

2.3.6.2 Resource energy offer verification (for offers greater than \$1,000/MWh)

Generation Resource Offer Screening Process

PJM will use a screening process to verify the reasonableness of each generation resource's cost-based Incremental Energy Offer segment in excess of \$1,000/MWh before it is considered eligible to be used in dispatch or the calculation of LMPs.

- Cost-based Incremental Energy Offers with prices above \$1,000/MWh will be subject to the offer screening process at the time of submission, and [offer segments verified by the screening process](#) will not be subject to further [screening verification](#) unless updated.
- Day-Ahead Market Incremental Energy Offers between \$1,000/MWh and \$2,000/MWh must be submitted prior to the close of the Day-Ahead Market bid period to be screened for eligibility to set LMP in the Day-Ahead Market.
- In Real-time, a resource's cost-based offer must be submitted at least 65 minutes prior to the start of the operating hour in order for incremental energy offer segments between \$1,000/MWh and \$2,000/MWh to be screened for eligibility to set LMP.

For each Incremental Energy Offer segment greater than \$1,000/MWh, PJM shall evaluate whether such offer segment exceeds the reasonably expected costs for that generation resource by determining the Maximum Allowable Incremental Cost for each segment in accordance with [the following formula Section 6.4.3 of Schedule 1 of the PJM Operating Agreement](#).

[PJM will use cost inputs provided by the Market Seller to calculate the Maximum Allowable Incremental Cost:](#)

- [The Market Seller shall provide heat inputs and performance factors in the Market Monitor's Member Information Reporting Application \(MIRA\) at least one week prior to the Operating Day.](#)
- [The Market Seller shall provide the applicable commodity fuel cost source and fuel related costs in MIRA prior to submitting the offer.](#)

$$\text{Maximum Allowable Incremental Cost (\$/MWh @ MW)} = \frac{(- \text{Maximum Allowable Operating Rate}_i - (\text{Bid Production Cost}_{i+1}))}{(\text{MW}_i - \text{MW}_{i+1})}$$

where

i = an offer segment within the Incremental Energy Offer, which is comprised of a pairing of price (\$/MWh) and a megawatt quantity

$$\text{Maximum Allowable Operating Rate (\$/hour @ MW)} = \frac{(- (\text{Heat Input}_i @ \text{MW}_i) \times (\text{Performance Factor}) \times (\text{Fuel Cost})) \times (1 + A)}$$

where

Heat Input = a heat rate curve (in MW/mmBTU), determined in accordance with the Market Seller's PJM-approved Fuel Cost Policy, Operating Agreement, Schedule 2, and PJM Manual 15, describing the resource's operational characteristics for converting the applicable fuel input (mmBTU) into energy (MW) specified in the Incremental Energy Offer, and up to the greater of the resource's Emergency Maximum or the last offer segment in MW

Performance Factor = a scaling factor that is a calculated ratio of actual fuel burn to either theoretical fuel burn (i.e., design Heat Input) or other current tested Heat Input, which is determined annually in accordance with the Market Seller's PJM-approved Fuel Cost Policy, Operating Agreement, Schedule 2, and PJM Manual 15, reflecting the resource's actual ability to convert fuel into energy (normal operation is 1.0)

Fuel Cost = applicable fuel cost as estimated by PJM at a geographically appropriate commodity trading hub, plus 10 percent

A = Up to 10% cost adder

Bid Production Cost (\$/hour @ MW) =

$$\left[\sum_{i=1}^n (MW_i - MW_{i-1}) \times (P_i) - \frac{1}{2} \times UBS \times (MW_i - MW_{i-1}) \times (P_i - P_{i-1}) \right] + (\text{No Load Cost})$$

where

MW = the MW quantity per offer segment within the Incremental Energy Offer;

P = the price (in dollars per megawatt-hour) per offer segment within the Incremental Energy Offer;

UBS = Uses Bid Slope =

- 0 for resources with an Incremental Energy Offer that uses a step function curve
- 1 for resources with an Incremental Energy Offer that uses a sloped offer curve

- If the cost submitted for the offer segment is less than or equal to the Maximum Allowable Incremental Cost value, then that segment is deemed verified and is eligible to be used in dispatch and to set LMP. PJM will notify the Market Seller identifying which offer segments it verified using the screen.
- If the cost submitted for the offer segment is greater than the Maximum Allowable Incremental Cost value, then the cost-based offer for that segment and all segments at an equal or greater price are deemed not verified. Such segments will be capped at the greater of \$1,000 or the price on the most expensive verified segment for the purposes of dispatch and setting LMP. PJM will notify the Market Seller identifying which segments it did not verify using the screen.
- Any subsequent update to a cost-based offer's incremental energy offer curve or no load cost will subject the offer to the screening process upon submission of the update and the offer will be capped based on the result of the updated screen.

Generation Resource Exception Process

If a resource's offer does not pass the offer screen, the Market Seller can submit an exception request. The exception process provides a Market Seller the ability to justify ~~the segment(s) of a resource's offer that does not pass the offer screen so that it may be used in dispatch and the calculation of LMP and/or to be used in make-whole calculations.~~

- During the exception process, a Market Seller PJM and the MMU will have to demonstrate that determine whether the resource offer is compliant with its defined the approved Fuel Cost Policy for all applicable operating hours and provide using documentation provided by the

Market Seller detailing the underlying costs, before the offer can be verified for use in dispatch, the calculation of LMP and/or for use in make-whole calculations.

- PJM and the MMU will process exception requests in the order received. If the Market Seller has not provided documentation in a sufficiently timely and organized manner for PJM and the MMU to process the exception in a timely manner, PJM and the MMU will process other requests in the queue before completing evaluation of such exception.

- Necessary Documentation for Verification of Exceptions:
 - Approved Fuel Cost Policy with a numerical cost calculation example applicable to the Operating Day and to the generating unit

 - -Prior documentation of all cost inputs applicable to the cost-based offer other than the ~~commodity~~ cost of fuel in MIRA

 - Documentation supporting the level of the ~~commodity~~ cost of fuel as defined by consistent with the applicable documentation requirements in the Market Seller's applicable approved Fuel Cost Policy. If applicable, the Market Seller shall separately identify the levels of the commodity cost of fuel, fuel transportation costs, and other fuel charges.

- If the documentation and/or the Fuel Cost Policy is insufficient for PJM and the MMU to verify the level of the cost-based offer, PJM will deny the exception. For a denied exception, PJM will cap the cost-based incremental energy offer at the greater of \$1,000/MWh or the highest cost verified in the offer screening process for dispatch, the calculation of LMP, and/or make-whole payments.

- If a Market Seller wishes to proceed with an exception process, the ~~m~~Market ~~s~~Seller will have to request an exception via email (EnergyOfferVerification@pjm.com). The Market Seller will have to fill out the Energy Offer Verification template located on the Energy Offer Verification page on PJM.com and provide any supporting documentation detailing the underlying costs to PJM and the MMU.

- Upon receiving the Energy Offer Template and any supporting documentation, PJM and the MMU will review the information against the Market Seller's Fuel Cost Policy to ensure adherence. Based on review PJM and the MMU will determine:
 - If the Market Seller does not provide complete information for the Energy Offer Verification Template or supporting documentation, PJM will notify the Market Seller, via email, that the information provided is incomplete. The Market Seller ~~must~~may then provide further documentation detailing the resource's underlying costs.

 - PJM and the MMU will verify the Market Seller's offer based on ~~the information provided~~the documentation and any other relevant information available to PJM and/or the MMU. PJM will then notify the Market Seller, via email, of the verification result. If the offer is verified, the offer becomes eligible to be used as part of dispatch and calculating LMP as soon as the verification decision is recorded in the PJM market systems.

Demand Response Resource Validation Process

Curtailment Service Providers must validate the end use customer(s) incremental costs for Economic, Pre-Emergency and Emergency demand response energy offers in accordance with the following provisions before it can be used for dispatch and in the calculation of LMP:

- Provide a summary of the incremental cost, [as defined in PJM Manual 15](#), on a \$/MWh for each cost category in the appropriate PJM system. Submit supporting documentation that explains and quantifies the end-use customer's incremental costs included in the summary.
 - ~~The end-use customer's incremental costs shall include the quantifiable cost incurred for not consuming electricity when dispatched by PJM, such as wages paid without production, lost sales, damaged products that cannot be sold, or other incremental costs as approved by PJM,~~
 - ~~Incremental costs may not include shutdown costs,~~
 - ~~Incremental costs should be based on the incremental cost incurred during the energy offer. The Curtailment Service Provider shall review and update the incremental cost on a daily basis when energy offers submitted are greater than or equal to \$1,000/MWh.~~

Attachment D: Verification of Cost Offers greater than \$1,000/MWh that were not eligible to set LMP

This section addresses the procedures by which Market Sellers that ~~incur submit cost-based~~ incremental ~~energy offer~~ ~~operating costs~~ for a generation resource greater than \$1,000/MWh can receive ~~credit for~~ Operating Reserves ~~credits~~. The aim of the procedure is to:

- Enable generation resources with cost-based incremental energy offers greater than \$1,000/MWh, and less than \$2,000/MWh, which did not pass the offer screening process in time ~~to set LMP~~ for all or a portion of the operating day, and which are requested to operate by PJM System Operations and operate, to be paid Operating Reserve credits~~made whole~~ under certain conditions.
- Enable generation resources with the cost-based incremental energy offers greater than \$2,000/MWh that are requested to operate by PJM System Operations to be paid Operating Reserve credits~~made whole~~ under certain conditions.
- Explain the process by which Market Sellers requesting to be paid Operating Reserve credits~~made whole~~ ~~to using~~ a resource's cost-based incremental energy offer, which did not pass the offer screening process can submit relevant documentation to PJM and the IMM to verify the cost offer. The cost-based incremental energy offer must be consistent with the approved fuel cost policy. This procedure does not guarantee cost recovery of actual costs. PJM and the MMU must review and approve the Market Seller's cost calculations before any Operating Reserve credits will be paid to a Market Seller under this attachment.

Eligibility

A generation resource with a cost-based offer greater than \$1,000/MWh developed in accordance with the PJM Market Rules Manual 15 Cost Development Guidelines (M15) and the Market Seller's applicable fuel cost policy is eligible when:

- A generation resource's cost-based offer did not pass the offer screen or a generation resource has a cost-based offer greater than \$2,000/MWh
- A generation resource operates during the operating hours for which ~~applicable to the cost-based offer greater than \$2,000/MWh or greater than \$1,000/MWh that did not pass the offer screen.~~
- PJM and the IMM MMU have received the Market Seller's submitted documentation that supports the payment of Operating Reserve credits~~make whole compensation~~, PJM and the MMU have verified all the costs, including start up, no load, and incremental energy, used to calculate the Operating Reserve credits using the exception process described in Section 2.3.6.2, and PJM has approved the credits.

Settlements

Operating Reserve credits paid as a result of this procedure will be calculated using the PJM and MMU verified cost-based offer instead of the cost-based offer used in the Day-Ahead and/or Real-Time Energy Market.

Generation owners of resources committed by PJM that meet the eligibility criteria to be compensated using this procedure have until 1030 on the business day following the operating day to submit an e-mail to EnergyOfferVerification@pjm.com with the following information:

- Unit Name
- Date of operation
- Applicable time of operation
- Contact information (name of sender, phone, e-mail)
- Date and time of PJM Dispatch contact to generator
- Documentation of the Market Seller's calculation of the cost based offer in accordance with [Manual](#) 15 and applicable Fuel Cost Policy.