Interconnection shall employ an optimization algorithm for each Base Residual Auction and each Incremental Auction to evaluate the Sell Offers and other inputs to such auction to determine the Sell Offers that clear such auction.

a) Base Residual Auction

For each Base Residual Auction, the optimization algorithm shall consider:

- all Sell Offers submitted in such auction;
- the Variable Resource Requirement Curves for the PJM Region and each LDA;
- any constraints resulting from the Locational Deliverability Requirement;
- *for Delivery Years starting with June 1, 2014, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which a separate VRR Curve is required by section 5.10(a) of this Attachment DD;*
- the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target.

The optimization algorithm shall be applied to calculate the overall clearing result to minimize the cost of satisfying the reliability requirements across the PJM Region, regardless of whether the quantity clearing the Base Residual Auction is above or below the applicable target quantity, while respecting all applicable requirements and constraints, including any restrictions specified in any Credit-Limited Offers. Where the supply curve formed by the Sell Offers submitted in an auction falls entirely below the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all such Sell Offers. Where the supply curve consists only of Sell Offers located entirely below the Variable Resource Requirement Curve and Sell Offers located entirely above the Variable Resource Requirement Curve, the auction shall clear at the price-capacity point on the Variable Resource Requirement Curve corresponding to the total Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve. In determining the lowest-cost overall clearing result that satisfies all applicable constraints and requirements, the optimization may select from among multiple

possible alternative clearing results that satisfy such requirements, including, for example (without limitation by such example), accepting a lower-priced Sell Offer that intersects the Variable Resource Requirement Curve and that specifies a minimum capacity block, accepting a higher-priced Sell Offer that intersects the Variable Resource Requirement Curve and that contains no minimum-block limitations, or rejecting both of the above alternatives and clearing the auction at the higher-priced point on the Variable Resource Requirement Curve that corresponds to the Unforced Capacity provided by all Sell Offers located entirely below the Variable Resource Requirement Curve.

The Sell Offer price of a Qualifying Transmission Upgrade shall be treated as a capacity price differential between the LDAs specified in such Sell Offer between which CETL is increased, and the Import Capability provided by such upgrade shall clear to the extent the difference in clearing prices between such LDAs is greater than the price specified in such Sell Offer. The Capacity Resource clearing results and Capacity Resource Clearing Prices so determined shall be applicable for such Delivery Year.

b) Scheduled Incremental Auctions and Supplemental Procurement Conditional Auctions.

For purposes of a-a Scheduled Incremental Auction for any Delivery Year through the 2016-2017 Delivery Year, or, for any Delivery Year beginning with the 2017-2018 Delivery Year, for purposes of the Scheduled Incremental Auction or a Supplemental Procurement Conditional Auction (if conducted), the optimization algorithm shall consider:

- The PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- Updated LDA Reliability Requirements taking into account any updated Capacity Emergency Transfer Objectives;
- the Capacity Emergency Transfer Limit used in the Base Residual Auction, or any updated value resulting from a Backbone Transmission Conditional Incremental Auction;
- For each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- *for Delivery Years starting with June 1, 2014, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each LDA for which PJM is required to establish a separate VRR Curve for the Base Residual Auction for the relevant Delivery Year;*
- A demand curve consisting of the Buy Bids submitted in such auction and, if indicated for use in such auction in accordance with the provisions below, the Updated VRR Curve Increment;

- The Sell Offers submitted in such auction; and
- The Unforced Capacity previously committed for such Delivery Year.

(i-1) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction for any Delivery Year through the 2016-2017 Delivery Year is triggered by section 5.4(c)(2) of this Attachment, the Office of the Interconnection shall employ in the clearing of such auction the Updated VRR Curve Increment.

(i-2) When, for the 2017-2018 Delivery Year or any subsequent Delivery Year, the requirement to seek additional resource commitments in the Scheduled Incremental Auction is triggered by section 5.4A(c)(2) of this Attachment, or when the requirement to seek additional resource commitments in a Supplemental Procurement Conditional Auction is triggered by section 5.4A(e)(1)(i) of this Attachment, the Office of the Interconnection shall employ in the clearing of such auction the Updated VRR Curve Increment.

(ii-1) When, for any Delivery Year through the 2016-2017 Delivery Year, the requirement to seek additional resource commitments in a Scheduled Incremental Auction is triggered by ~~section 5.4(c)(1) of this Attachment, and the conditions stated in section 5.4(c)(2) do not apply,~~ the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Scheduled ~~Auctions~~ for such Delivery Year that does not clear such auction, minus (C) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (D) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year plus any amount required by section 5.4(c)(2)(ii). If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity.

(ii-1) When, for the 2017-2018 Delivery Year or any subsequent Delivery Year, the requirement to seek additional resource commitments in the Scheduled Incremental Auction is triggered by section 5.4A(c)(1) of this Attachment, and the conditions stated in section 5.4A(c)(2) do not apply, or when the requirement to seek additional resource commitments in a Supplemental Procurement Conditional Auction is triggered by section 5.4A(e)(1)(ii) of this Attachment and the conditions stated in section 5.4A(e)(1) (i) do not apply, the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Supplemental Procurement Conditional Auctions for such Delivery Year that does not clear

such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year plus any amount required by section 5.4A(c)(2)(ii). The Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity.

(iii-1) When, for any Delivery Year through the 2016-2017 Delivery Year, the possible need to seek agreements to release capacity commitments in any Scheduled Incremental Auction is indicated for the PJM Region or any LDA by section 5.4(c)(3)(i) of this Attachment, the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, minus (C) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, plus (D) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year minus any capacity sell-back amount determined by PJM to be required for the PJM Region or such LDA by section 5.4(c)(3)(ii) of this Attachment; provided, however, that the amount sold in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade may not exceed the amounts purchased in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. – If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity; provided, however, that in no event shall the Office of the Interconnection offer to sell back capacity at a price lower than the Capacity Resource Clearing Price determined in the Base Residual Auction for such Delivery Year for, as applicable to such contemplated sell-back, the PJM Region or relevant LDA.

(iii-2) When, for the 2017-2018 Delivery Year or any subsequent Delivery Year, the possible need to seek agreements to release capacity commitments in the Scheduled Incremental Auction is indicated for the PJM Region or any LDA by section 5.4A(c)(3)(i) of this Attachment, the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Supplemental Procurement

Conditional Auctions for such Delivery Year that does not clear such auction, plus (C) the difference between the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement and, respectively, the PJM Region Reliability Requirement, or LDA Reliability Requirement, utilized in the most recent prior auction conducted for such Delivery Year minus (D) any capacity sell-back amount determined by PJM to be required for the PJM Region or such LDA by section 5.4A(c)(3)(ii) of this Attachment; provided, however, that the amount sold in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade may not exceed the amounts purchased in total for all LDAs and the PJM Region related to a delay in a Backbone Transmission upgrade. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity; provided, however, that in no event shall the Office of the Interconnection offer to sell back capacity at a price lower than the Capacity Resource Clearing Price determined in the Base Residual Auction for such Delivery Year for, as applicable to such contemplated sell-back, the PJM Region or relevant LDA.

(iv-1) If, for any Delivery Year through the 2016-2017 Delivery Year, none of the tests for adjustment of capacity procurement in subsections (i-1), (ii-1), or (iii-1) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction, minus (C) the amount that the Office of the Interconnection sought to sell back in prior Scheduled Incremental Auctions for such Delivery Year that does not clear such auction. If the result of such equation is a positive quantity, the Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If the result of such equation is a negative quantity, the Office of the Interconnection shall employ in the clearing of the auction a portion of the Updated VRR Curve Decrement, extending and ascending to the left from the right-most point on that curve in a megawatt amount corresponding to the negative quantity defined above, to seek to sell back such quantity. If more than one of the tests for adjustment of capacity procurement in subsections (i-1), (ii-1), or (iii-1) is satisfied for the PJM Region or an LDA in a Scheduled Incremental Auction, the Office of the Interconnection shall not seek to procure the Short-Term Resource Procurement Target Applicable Share more than once for such region or area for such auction; provided, however, that in no event shall the Office of the Interconnection offer to sell back capacity at a price lower than the Capacity Resource Clearing Price determined in the Base Residual Auction for such Delivery Year for, as applicable to such contemplated sell-back, the PJM Region or relevant LDA.

(iv-2) If, for the 2017-2018 Delivery Year or any subsequent Delivery Year, none of the tests for adjustment of capacity procurement in subsections (i-2), (ii-2), or (iii-2) is satisfied for the PJM Region or an LDA in the Scheduled Incremental Auction, the Office of the Interconnection first shall determine the total quantity of (A) the Short-Term Resource Procurement Target Applicable Share for such auction, plus (B) the amount that the Office of the Interconnection sought to procure in prior Supplemental Procurement Conditional Incremental Auctions for such Delivery Year that does not clear such auction. The Office of the Interconnection shall employ in the clearing of such auction a portion of the Updated VRR Curve Increment extending right from the left-most point on that curve in a megawatt amount equal to that positive quantity defined above, to seek to procure such quantity. If more than one of the tests for adjustment of capacity procurement in subsections (i-2), (ii-2), or (iii-2) is satisfied for the PJM Region or an LDA in the Scheduled Incremental Auction, the Office of the Interconnection shall not seek to procure the Short-Term Resource Procurement Target Applicable Share more than once for such region or area for such auction.

(v) If PJM seeks to procure additional capacity in an Incremental Auction due to a triggering of the tests in subsections (i-1), (ii-1), (iii-1) or (iv-1) (or (i-2), (ii-2), (iii-2) or (iv-2)), then the Minimum Annual Resource Requirement for such Auction will be equal to the updated Minimum Annual Resource Requirement (*based on the latest DR Reliability Targets*) minus the amount of previously committed capacity from Annual Resources, and the Minimum Extended Summer Resource Requirement for such Auction will be equal to the updated Minimum Extended Summer Resource Requirement (*based on the latest DR Reliability Targets*) minus the amount of previously committed capacity from Annual Resources and Extended Summer Demand Resources. If PJM seeks to release prior committed capacity due to a triggering of the test in subsection (iii) then PJM may not release prior committed capacity from Annual Resources or Extended Summer Demand Resources below the updated Minimum Annual Resource Requirement and updated Minimum Extended Summer Resource Requirement, respectively.

(vi) If the above tests are triggered for an LDA and for another LDA wholly located within the first LDA, the Office of the Interconnection may adjust the amount of any Sell Offer or Buy Bids otherwise required by subsections (i-1), (ii-1), or (iii-1) (or by subsections (i-2), (ii-2, or (iii-2)) above in one LDA as appropriate to take into account any reliability impacts on the other LDA.

(vii) The optimization algorithm shall calculate the overall clearing result to minimize the cost to satisfy the Unforced Capacity Obligation of the PJM Region to account for the updated PJM Peak Load Forecast and the cost of committing replacement capacity in response to the Buy Bids submitted, while satisfying or honoring such reliability requirements and constraints, in the same manner as set forth in subsection (a) above.

(viii) Load Serving Entities may be entitled to certain credits (“Excess Commitment Credits”) under certain circumstances as follows:

- (A) For either or both of the Delivery Years commencing on June 1, 2010 or June 1, 2011, if the PJM Region Reliability Requirement used for purposes of the Base Residual Auction for such Delivery Year exceeds the PJM Region Reliability Requirement that is based on the last updated load forecast prior to such Delivery Year, then such excess will be allocated to Load Serving Entities as set forth below;
- (B) For any Delivery Year beginning with the Delivery Year that commences June 1, 2012, the total amount that the Office of the Interconnection sought to sell back pursuant to subsection (b)(iii-1) or (b)(iii-2) above in the Scheduled Incremental Auction(s) for such Delivery Year that does not clear such auction(s), less the total amount that the Office of the Interconnection sought to procure pursuant to subsections (b)(i) and (b)(ii) above in the Scheduled Incremental Auction(s) and, as applicable, Supplemental Procurement Conditional Auctions for such Delivery Years that does not clear such auctions, will be allocated to Load Serving Entities as set forth below;
- (C) the amount from (A) or (B) above for the PJM Region shall be allocated among Locational Deliverability Areas pro rata based on the reduction for each such Locational Deliverability Area in the peak load forecast from the time of the Base Residual Auction to the time of the Third-Scheduled Incremental Auction (or for Delivery Years through the 2016-2017 Delivery Year, the Third Incremental Auction); provided, however, that the amount allocated to a Locational Deliverability Area may not exceed the reduction in the corresponding Reliability Requirement for such Locational Deliverability Area; and provided further that any LDA with an increase in its load forecast shall not be allocated any Excess Commitment Credits;
- (D) the amount, if any, allocated to a Locational Deliverability Area shall be further allocated among Load Serving Entities in such areas that are charged a Locational Reliability Charge based on the Daily Unforced Capacity Obligation of such Load Serving Entities as of June 1 of the Delivery Year and shall be constant for the entire Delivery Year. Excess Commitment Credits may be used as Replacement Capacity or traded bilaterally.

c) Backbone Transmission Conditional Incremental Auction

For each Backbone Transmission Conditional Incremental Auction, the optimization algorithm shall consider:

- The quantity and location of capacity required to address the identified reliability concern that gave rise to the Backbone Transmission Conditional Incremental Auction;

- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a [Backbone Transmission Conditional Incremental Auction](#); and
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity and location of capacity required to address the identified reliability violation at a Buy Bid price equal to 1.5 times Net CONE.

The optimization algorithm shall calculate the overall clearing result to minimize the cost to address the identified reliability concern, while satisfying or honoring such reliability requirements and constraints.

d) Equal-priced Sell Offers

If two or more Sell Offers submitted in any auction satisfying all applicable constraints include the same offer price, and some, but not all, of the Unforced Capacity of such Sell Offers is required to clear the auction, then the auction shall be cleared in a manner that minimizes total costs, including total make-whole payments if any such offer includes a minimum block and, to the extent consistent with the foregoing, in accordance with the following additional principles:

1) as necessary, the optimization shall clear such offers that have a flexible megawatt quantity, and the flexible portions of such offers that include a minimum block that already has cleared, where some but not all of such equal-priced flexible quantities are required to clear the auction, pro rata based on their flexible megawatt quantities; and

2) when equal-priced minimum-block offers would result in equal overall costs, including make-whole payments, and only one such offer is required to clear the auction, then the offer that was submitted earliest to the Office of the Interconnection, based on its assigned timestamp, will clear.