

in the PJM Manuals. Reserve levels are probabilistically determined based on the season's historical load forecasting error and forced outage rates.

(c) Nuclear generation resources shall not be eligible for Operating Reserve payments unless: 1) the Office of the Interconnection directs such resources to reduce output; or 2) ~~the resource has obtained an exception under the procedures specified in the Appendix to Attachment M a physical problem at the unit requires a risk premium, provided that the risk premium is approved by the MMU Office of the Interconnection. The foregoing notwithstanding, the Office of the Interconnection and the MMU shall consider requests by nuclear generation resources for Operating Reserve payments for specific circumstances not covered by the foregoing rules. Such requests shall be evaluated on a case-by-case basis.~~

Comment [JWM1]: Move process for obtaining approval of risk premiums and case-by-case exception to the Appendix to Attachment M

1.7.18 Regulation.

(a) Regulation to meet the Regulation objective of each Regulation Zone shall be supplied from generation resources and/or Demand Resources located within the metered electrical boundaries of such Regulation Zone. Generating Market Buyers, and Market Sellers offering Regulation, shall comply with applicable standards and requirements for Regulation capability and dispatch specified in the PJM Manuals.

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UB equals the offer price for the unit, determined according to the schedule on which the unit was committed day-ahead, unless such schedule was a price-based schedule and the offer associated with that price schedule is less than the cost-based offer provided for the unit, in which case the offer for the unit will be determined from the cost-based schedule; and

where $URTLMP - UDALMP$ and $URTLMP - UB$ shall not be negative.

(f-2) A Market Seller's hydroelectric resource that is pool-scheduled (or self-scheduled, if operating according to paragraph 1.10.3 (c)), the output of which is altered at the request of the Office of the Interconnection from the schedule submitted by the owner, due to a transmission constraint or other reliability issue, shall be compensated for lost opportunity cost in the same manner as provided in sections 3.2.2A(d) and 3.2.3A(f) and further detailed in the PJM Manuals.

~~(f-3) If a Market Seller can demonstrate to the satisfaction of the Office of the Interconnection and the Market Monitoring Unit that, due to specific pre-existing binding commitments to which it is a party, and that properly should be recognized for purposes of this section, the above calculations do not accurately compensate the Market Seller for opportunity cost associated with following PJM dispatch instructions and reducing or suspending a unit's output due to a transmission constraint or other reliability issue, then the Office of the Interconnection will negotiate with the individual Market Seller such appropriate compensation by the Market Monitoring Unit.~~

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(g) A Market Seller providing Reactive Services from a hydroelectric resource where such resource is pool scheduled (or self-scheduled, if operating according to paragraph 1.10.3 (c)), and where the output of such resource is altered from the schedule submitted by the Market Seller for the purpose of maintaining reactive reliability at the request of the Office of the Interconnection, shall be compensated for lost opportunity cost in the same manner as provided in sections 3.2.2A(d) and 3.2.3A(f) and further detailed in the PJM Manuals.

~~(h) If a Market Seller can demonstrate to the satisfaction of the Office of the Interconnection and the Market Monitoring Unit that, due to specific pre-existing binding commitments to which it is a party, and that properly should be recognized for purposes of this section, the above calculations do not accurately compensate the Market Seller for lost opportunity cost associated with following the Office of the Interconnection's dispatch instructions to reduce or suspend a unit's output for the purpose of maintaining reactive reliability, then the Office of the Interconnection will provide such alternate lost opportunity cost compensation to the Market Seller as can be agreed upon by the Market Seller, and the Office of the Interconnection, and the Market Monitoring Unit.~~

(i) The amount of Synchronized Reserve provided by generating units maintaining reactive reliability shall be counted as Synchronized reserve satisfying the overall PJM Synchronized Reserve requirements. Operators of these generation units shall be notified of such provision, and to the extent a generation unit's operator indicates that the generation unit is capable of providing Synchronized Reserve, shall be subject to the same requirements contained in Section 3.2.3A regarding provision of Tier 2 Synchronized Reserve. At the end of each Operating Day, to the extent a condenser operated to provide Reactive Services also provided Synchronized Reserve, a Market Seller shall be credited for providing synchronous condensing for the purpose of maintaining reactive reliability at the request of the Office of the Interconnection, in an amount equal to the higher of (i) the hourly Synchronized Reserve Market Clearing Price for each hour a generation unit provided synchronous condensing multiplied by the amount of Synchronized reserve provided by the synchronous condenser or (ii) the sum of (A) the generation unit's hourly cost to provide synchronous condensing, calculated in accordance with the PJM Manuals, (B) the hourly product of MW energy usage for providing synchronous condensing multiplied by the real time LMP at the generation unit's bus, (C) the generation unit's startup-cost of providing synchronous condensing, and (D) the unit-specific lost opportunity cost of the generation resource supplying the increment of Synchronized Reserve as determined by the Office of the Interconnection in accordance with procedures specified in the PJM Manuals. To the extent a condenser operated to provide Reactive Services was not also providing Synchronized Reserve, the Market Seller shall be credited only for the generation unit's cost to condense, as described in (ii)

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5.2 Transmission Congestion Credit Calculation.

5.2.1 Eligibility.

~~(a) Except as provided in the Appendix to Attachment M Section 5.2.1(b), each holder of a Financial Transmission Right shall receive as a Transmission Congestion Credit a proportional share of the total Transmission Congestion Charges collected for each constrained hour.~~

Comment [JWM3]: Move FTR Forfeiture Rule to the Appendix to Attachment M.

~~(b) If a holder of a Financial Transmission Right between specified delivery and receipt busses acquired the Financial Transmission Right in a Financial Transmission Rights Auction (the procedures for which are set forth in Part 7 of this Schedule 1) and (i) had an Increment Bid and/or Decrement Bid that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market for delivery or receipt at or near delivery or receipt busses of the Financial Transmission Right; and (ii) the result of the acceptance of such Increment Bid or Decrement Bid is that the difference in locational marginal prices in the Day-ahead Energy Market between such delivery and receipt busses is greater than the difference in locational marginal prices between such delivery and receipt busses in the Real time Energy Market, then the Market Participant shall not receive any Transmission Congestion Credit, associated with such Financial Transmission Right in such hour, in excess of one divided by the number of hours in the applicable month multiplied by the amount that the Market Participant paid for the Financial Transmission Right in the Financial Transmission Rights Auction.~~

~~(c) For purposes of Section 5.2.1(b) a bus shall be considered at or near the Financial Transmission Right delivery or receipt bus if seventy five percent or more of the energy injected or withdrawn at that bus and which is withdrawn or injected at any other bus is reflected in the constrained path between the subject Financial Transmission Right delivery and receipt busses that were acquired in the Financial Transmission Rights Auction.~~

5.2.2 Financial Transmission Rights.

(a) Transmission Congestion Credits will be calculated based upon the Financial Transmission Rights held at the time of the constrained hour. Except as provided in paragraph (e) below, Financial Transmission Rights shall be auctioned as set forth in Section 7.

(b) The hourly economic value of a Financial Transmission Right Obligation is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and

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subsection (a) that are jointly pivotal with respect to such transmission limit(s), and (2) the generation resource's owner, when combined with the two largest other generation suppliers, is not pivotal ("three pivotal supplier test"). ~~Notwithstanding the number of jointly pivotal suppliers in any hour, if the PJM Market Monitoring Unit determines that a reasonable level of competition will not exist based on an evaluation of all facts and circumstances, it may propose to the Commission the removal of offer capping suspensions otherwise authorized by this section. Such proposals shall take effect only upon Commission acceptance or approval. This provision is also found in Article IV, Section E of Attachment M of the Tariff. In the event of any conflict or inconsistency between this section and the provisions contained in Attachment M, the terms of Attachment M shall control.~~

Comment [JWM4]: The deleted portion should be moved to the Appendix to Attachment M.

(f) For the purposes of conducting the three pivotal supplier test in subsection (e), the following applies:

(i) All megawatts of available incremental supply for which the power distribution factor ("dfax") has an absolute value equal to or greater than the dfax used by the Office of the Interconnection's system operators when evaluating the impact of generation with respect to the constraint ("effective megawatts") will be included in the available supply analysis at costs equal to the cost-based offers of the available incremental supply adjusted for dfax ("effective costs"). The Office of the Interconnection will post on the PJM website the dfax value used by operators with respect to a constraint when it varies from three percent.

(ii) The three pivotal supplier test will include in the definition of the relevant market incremental supply up to and including all such supply available at an effective cost equal to 150% of the cost-based clearing price calculated using effective costs and effective megawatts and the need for megawatts to solve the constraint.

(iii) Offer price caps will apply on a generation supplier basis (i.e. not a generating unit by generating unit basis) and only the generation suppliers that fail the three pivotal supplier test will have their units that are dispatched with respect to the constraint offer capped. A generation supplier for the purposes of this section includes corporate affiliates. Supply controlled by a generation supplier or its affiliates by contract with unaffiliated third parties or otherwise will be included as supply of that generation supplier; supply owned by a generation supplier but controlled by an

6.4.2 Level.

(a) The offer price cap shall be ~~one of the an~~ amount determined in accordance with the procedures set forth in the Appendix to Attachment M and shall be provided by the Market Seller as a cost-based offer submitted in conjunction with any market Offer.

~~s specified below, as specified in advance by the Market Seller for the affected unit:~~

~~(i) The weighted average Locational Marginal Price at the generation bus at which energy from the capped resource was delivered during a specified number of hours during which the resource was dispatched for energy in economic merit order, the specified number of hours to be determined by the Office of the Interconnection and to be a number of hours sufficient to result in an offer price cap that reflects reasonably contemporaneous competitive market conditions for that unit;~~

~~(ii) The incremental operating cost of the generation resource as determined in accordance with Schedule 2 of the Operating Agreement and the PJM Manuals ("incremental cost"), plus 10% of such costs;~~

~~(iii) For units that are frequently offer capped, the following shall apply:~~

~~(a) For units that are offer capped for 60% or more of their run hours, but less than 70% of their run hours, the offer price cap will be either (i) incremental cost plus 10% or (ii) incremental cost plus \$20 per megawatt hour;~~

~~(b) For units that are offer capped for 70% or more of their run hours, but less than 80% of their run hours, the offer price cap will be either (i) incremental cost plus 15%, not to exceed incremental cost plus \$40 per megawatt hour, or (ii) incremental cost plus \$30 per megawatt hour;~~

~~(c) For units that are offer capped for 80% or more of their run hours, the offer price cap will be (i) incremental costs plus 10%; (ii) incremental cost plus \$40 per megawatt hour; or (iii) the agreed unit specific going forward costs of the affected unit as reflected in an agreement entered pursuant to subparagraph (iv), below; or~~

~~(iv) An amount determined by agreement between the Office of the Interconnection and the Market Seller, provided that, if the Office of the Interconnection and the Market Seller cannot reach agreement after 60 days from the commencement of negotiations, then the Market Seller may submit the rates, terms, and conditions of its proposed offer cap to the Commission for resolution. In making its determination of the appropriate offer price cap, the Office of the Interconnection shall consider any advice and analysis provided to the Office of the Interconnection by the Market Monitoring Unit.~~

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~~(b) For purposes of section 6.4.2(a)(iii), a generating unit shall qualify for the specified offer cap upon issuance of written notice from the Market Monitoring Unit Office of the Interconnection that it is a “Frequently Mitigated Unit” or “FMU” because it was offer capped for the applicable percentage of its run hours, determined on a rolling 12-month average basis, effective with a one month lag.~~

~~(c) Any generating unit, without regard to ownership, located at the same site as a Frequently Mitigated Unit qualifying under Sections 6.4.2(a)(iii) shall become an “Associated Unit” upon issuance of written notice from the Market Monitoring Unit Office of the Interconnection that it meets all of the following criteria:~~

- ~~1. The unit has the identical electric impact on the transmission system as the FMU;~~
- ~~2. The unit (i) belongs to the same design class (where a design class includes generation that is the same size and utilizes the same technology, without regard to manufacturer) and uses the identical primary fuel as the FMU or (ii) is regularly dispatched by PJM as a substitute for the FMU based on differences in cost that result from the currently applicable FMU adder;~~
- ~~3. The unit (i) has an average daily cost based offer, as measured over the preceding 12-month period, that is less than or equal to the FMU’s average daily cost based offer adjusted to include the currently applicable FMU adder or (ii) is regularly dispatched by PJM as a substitute for the FMU based on differences in cost that result from the currently applicable FMU adder.~~

~~The offer cap for an associated unit shall be equal to the incremental operating cost of such unit, as determined in accordance with Schedule 2 of the Operating Agreement and the PJM Manuals, plus the applicable percentage adder or dollar per megawatt hour adder as specified in Section 6.4.2(a)(iii)(a), (b), or (c) for the unit with which it is associated.~~

~~(d) For purposes of section 6.4.2(a)(iii)(c), the unit-specific going forward costs determined by agreement between the Office of the Interconnection and the Market Seller shall include only the costs included in the Deactivation Avoidable Cost Rate, excluding costs associated with the Avoidable Project Investment Recovery Rate (APIR), set forth in section 115 of the PJM Tariff. Any costs that would be capitalized according to generally accepted accounting principles, associated carrying costs, or other fixed costs shall not be included. The agreement shall further provide that (i) in order for such costs to qualify for inclusion in the amounts determined by the agreement, the Market Seller~~

~~must agree to provide to PJM relevant cost data concerning fuel, operating and maintenance, and other avoidable costs, (ii) the maintenance practices and incurrence of expense at the unit shall be subject to audit by the Office of the Interconnection, and (iii) the unit owner agrees to operate the unit in accordance with Good Utility Practice.~~

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~~(e) Any agreement entered pursuant to section 6.4.2(a)(iv) shall be filed with the Commission and shall be effective only upon acceptance of the agreement for filing by the Commission; provided however, that agreements to reflect unit specific going forward costs in accordance with section 6.4.2(a)(iii) shall be filed with the Commission for informational purposes only and shall be effective the day following the date of the informational filing.~~

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(b~~f~~) Market Participants shall have exclusive responsibility for preparing and submitting their offers on the basis of accurate information and in compliance with the FERC Market Rules, inclusive of the level of any applicable offer cap, and in no event shall PJM be held liable for the consequences of or make any retroactive adjustment to any clearing price on the basis of any offer submitted on the basis of inaccurate or non-compliant information.

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6.5 [Reserved for Future Use]

6.6 Minimum Generator Operating Parameters – Parameter Limited Schedules

(a) Generation resources shall be subject to pre-determined limits on non-price offer parameters (“parameter limited schedules”) under the following circumstances:

- (i) The Operating Reserve markets fail the three pivotal supplier test. When this subsection applies, the parameter limited schedule shall be the less limiting of the defined parameter limited schedules or the submitted offer parameters.
- (ii) The Office of the Interconnection: (i) declares a Maximum Generation Emergency; (ii) issues an alert that a Maximum Generation Emergency may be declared (“Maximum Generation Emergency Alert”); or (iii) schedules units based on the anticipation of a Maximum Generation Emergency or a Maximum Generation Emergency Alert for all, or any part, of an Operating Day.

(b) Parameter limited schedules ~~applied pursuant to this section shall be determined by the Office of the Interconnection in accordance with the PJM Manuals and~~ shall consist of the following parameters:

- (i) Turn Down Ratio;
- (ii) Minimum Down Time;
- (iii) Minimum Run Time;
- (iv) Maximum Daily Starts;
- (v) Maximum Weekly Starts.

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(c) Unless a Generation Resource has obtained an exception for unit-specific values determined in accordance with the process set forth in the Appendix to Attachment M, such Generation Resource shall include in its parameter limited schedule values equal to or within the limits set forth in the chart below:

[Insert Parameter Limited Schedule Matrix]

~~(v) In making its determination of parameter limited schedules the Office of the Interconnection shall consider any advice and analysis provided to the Office of the Interconnection by the Market Monitoring Unit.~~

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VERIFICATION

PJM requires that the load reduction meter data be submitted to PJM within 60 days of the event. If the data are not received within 60 days, no payment for participation is provided. Meter data must be provided for the hour prior to the event, as well as every hour during the event.

These data files are to be communicated to PJM either via the Load Response Program web site or email. Files that are emailed must be in the PJM-approved file format. Meter data will be forwarded to the EDC and LSE upon receipt, and these parties will then have ten (10) business days to provide feedback to PJM. ~~All load reduction data are subject to PJM Market Monitoring Unit audit.~~

Comment [JWM5]: Relocate provision to the Appendix to Attachment M (retrospective mitigation).

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