

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**PJM Interconnection, L.L.C.**

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**Docket No. ER15-\_\_\_\_-000**

**Reforms to the Reliability Pricing Market (“RPM”) and Related Rules in the PJM  
Open Access Transmission Tariff (“Tariff”) and Reliability Assurance Agreement  
Among Load Serving Entities (“RAA”)**

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**December 12, 2014**

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December 12, 2014

Honorable Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E., Room 1A  
Washington, D.C. 20426

Re: *PJM Interconnection, L.L.C.*, Docket No. ER15-\_\_\_\_-000  
***January 12, 2015 Comment Date Requested***

Dear Ms. Bose:

PJM Interconnection, L.L.C. (“PJM”), pursuant to section 205 of the Federal Power Act (“FPA”), 16 U.S.C. § 824d, hereby submits important reforms to the Reliability Pricing Market (“RPM”) and related rules in the PJM Open Access Transmission Tariff (“Tariff”) and Reliability Assurance Agreement Among Load Serving Entities (“RAA”) to better ensure that committed capacity resources will perform when called upon to meet the reliability needs of the PJM Region.<sup>1</sup>

To provide the Commission with time to fully review these changes, PJM requests that the enclosed revisions become effective on April 1, 2015. ***Moreover, to allow all interested parties sufficient time to review and comment on the reforms proposed in this filing, PJM requests that the Commission extend the comment date to January 12, 2015, which is 31 days from the date of this filing.***

## **I. INTRODUCTION AND SUMMARY**

The Commission has found that a resource adequacy construct that “fails to provide adequate incentives for resource performance, [can] threaten[] reliable operation of the system and forc[e] consumers to pay for capacity without receiving commensurate reliability benefits.”<sup>2</sup> As the Commission has explained, a resource adequacy construct

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<sup>1</sup> Capitalized terms not otherwise defined herein have the meaning specified in, as applicable, the Tariff, RAA, or Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”).

<sup>2</sup> *ISO New England Inc.*, 147 FERC ¶ 61,172, at P 23 (2014) (“*ISO-NE Pay for Performance*”), *reh’g pending*.

that “treats many resources as if they are fully available to operate” during emergencies, “and pays them accordingly, even when those resources are unable to deliver energy or reserves at that time” will “not only fail to incent resource performance, but also perversely select less reliable resources over more reliable resources because a capacity supplier’s decision to forego investments that would improve resource performance allows it to offer into the [capacity auction] at a lower price.”<sup>3</sup> Indeed, the Commission just last month required each jurisdictional centralized market operator to identify actions it is taking to improve fuel assurance, which is a key pre-requisite to better generation performance.<sup>4</sup> As the Commission recognized, generator performance “directly contributes to the overall reliability of the grid and just and reasonable rates.”<sup>5</sup>

By this filing, PJM proposes a series of important tariff reforms to ensure that resources committed as capacity to meet the PJM Region’s reliability needs will deliver the promised energy and reserves when called upon in emergencies, providing the reliability that the region expects and requires. Among the key reforms proposed by this filing:

- A new capacity product—the Capacity Performance Resource—that provides greater assurance of delivery of energy and reserves during emergency conditions;
- A redefined capacity product—the Base Capacity Resource—that is essentially the existing capacity product but with enhanced assurance of delivery of energy and reserves during hot weather operations;
- Virtually eliminating the current excuses for Capacity Resource non-performance, leaving only certain narrowly drawn exceptions for actions specifically approved or directed by PJM;
- Charges assessed for poor performance (subject to a reasonable “stop-loss” provision), and credits given for superior performance, patterned closely on provisions recently approved for ISO–New England, Inc., to provide a strong incentive for performance;
- Capacity sell offer rule changes that recognize the costs and risks of offering Capacity Performance Resources by increasing the offer-price cap for such resources to the Net Cost of New Entry, while also allowing offers in excess of the Net Cost of New Entry if the seller can demonstrate that the costs of improving resource performance, including firm fuel costs and documented and verifiable expenses solely attributable to the risks of offering Capacity Performance Resources, exceed that value;

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<sup>3</sup> *Id.* at P 26.

<sup>4</sup> *Centralized Capacity Markets in Reg’l Transmission Orgs. and Indep. Sys. Operators/Winter 2013-2014 Operations and Market Performance in Reg’l Transmission Orgs. and Indep. Sys. Operators*, 149 FERC ¶ 61,145, at P 20 (2014).

<sup>5</sup> *Id.* at P 8.



- A distinct “must-offer” requirement specifically for resources capable of qualifying as Capacity Performance Resources, to prevent physical withholding of such resources;
- Conforming changes to Load Serving Entity capacity obligations, to reflect the reliability value added by resource performance during winter-season emergencies;
- Preservation of existing capacity products through May 31, 2020, subject to a reliability-based cap on the quantity of such products that may clear the capacity auctions, to allow market participants time to adapt their resources as necessary to ensure satisfaction of the region’s expectation that all committed capacity will deliver energy and reserves during emergencies;
- An allowance for differential price clearing during that transition, to recognize the higher value of Capacity Performance Resources;
- Elimination of the current market rule that intentionally understates the region’s reliability needs in the RPM Base Residual Auction, to eliminate a possible source of under-pricing of any resources (including Capacity Performance Resources) in that auction; and
- Conforming changes to various capacity rules, including the RPM credit requirements (to reflect increased credit exposure from the new Non-Performance Charge) and the Fixed Resource Requirement alternative to RPM (to establish equivalent requirements and incentives for resource performance).

PJM proposes to implement these changes for the next Base Residual Auction (“BRA”), which is scheduled for May, 2015, and which will procure capacity for the 2018/2019 Delivery Year. To allow ample time for the Commission to consider these changes, yet still allow implementation of these rules for the 2015 BRA, PJM proposes an effective date of April 1, 2015. PJM offers this additional time—nearly double the 60 days typically allowed for an initial Commission order on a section 205 filing—in expectation that the Commission can issue a definitive order on the filing by April 1, and thus confirm for market participants over a month prior to the auction that the Capacity Performance Resource product will indeed be recognized in that auction. PJM recognizes, however, that by proposing such an effective date, the Commission would not be obliged to take any action on the filing until just prior to April 1. PJM therefore urges the Commission, if it determines any interim action (such as requesting additional information, if any, the Commission deems necessary to process this filing) is appropriate for this filing, to take such action by no later February 11, 2015. In this way, the Commission could remain in a position to take final, substantive action on this filing by April 1, and thereby facilitate orderly integration of these rules for the 2015 BRA.<sup>6</sup>

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<sup>6</sup> Under the rules proposed in this filing, certain actions to prepare for the May 2015 BRA, such as submission of requests for exceptions from the proposed Capacity Performance Resource “must-offer” provision, would need to be initiated prior to April 1. PJM clarifies that it will receive and process any such requests while this filing is pending, to ensure timely resolution of such issues in the event the Commission accepts these rule changes, as proposed, for the 2015

While the tariff changes in this filing are focused on the 2018/2019 (and subsequent) Delivery Years, this filing does not neglect the near-term Delivery Years, for which PJM already has conducted Base Residual Auctions because resource performance, and greater assurance of delivery of energy and reserves during emergencies, are just as important for the 2015/2016 through 2017/2018 Delivery Years. The short time before each of those Delivery Years starts, however, means that resource owners have less time to make the capital or operating changes needed to improve the performance of their resources. Consequently, PJM will not attempt to mandate these new requirements before resources can reasonably prepare for them. But some actions to improve near-term reliability and resource performance can and should be pursued. In particular, PJM will be addressing reliability and generator performance concerns for the 2015/2016 Delivery Year, stemming from generator deactivations associated with the U.S. Environmental Protection Agency's Mercury and Air Toxics Standards,<sup>7</sup> as well as potential adverse impacts from a federal appellate decision on the Commission's demand response jurisdiction,<sup>8</sup> and an ensuing complaint regarding capacity demand response,<sup>9</sup> on Demand Resources committed to PJM for the next Delivery Year, through a proposed mechanism for procurement of additional resources and related changes. To ensure a timely and focused response, PJM will address the relief needed for the 2015/2016 Delivery Year in a separate section 205 tariff filing (which could take the form, in part, of a tariff waiver request) later this month.

For the 2016/2017 and 2017/2018 Delivery Years, PJM proposes in today's filing to seek voluntary commitments of Capacity Performance Resources via special-purpose auctions. Capacity Market Sellers that commit Capacity Performance Resources will be subject to the proposed non-performance charge for poor performance, but with lower non-performance charge levels, and with a lower "stop-loss," than PJM is proposing for the 2018/2019 and subsequent Delivery Years. Resources of any type that provide superior performance will share in the collected non-performance charge revenues for those near-term years.

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BRA. This is the same procedure PJM has, upon similar notice to the Commission and market participants, employed in prior years for rule changes affecting BRA participation. *See, e.g.,* Submittal of PJM Interconnection, L.L.C., Docket No. ER14-503-001, at 2-3 (Feb. 20, 2014), accepted in, *PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,060, at P 1 (2014), *reh'g pending*; Submittal of PJM Interconnection, L.L.C., Docket No. ER13-2108-000, at 24-25 (Aug. 2, 2013), accepted in, *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,150, at P 1 (2014), *reh'g pending*.

<sup>7</sup> 40 C.F.R. Parts 60, 63; *see also The Commission's Role Regarding the Environmental Protection Agency's Mercury and Air Toxics Standards*, 139 FERC ¶ 61,131, at PP 5, 8, 13 (2012) (acknowledging reliability issues which might arise due to deactivation).

<sup>8</sup> *Electric Power Supply Ass'n v. FERC*, 753 F.3d 216 (D.C. Cir. 2014) ("EPSA").

<sup>9</sup> Complaint of First Energy Service Company, Docket No. EL14-55-000 (May 23, 2014).

PJM also is filing, or will file, other related filings this month. First, concurrent with this section 205 filing, PJM is submitting a filing under section 206 of the Federal Power Act proposing additional remedies to the problem of sub-par generator performance. Specifically, PJM proposes in the section 206 filing to: (1) revise the procedure for determining parameter limits for resources, including clarifying that such limits must be based solely on the operating design characteristics of each specific resource (rather than on economic or budgetary concerns), and then clarify that units operating outside of those parameter limitations for reasons other than at PJM direction are ineligible to be made whole through Operating Reserve credits for such operation during specified types of emergencies or alerts; (2) reform PJM's current *force majeure* rules to recognize that participants in PJM's wholesale power markets should be excused from performance only when catastrophic conditions broadly preclude performance by market participants in the PJM Region; (3) reduce opportunities to effectively avoid capacity resource performance by submitting uneconomic (i.e., "Maximum Emergency") offers in the Day-ahead Energy Market; and (4) include in the market rules more transparent and rigorous criteria for PJM's consideration and approval of requested planned and maintenance outages, including clarifying PJM's authority to timely rescind a prior approval.

Because these changes primarily concern the Operating Agreement (which requires a super-majority Member vote for amendments), and because the Enhanced Liaison Committee stakeholder process employed for these changes proceeds (by stakeholder design) directly to PJM Board consideration without a Member vote, PJM is not authorized to make those changes under FPA section 205. PJM stresses, however, that while these two concurrent filings provide complementary solutions to the same underlying problem, and while both seek the same, April 1, 2015 effective date, this section 205 filing *is not dependent upon* Commission acceptance of the section 206 filing. The facts, precedent, and logic that compel approval of the changes in this section 205 filing also compel approval of the section 206 changes, and approval of the section 205 changes without the section 206 changes would bypass an opportunity for a more effective solution. Nonetheless, the Commission could find the changes in this section 205 filing to be just and reasonable without first (or concurrently) accepting the changes in the section 206 filing. To the contrary, the section 206 filing is better viewed as building on the changes in *this* filing. Moreover, while concurrent action on both filings by April 1 is strongly preferred, the changes proposed in the section 206 filing primarily entail energy market rule changes for forward Delivery Years, thus permitting additional time for consideration of the section 206 filing if the Commission finds that necessary. The Commission therefore should act definitively on the tariff changes in this section 205 filing by the proposed April 1, 2015 effective date even if it does not (contrary to PJM's request) act on the proposed changes in the section 206 filing by April 1, 2015.

Second, PJM will file in December capacity market changes under FPA section 205 to establish a means for wholesale entities to obtain reductions in capacity charges by committing load reductions on the demand side of the capacity market, so that a ready alternative is available to PJM's current supply-side paradigm for capacity demand response is available for the 2015 BRA, if necessary to address uncertainty resulting from the *EPSA* decision.

The concurrence of the pressing need to reform the capacity resource performance rules, with the potential need to reform the capacity market demand response rules and avoid creating further commitments that may later have to be undone depending on the status of the *EPSA* mandate, adds to the challenges faced by both PJM and the Commission. To help meet that challenge, PJM is preparing its filings this month in a way that allows the Commission to decouple its consideration of these two issues.

In PJM's view, given *EPSA*'s clear limitations on, at a minimum, wholesale energy market compensation to end-user demand response, the approach for the next BRA that would best balance reliability, cost, and long-term certainty and best match the treatment of demand response in both the energy and capacity markets, would be to reform both the rules on capacity performance and those on demand response. But PJM recognizes that further appellate proceedings on *EPSA* will strongly influence whether capacity demand response changes should be implemented for the next BRA. PJM therefore will use its filings this month to present the Commission with options. The present filing, for example, preserves the current approach of permitting end-user offers on the supply-side for load reductions, but strengthens the requirements for resource performance, consistent with the capacity performance changes proposed for other types of resources. The filing later this month will propose to shift capacity market demand response to a wholesale-entity, demand-side model, and will describe that shift in both a way that is consistent with this capacity performance filing, and in a way that assumes no change to performance requirements. Thus, the Commission will be in a position to approve rules for the next BRA either with or without capacity performance reforms, and (independently) either with or without transitioning demand response to a more sustainable post-*EPSA* model.

## II. BACKGROUND

PJM's Reliability Pricing Model ("RPM") capacity market has been successful in securing capacity *commitments*, including from new resources.<sup>10</sup> However, the RPM rules on capacity *performance* have not kept pace with that growth, and do not adequately ensure actual performance. PJM details those weaknesses in its capacity performance rules below, explains how dramatic changes in the region's resource portfolio (including changes facilitated by RPM) can put further stress on the fault line between expected performance and realized performance, and describes how events last winter illustrated how actual performance can fall well short of committed performance. While, as the Commission has recognized, RPM always has depended on the

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<sup>10</sup> In the 2017/2018 BRA, PJM procured 5,927.4 MW of capacity from new generation, "the highest quantity of new generation procured since the start of RPM," compared with 4,281.6 MW in the 2016/2017 BRA, 4,898.9 MW in the 2015/2016 BRA, and 415.5 MW in the 2014/2015 BRA. *2017/2018 RPM Base Residual Auction Results*, PJM Interconnection, L.L.C., 2 (2014), <http://www.pjm.com/~media/markets-ops/rpm/rpm-auction-info/2017/2018-base-residual-auction-report.ashx> ("2017/2018 BRA Results").

commitment of identifiable, unit-specific, firm, physical resources,<sup>11</sup> with an expectation that those identifiable firm resources would be accountable and reliable when called upon to meet critical resource needs, it has become apparent that the current RPM market design is not providing sufficient deterrents to poor performance, or sufficient incentives for good performance. This filing will improve that market design, and help ensure that the realized performance better matches the expected performance.

**A. RPM’s Current Charges for Sub-Par Performance are Inadequate.**

A Capacity Resource committed in RPM currently faces only limited and attenuated adverse consequences for failing to provide energy and reserves when needed. First, each Capacity Resource’s saleable megawatt value is discounted to reflect the resource’s forced outage history.<sup>12</sup> A resource with relatively frequent or extended outages therefore can offer (and be compensated for) a lower megawatt value than a resource with fewer, or less extended, outages. A resource’s Unforced Capacity value, however, is determined over a full year and is only applied in subsequent years, so the incremental adverse impacts of poor resource performance are only slight (typically changing the resource’s saleable capacity by no more than a few percent each year) and realized only on a lagging basis.<sup>13</sup> As a performance requirement, therefore, PJM’s existing EFORD and Unforced Capacity rules are essentially the same as the ISO-NE rules that “penaliz[e] capacity resources for outages after-the-fact by reducing the amount of capacity they can offer in future auctions,” which the Commission categorized as “ineffective performance incentives” that “have the potential to adversely affect the ability of centralized capacity markets to deliver on the goal of ensuring resource adequacy in real-time.”<sup>14</sup>

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<sup>11</sup> DR Sell Offer Order at P 22 (“PJM needs to have a reasonable assurance that resources offering into RPM auctions will actually be able to provide the offered demand response capability so that PJM can meet its resource adequacy requirements.”), at P 27 (PJM can reasonably require that RPM offers be submitted “with the ‘reasonable expectation, based on [seller’s] analyses as of the date of the [offer]’ to deliver all megawatts that clear in the RPM Base Residual Auction by the specified Delivery Year.”).

<sup>12</sup> See RAA, Schedule 5 (describing demand-equivalent forced outage rate (“EFORD”) calculation), Tariff, Attachment DD, section 5.4 (prescribing that the capacity product offered in RPM is “Unforced Capacity,” i.e., installed capacity discounted using EOFRd).

<sup>13</sup> Indeed, even a resource that is completely unavailable for service could still be assigned some level of Unforced Capacity for a number of years until the EFORD reductions “catch up” to the present state of the unit in the Delivery Year.

<sup>14</sup> *ISO-NE Pay for Performance* at P 35 n.34 (alteration in original) (quoting Answer of ISO New England Inc. in Opposition to NEPOOL Alternative Proposal, Docket No. ER14-1050-000, at 13 (Feb. 12, 2014)).

Second, Generation Capacity Resources in PJM are subject to a Peak-Hour Period Availability Charge<sup>15</sup> which employs a peak-period availability metric (“EFORp”) “to assess whether generation resources committed as capacity actually are available at expected levels during peak periods.”<sup>16</sup> As the Commission has explained, PJM’s current “peak-hour-period availability charges and credits are calculated by comparing a unit’s actual availability during peak-hour-periods with its expected availability.”<sup>17</sup> For this purpose, the “actual peak-hour-period availability is determined by assessing its availability during 500 peak hours of the delivery year.”<sup>18</sup> Expected availability during those peak-hour periods is based on the resource’s five-year average annual forced outage rate.<sup>19</sup> If a resource’s actual availability (after considering forced outages) during those 500 peak hours is worse than its five-year average annual outage experience, the resource faces a charge under section 10. Conversely, if the resource’s availability during those 500 hours is better than its outage history would suggest, it “may receive a credit, funded by any charges paid by the other capacity suppliers with lower than expected performance.”<sup>20</sup>

PJM’s current generator availability charge therefore is similar to a proposed charge<sup>21</sup> that the Commission rejected as flawed and inadequate in *ISO-NE Pay for Performance*. As the Commission explained “measuring a resource’s performance only against its own historical performance . . . may inappropriately reward poorly-performing resources and penalize highly-performing resources, which could further erode reliability in the region.”<sup>22</sup> Indeed, basing a resource’s availability in a three-year forward Delivery Year on its outage experience during the five years before that Delivery Year “could provide an incentive for a capacity resource to reduce its measured performance over the

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<sup>15</sup> See Tariff, Attachment DD, section 10.

<sup>16</sup> *Pepco Energy Servs., Inc. v. PJM Interconnection, L.L.C.*, 128 FERC ¶ 61,051, at P 4 (2009) (“*Pepco Energy Services*”).

<sup>17</sup> *Id.* at P 5.

<sup>18</sup> *Id.* For PJM’s current provision, summer peak-hour periods are the hours between 2:00 p.m. and 7:00 p.m. on non-holiday weekdays during June through August (approximately 340 hours), while winter peak-hour periods are the hours between 7:00 a.m. and 9:00 a.m., and those between 6:00 p.m. and 8:00 p.m. on non-holiday weekdays in December and January (approximately 160 hours). Tariff, Attachment DD, section 10(b).

<sup>19</sup> Tariff, Attachment DD, section 10(d).

<sup>20</sup> *Pepco Energy Services* at P 5.

<sup>21</sup> See *ISO-NE Pay for Performance* at PP 13 & n.12, 14 (describing NEPOOL proposal to assess charges when resource availability over summer and winter peak hours falls short of the resource’s expected availability based on five-year average EFORd).

<sup>22</sup> *Id.* at P 24.

next four years to lower the five-year historical [availability metric] against which its performance would be measured” for that Delivery Year.<sup>23</sup>

PJM’s current generator availability charge also is overly broad in measuring performance and overly generous in excusing non-performance. By assessing performance over about 340 summer hours and about 160 winter hours, poor performance during critical emergency hours could be offset by adequate performance during other peak hours, thereby reducing or even eliminating any charge for a resource that was actually unavailable when it was most needed. Moreover, even if a resource is on a forced outage during the peak period, it is not counted as unavailable if the outage was deemed “Outside Management Control.”<sup>24</sup>

The Peak-Hour Period Availability (“PHPA”) Charge also has not posed a substantial threat to the capacity revenues of poor performing resources. In the 2012/2013 Delivery Year, PJM assessed PHPA charges of approximately \$9.4 million, or 0.2 % of total RPM revenues that year. For the 2013/2014 Delivery Year, PHPA charges were approximately \$38.9 million, or 0.6 % of total RPM revenues. Even considering only the poorly performing resources, i.e., those for which a PHPA charge was assessed, the capacity revenue loss was relatively low. PJM assesses PHPA charges on a Capacity Market Seller basis, rather than on an individual unit basis. But PJM can roughly estimate unit revenue losses by focusing on resource owners that: (i) were assessed PHPA charges in a Locational Deliverability Area (“LDA”); and (ii) had units in that same LDA with an availability shortfall. PJM estimates that only about 6.4 % of generation units committed in the 2012/2013 Delivery Year incurred PHPA charges, and those PHPA charges amounted to a loss of only about 5.7 % of these resources’ capacity revenues. For the 2013/2014 Delivery Year, about 23.1 % of generators were assessed PHPA charges, and lost only about 3.5 % of their capacity revenues. This very low risk of revenue loss probably stems from multiple features of the PHPA Charge, including the basic approach of using the resource’s historic performance to set its expected performance, the relatively large number of peak hours considered in that calculation, the opportunities to excuse unavailability, the numerous opportunities to offset poor performance, and the limits imposed on measures of poor performance.<sup>25</sup> Whatever the precise contribution of each of these factors, the bottom line is that sellers face little risk of losing much of their capacity revenues from the current PHPA Charge, even if performance is very poor.

The PHPA Charge is thus the only RPM provision that is specifically designed to enforce a generation resource’s capacity commitment, but it is plainly inadequate. It plainly puts most of the risk of resource underperformance on loads, rather than on the resource owners or operators. A seller can earn considerable revenues through RPM by committing its generation resource as capacity, with little concern that it will lose much of that revenue even if it performs poorly. A Capacity Market Seller therefore has little

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<sup>23</sup> *Id.*

<sup>24</sup> Tariff, Attachment DD, section 10(d).

<sup>25</sup> *Id.*, Attachment DD, sections 10(c)-(i).

incentive to make capital improvements or increase its operating expenses in order to enhance availability since there is little risk of losing significant capacity revenues for being unavailable during reliability critical events. To the contrary, the PHPA provision's excuses for unavailability create incentives to characterize outages as outside management control, to obscure the true cause of an outage, or to shift blame for an outage to a third party such as a gas pipeline. The market design reflected in the current PHPA therefore is the antithesis of the Commission's recent suggestion that "RTOs/ISOs could reform their centralized capacity markets to provide greater price incentives for capacity resources to be available, and impose stiff penalties for failure to perform, to encourage capacity resources to enter into firmer fuel arrangements."<sup>26</sup>

**B. RPM's Current Sell-Offer Pricing Rules Do Not Clearly Allow Recovery of Some Fuel Assurance Costs.**

The Commission recently observed that the "eastern" capacity markets "establish capacity prices based on economic bids of sellers, but do not directly take into account generator type, fuel supply arrangements, or operational characteristics."<sup>27</sup> This fairly characterizes RPM's market, with no product differentiation for generator types, age, or operational characteristics, and with the added complication that PJM's offer price cap rules do not clearly allow sellers to include firm gas supply transportation costs in their cost-based offers. Due to high market share concentrations in the capacity market, Sell Offers from Existing Generation Capacity Resources are routinely cost-capped. For this purpose, the measure of seller costs is known as the Avoidable Cost Rate ("ACR") or "going forward" costs, i.e., annual operating expenses that would not be incurred if a unit chose not to be a Capacity Resource for a year.<sup>28</sup> Currently, the costs of firm transportation ("FT") of natural gas are neither explicitly included in, nor explicitly excluded from, ACR.<sup>29</sup>

The ACR rules do allow recovery of capital costs reasonably needed to allow an existing generator to remain in service or improve peak-hour availability,<sup>30</sup> and those permissible costs (known as Allowable Project Investment Rates, or "APIR") could include investments in fuel security, such as dual-fuel capability. However, the Independent Market Monitor for PJM ("IMM") has communicated to market participants

<sup>26</sup> *Centralized Capacity Markets in Reg'l Transmission Orgs. and Indep. Sys. Operators/Winter 2013-2014 Operations and Market Performance in Reg'l Transmission Orgs. and Indep. Sys. Operators*, 149 FERC ¶ 61,145, at P 15.

<sup>27</sup> *Id.* at P 6.

<sup>28</sup> *See* Tariff, Attachment DD, section 6.8.

<sup>29</sup> *See* Tariff, Attachment DD, section 6.8. Avoidable costs specifically allowed include items related to administrative overhead, fixed operations and maintenance costs along with associated labor costs, capital carrying costs for fuel inventory (related to coal or oil stored on-site), taxes, insurance, and variable expenses not related to output such as station service and water.

<sup>30</sup> *See* Tariff, Attachment DD, section 6.8.



and to PJM that he does not support inclusion of natural gas firm transportation costs in the ACR calculations because, in his view, they are not the type of costs that are allowed under the ACR definition.

As a consequence, the ACR rules as currently implemented bias fuel choices for gas-fired resources towards either dual-fuel arrangements, which can be recovered through the ACR rules, or the use of interruptible transportation service (“IT”), which can be included in energy market offers or bundled commodity and transportation arrangements and then recovered through the wholesale energy market. By contrast, the costs of FT service cannot be recovered through either of these routes under the current rules, even though FT service improves generator availability during peak hour periods in exactly the same way as the dual-fuel capital investment.

Consequently, there currently are no good options for reflecting the costs of enhancing generator performance through to FT service. Competitive pressures will lead gas-fired resources to avoid the costs of FT service that would reduce profits given that the recovery of those costs in the PJM markets is uncertain, and RPM’s current performance rules do not establish a sufficient incentive to incur such costs.

But simply being able to include the costs of FT service in an offer does not mean that such an offer will clear the auction. The larger problem is that if resources that choose not to invest in (or budget for) measures to ensure higher availability and better performance (e.g., dual-fuel capability, firm gas transportation, or weatherization investments) can still clear the auction and set the clearing price, sellers that are willing to make such investments could be priced out of the market. Rather than encouraging investments to improve Capacity Resource performance, therefore, RPM’s current rules (including the weak performance incentives) encourage sellers to trim their capital improvement plans and operating budgets in order to remain competitive with resources that can clear as capacity and receive all or most of RPM’s capacity payments, without making effort to enhance fuel security or otherwise improve availability and performance.

In other words, the current market design’s inadequate deterrents to poor performance, and the inability to reflect all costs to enhance performance along with competitive pressures to submit prices that are assured of clearing the capacity auction, are a disincentive to the very improvements to fuel security that the Commission recently highlighted as key to ensuring future reliability.<sup>31</sup>

This shortcoming could be addressed, however, with market rule changes that strongly emphasize, and require accountability for, resource performance. With that change, the dynamic of competing supply offers in the capacity auction would be redirected toward finding the most cost-effective solution to performance shortcomings (whether that is subscribing to FT service including paying for new gas pipeline capacity,

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<sup>31</sup> *Centralized Capacity Markets in Reg’l Transmission Orgs. and Indep. Sys. Operators/Winter 2013-2014 Operations and Market Performance in Reg’l Transmission Orgs. and Indep. Sys. Operators*, 149 FERC ¶ 61,145, at PP 5, 7-8.

dual-fuel capability, or other approaches), rather than the current rules' lack of sufficient accountability for poor performance, which has the effect of driving capacity prices below the level needed to support *any* performance solution.

### **C. The Region's Resource Mix Is Changing Rapidly, Raising New Performance Challenges.**

As the Commission recently observed, issues of the fuel assurance needed to support generator performance “have become of greater concern given the increased reliance on natural gas-fired generators due to low average natural gas prices, compliance with environmental regulations, and other factors.”<sup>32</sup> The Commission added, however, that while “issues surrounding increased reliance on natural gas act as important drivers of current fuel assurance concerns, the need to address fuel assurance continues to apply to all resources, regardless of fuel type.”<sup>33</sup>

The trend toward greater reliance on gas-fired generation is evident in the PJM Region, with substantial retirements of coal- and oil-fired resources, and a generator interconnection queue overwhelmingly weighted towards gas-fired resources. Cumulatively since 2008, and projecting forward to 2019, over 26,000 megawatts of coal and oil-fired generation in the PJM Region have retired or are expected to retire, driven by environmental regulatory changes, changing fuel prices, and the development of new, more efficient gas-fired generators.

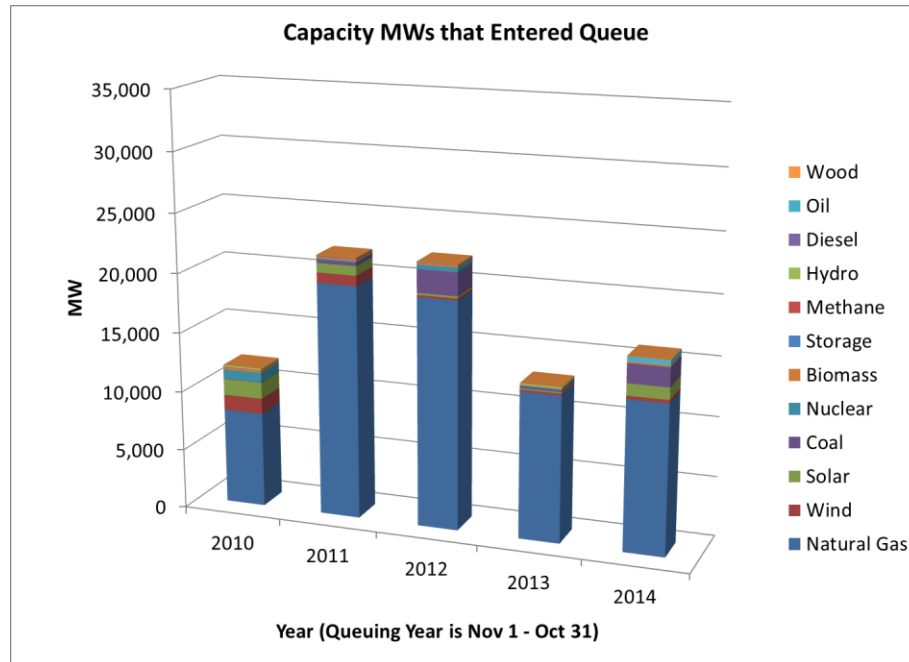
The PJM generation interconnection queue plainly shows this rapid shift in the resource base. The bar graph below<sup>34</sup> depicts the megawatts of Capacity Resources, by resource type, that have entered the queue in each of the last five years. As can be seen, the vast majority—in every one of those years—of the resources seeking to enter the PJM Region has been natural-gas-fueled.

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<sup>32</sup> *Centralized Capacity Markets in Reg'l Transmission Orgs. and Indep. Sys. Operators/Winter 2013-2014 Operations and Market Performance in Reg'l Transmission Orgs. and Indep. Sys. Operators*, 149 FERC ¶ 61,145, at P 7.

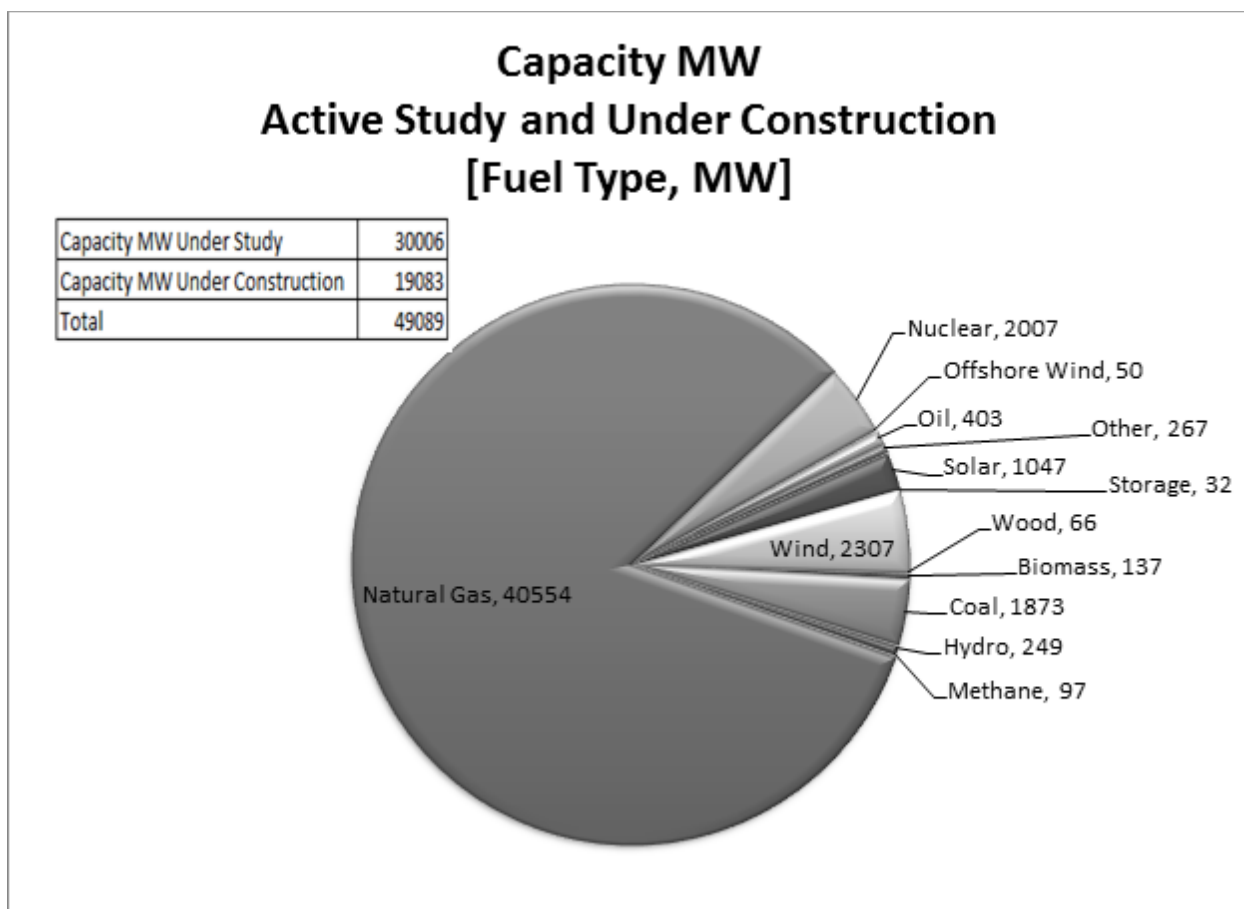
<sup>33</sup> *Id.*

<sup>34</sup> Data was pulled from PJM's Transmission Interconnection Planning database, covering November 1, 2013 through October 31, 2014, which is a “queue year” for PJM.



The pie chart below,<sup>35</sup> which shows the cumulative effect for *all* active queue requests (as of November 2014), starkly illustrates this trend by showing that *over 82 percent* of the projects now in the queue are natural gas projects. In other words, the region is becoming more dependent on gas-fired resources, and that dependence on natural gas is expected to increase greatly in coming years, as projects move through the interconnection process and into service.

<sup>35</sup> Data was pulled from PJM's Transmission Interconnection Planning database on November 20, 2014.



The rapid shift from coal to natural gas generation has presented challenges. Coordination between the gas and electricity industries, with very different physical, operational and market structures (including differences between power market offer deadlines and pipeline transportation nomination deadlines), has been insufficient to date, as highlighted by several recent Commission initiatives.<sup>36</sup> Moreover, the same increased gas supplies and lower natural gas prices that have contributed to development of new, more efficient, gas-fired generation plants have also put significant downward pressure on PJM energy prices, thereby placing greater pressure on generation resources to cover their going-forward (or avoidable) costs through RPM. The significant amount of new entry into RPM auctions recently has not increased clearing prices to the extent some might expect, because pending coal-fired retirements have been replaced by lower cost Demand Resources and combined cycle gas resources, which can recover considerably

<sup>36</sup> See e.g., *Coordination of the Scheduling Processes of Interstate Natural Gas Pipelines and Public Utilities*, Notice of Proposed Rulemaking, IV FERC Stats. & Regs., Proposed Regs. ¶ 32,700 (2014); *Posting of Offers to Purchase Capacity*, 146 FERC ¶ 61,203 (2014); *Cal. Indep. Sys. Operator Corp.*, 146 FERC ¶ 61,202 (2014); *Coordination Between Natural Gas & Elec. Markets*, Notice Assigning Docket No. and Requesting Comments, Docket No. AD12-12-000 (Feb. 15, 2012).

more of their going-forward costs through the energy market than can coal resources.<sup>37</sup> The combined effects on energy and capacity prices has simply reinforced that already embedded disincentive for the investments needed to maintain the high availability and high performance expected from existing generators that are committed as capacity in the PJM Region.

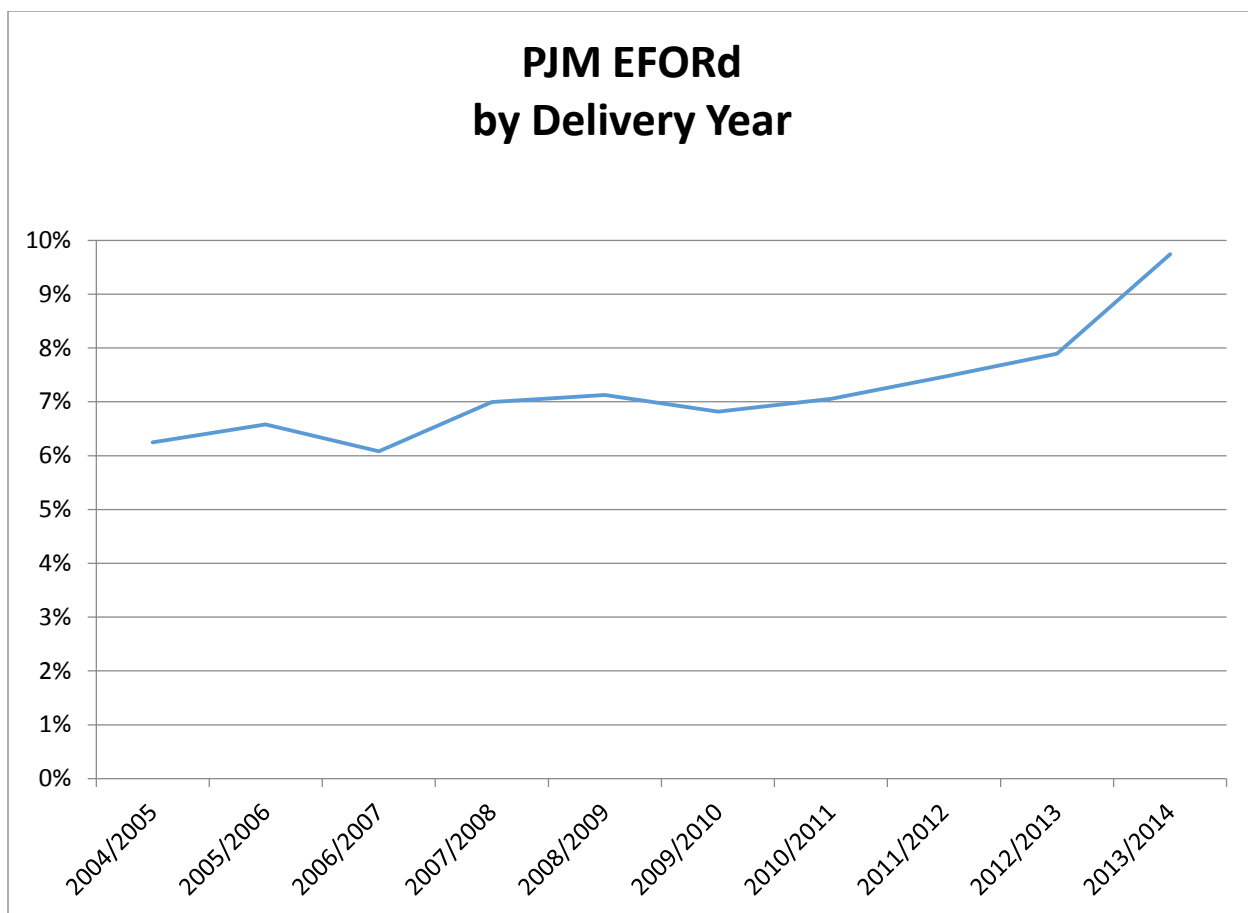
**D. Generator Equivalent Forced Outage Rates Have Gradually Deteriorated Over the Same Time Period that RPM Has Been in Effect.**

As seen in the graph below, generator equivalent forced outage rates (i.e., EFORD) have worsened over the last ten years.<sup>38</sup>

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<sup>37</sup> See 2013 State of the Market Report, Volume 2, Section 7: Net Revenue, Table 7-33. The class average avoidable cost for combined cycle gas plants is \$17,592/MW-year and for combustion turbine plants (like the RPM Reference Resource), is \$8,889/MW-year. In contrast, sub-critical coal units have a class average avoidable cost of \$59,827/MW-year and super-critical coal units have a class average avoidable cost of \$56,987/MW-year. For a proxy of nuclear unit avoidable costs, the U.S. EPA in its Integrated Planning Model documentation shows approximately \$190,000 to \$220,000/MW-year, but these costs are unit specific. See Documentation EPA Base Case v.5.13 Using the Integrated Planning Model, Chapter 4, pp. 4-62 to 4-64 at [http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/Chapter\\_4.pdf](http://www.epa.gov/airmarkets/progsregs/epa-ipm/docs/v513/Chapter_4.pdf).

<sup>38</sup> The source of this data is NERC GADS data for the PJM footprint.



RPM, including the PHPA Charge, was implemented beginning with the 2007-2008 Delivery Year. This unmistakable deterioration in EFORD probably has many causes. As relevant here, however, it is beyond dispute that the current RPM rules *have not prevented* this progressive reduction in the availability of generation resources in PJM, almost all of which is committed as capacity to the PJM Region. The lesson here is quite simple: while capacity *commitment* has been a success in RPM, the current RPM design's incentive structure clearly has not been as successful in ensuring the desired capacity *performance*.

**E. Indicative of the Current Market Design's Shortcomings, Resource Performance Fell Far Below Expected Levels Last Winter, Highlighting the Gap that Has Arisen Between Resource Commitments and Resource Performance.**

The potential adverse impacts of the trends described above, i.e., the PHPA Charge's inadequate incentive to improve generation resource availability, the challenges under the current RPM rules to recovering firm gas transmission costs or other investments and expenses associated with improving resource performance and availability, and an increasing reliance on gas-fired resources, were starkly illustrated by the poor resource performance in the PJM Region in January, 2014. During this past winter's peak on January 7, 2014, over 40,000 megawatts—22 percent of the generation

in the PJM region—was on forced outage and unavailable, largely due to mechanical and fuel supply problems.<sup>39</sup> This 22 percent forced outage rate was far above the historical average of 7 percent.<sup>40</sup>

The Figure below, reproduced from the PJM 2014 Cold Weather Report, shows outages by mode of failure.<sup>41</sup> The largest single source of failure was natural gas interruptions. But that only accounts for about one-fourth of the outages; as can be seen, there were many other causes, including maintenance and weatherization.<sup>42</sup> On a megawatt basis, natural gas interruptions accounted for 9,300 MW out of over 40,000 MW, while coal steam outages (considering all sources of failure) were the largest generator-plant-type category, at 13,700 MW.<sup>43</sup> Other natural gas outages related to issues such as start failures due to cold weather or issues with using back-up fuel accounted for another 9,700 MW and are related more to weatherization and maintenance issues than the inability to secure gas supplies and transportation.<sup>44</sup>

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<sup>39</sup> PJM Interconnection, L.L.C., *Analysis of Operational Events and Market Impacts During the January 2014 Cold Weather Events*, (May 8, 2014), [www.pjm.com/~media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx](http://www.pjm.com/~media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx) (“2014 Cold Weather Report”). These unavailable megawatts were due to either the generator’s entire output being unavailable or a limitation on the amount of megawatts the generator could supply to the system. *Id.*

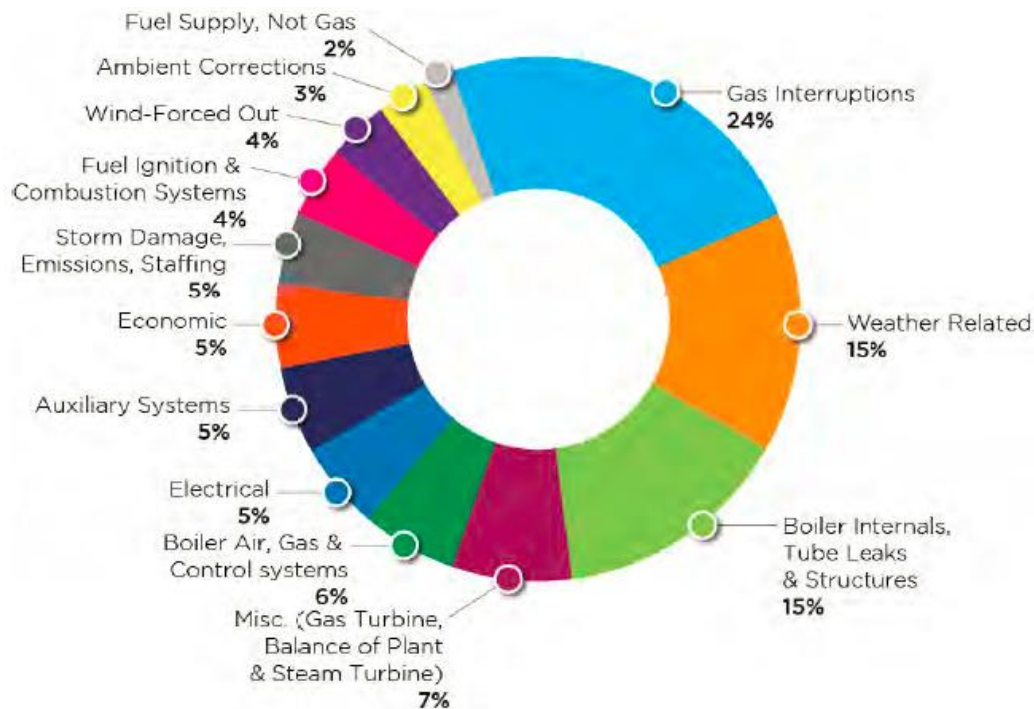
<sup>40</sup> *Id.*

<sup>41</sup> 2014 Cold Weather Report at 25, Figure 16.

<sup>42</sup> *See* *Analysis of Operational Events and Market Impacts of During the January 2014 Cold Weather Events*, Figure 16, p. 25 at <http://pjm.com/~media/documents/reports/20140509-analysis-of-operational-events-and-market-impacts-during-the-jan-2014-cold-weather-events.ashx>.

<sup>43</sup> *Id.* at 26.

<sup>44</sup> *Id.*



In the wake of last winter's extreme cold weather events, PJM surveyed generation owners to help identify the operational issues that contributed to forced outages and poor performance. Generation owners reported a variety of issues, including:

1. *Frozen equipment*: condensate lines, nozzles, boiler controls, fly ash transfer equipment, selective catalytic reduction and water injection systems; many freezing issues attributed to inadequate heat trace and/or insulation issues which allowed water to penetrate and freeze lines.
2. *Fuel issues*: frozen coal, coal opacity issues, weather-related oil and gas fuel delivery issues.
3. *Emissions equipment*: freezing of water supply for injection systems that must be operated to reduce nitrogen oxide emissions, and difficulty adapting or tuning emissions equipment to operate correctly under unfamiliar extreme cold weather conditions.
4. *Consumables impacts*: frozen limestone, leaks from hydrogen seal oil systems resulting in depletion of hydrogen stores.
5. *Secondary processes*: issues with systems like demineralized water systems—limited ability to make and store demineralized water used for boiler feed water make-up and injection systems.
6. *Units not frequently operated*: issues with attempted operation of some high-cost, low-capacity-factor generators that had not been operated since the summer peak period.<sup>45</sup>

<sup>45</sup> *Problem Statement on PJM Capacity Performance Definition*, PJM Interconnection, L.L.C., 9 (Aug. 1, 2014),



Most, if not all, of these issues could be addressed through investments in weatherization or increased operating budgets. To help ensure winter peak period reliability, RPM should be supportive of such investments and expenditures. As shown above, however, the current RPM rules contain insufficient financial deterrents to poor availability or poor performance. Indeed, despite the extremely poor resource availability during January 2014, Generation Capacity Resources were charged only about \$ 150,000 under the PHPA Charge—a tiny fraction of the capacity payments those poorly performing resources receive under RPM. Moreover, as also shown above, RPM’s offer-price rules and clearing price pressures may actually establish some disincentives to such investments and expenditures. Put more simply, there currently are no explicit means in RPM to value the efforts generation owners must undertake to improve future winter performance, and the very high rate of outages seen last January seem to confirm that, if anything, the current market design offers more *disincentive* (rather than incentive) to invest in improvements to winter-time performance.

While the weather conditions from January 6-8, 2014, popularly known as the “Polar Vortex,” were extreme, and the resulting winter peak load reached a level that is expected to occur only 10 % of the time, the outages and poor generator performance observed on those days could recur more frequently, as they were due in part to the trends described above, which persist in any weather. While there is no single cause, and no single solution, to events as broad, complex, and consequential as the Polar Vortex, one solution stands out—changing the market rules to change the incentives for sellers to ensure good resource performance. Even if there were never another Polar Vortex, the misaligned incentives under the current market rules would remain, and those rules therefore would continue to fail to support needed changes to improve resource performance.<sup>46</sup>

Cold weather and snow storms later in January 2014 also resulted in above-average forced outages, although not as severe as experienced on January 7. The late January events more starkly illustrated, however, a different shortcoming in the current RPM rules—lack of support for firm gas delivery arrangements (as discussed in section II.B above). Extreme price volatility in the natural gas spot markets for delivery in PJM (apparently related to pipeline constraints in moving gas from production areas to electrical and gas heating load centers) in late January 2014, coupled with natural gas purchasing and transmission scheduling rules that are not well adapted to the needs of PJM energy market participants, compelled gas-fired generation owners to purchase

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[pjm.com/~media/documents/reports/20140801-problem-statement-on-pjm-capacity-performance-definition.ashx](http://pjm.com/~media/documents/reports/20140801-problem-statement-on-pjm-capacity-performance-definition.ashx).

<sup>46</sup> PJM was undertaking analysis to address these issues prior to the Polar Vortex. In fact, well before January, 2014, PJM was undertaking its own analysis of the gas infrastructure to meet future electric needs and was the Lead Principle Investigator in the Department of Energy’s Eastern Interconnection Planning Collaborative’s detailed investigation of the resiliency of the gas infrastructure to meet future generation needs.

high-price natural gas for longer time periods and in greater quantities than was ultimately required to satisfy PJM's real-time needs.<sup>47</sup> These conditions resulted in hundreds of millions of dollars of make-whole payments to generators, which were then "uplifted" to loads under PJM's market rules.<sup>48</sup> The Commission recognized this very problem just last month, finding that "[f]ailure to address fuel assurance could also result in volatile (and often high) prices to consumers when generation resources are forced to procure fuel supplies at the last minute in a volatile natural gas market," and observing that "[t]he events of winter 2013/2014 provide an example of this potential."<sup>49</sup>

**F. To Enable Implementation in Time for the Next Base Residual Auction, PJM Addressed These Shortcomings in its Current Rules, and Developed the Rule Changes Reflected in this Filing, Through its Enhanced Liaison Committee Stakeholder Process.**

As can be seen from the foregoing review, RPM's current capacity performance requirements are weak, and require reform. Because RPM secures capacity commitments on a three-year forward basis, RPM reforms, for the most part, can only take full effect on a three-year-forward basis. The next RPM BRA is scheduled for May 2015, and will secure capacity commitments for the Delivery Year that starts on June 1, 2018. If PJM deferred these changes to the following BRA, held in May 2016 for the Delivery Year that starts on June 1, 2019, it would mean that the PJM Region would let *five more* winters pass after 2014 without implementing a full remedy to the manifestly deficient performance requirements in the current rules.<sup>50</sup> The PJM Region's experience with unacceptably poor performance last winter makes plain why PJM cannot take the risk of waiting.

The PJM Board of Managers therefore elected to address this issue using a process known as the Enhanced Liaison Committee ("ELC") stakeholder process. The ELC process was designed by the stakeholders themselves through a lengthy review of PJM's stakeholder process. The ELC process is specifically intended for issues that have not been resolved, or are unlikely to be resolved, in the standard stakeholder process.<sup>51</sup> The process calls for the development by PJM of proposals, the taking of comments on

<sup>47</sup> 2014 Cold Weather Report at 32-33.

<sup>48</sup> *Id.* at 32, 44.

<sup>49</sup> *Centralized Capacity Markets in Reg'l Transmission Orgs. and Indep. Sys. Operators/Winter 2013-2014 Operations and Market Performance in Reg'l Transmission Orgs. and Indep. Sys. Operators*, 149 FERC ¶ 61,145, at P 8.

<sup>50</sup> PJM is proposing in this filing transitional rules for the Delivery Years for which a BRA already has been conducted. For those years, however, commitment of resources that can satisfy the expectation of delivery of energy and reserves whenever needed during emergencies is strictly voluntary.

<sup>51</sup> See *PJM Manual 34: PJM Stakeholder Process*, PJM Interconnection, L.L.C., section 15.2.2 (May 15, 2014), [www.pjm.com/~media/documents/manuals/m34.ashx](http://www.pjm.com/~media/documents/manuals/m34.ashx).

the PJM proposal and final deliberation by the PJM Board after the submission of both written materials and oral presentations before the Board. The process calls for this direct decision-making by the Board instead of a consensus-based process in which stakeholders vote on various market rule changes. The Board elected the ELC process for capacity performance given valid concern that the standard stakeholder process could not resolve the inherently contentious issues in time for implementation before the next BRA.

In accordance with the ELC process, PJM staff developed and posted a capacity performance “problem statement” on August 1, 2014 which itself was the subject of discussion and modification at stakeholder meetings. PJM staff next prepared and posted a draft proposed solution on August 20, 2014 and, following several stakeholder education meetings and feedback, an updated proposal on October 7, 2014. Stakeholders formed coalitions by October 21, 2014, and the coalitions prepared and posted briefing papers to describe their concerns and alternative approaches to the capacity performance question. The Board then heard oral presentations by most of those coalitions at a special Enhanced Liaison Committee meeting on November 4, 2014. That meeting included follow-up questions and direct interactions between the Board members and the coalition representatives, as well as a presentation to the Board by state regulatory commission representatives.

In early December, the PJM Board met and authorized PJM to submit to the Commission the proposal reflected in this filing. As a result of stakeholder feedback, the proposal has changed substantially since the draft posted by PJM on August 20, 2014 (and has even changed significantly from the version posted on October 7). Among the major changes from the prior versions, this proposal patterns the non-performance charge closely on the “pay-for-performance” positive and negative payment provision that the Commission accepted from ISO-NE earlier this year. The current proposal is also far less prescriptive on the eligibility requirements for Capacity Performance Resources. Also, given stakeholder feedback, PJM is not including in this filing any changes (which were discussed in the October 7 revised proposal) to shift demand response to a demand-side, wholesale-entity construct. As explained above, PJM has decoupled that issue from the capacity performance proposal and will address it through a separate filing later this month.

### **III. THE PROPOSED TARIFF AND RAA REVISIONS TO IMPROVE CAPACITY PERFORMANCE ARE JUST AND REASONABLE**

#### **A. A New Capacity Product, with More Stringent Performance Requirements, Is Needed.**

As explained above, resources committed as capacity are expected to provide energy and reserves when needed, particularly during emergency conditions. However, PJM’s current rules do not create sufficient incentives to ensure this result. This filing is designed to remedy that insufficiency, and the vehicle it uses to do so is a new capacity product called the “Capacity Performance Resource.” The fundamental attribute of a Capacity Performance Resource is that it shall provide energy and reserves when called

upon by PJM during emergencies. PJM and stakeholders expect resource owners and operators to take the necessary steps to ensure their resources meet that expectation with no excuses for non-performance (other than the very limited PJM approved exceptions set forth herein). Therefore the tariff changes in this filing are not overly prescriptive on qualification or eligibility requirements of a Capacity Performance Resource. The focus instead is on creating material adverse consequences for poor performance and substantial rewards for good performance, as more fully described in section III.E. There are, however, certain operational requirements specified in the Tariff and RAA to put Capacity Market Sellers on notice of certain minimum expected requirements.

Because *all* Capacity Resources *should* satisfy the expectation they will deliver energy and reserves whenever called upon during an emergency, this filing establishes Capacity Performance Resources as the sole capacity product beginning June 1, 2020. Recognizing however, as shown by recent experience, that some existing resources may not be able to satisfy this expectation in the near term, PJM is preserving until May 31, 2020 a separate capacity product – Base Capacity Resources – with a lesser performance expectation. The most important distinctions in the treatment of Capacity Performance Resources and Base Capacity Resources stem from PJM’s proposed Non-Performance Charge, as described in section III.E. Many of the other operational requirements and performance obligations can and should be the same or nearly the same as discussed below.

### *1. Capacity Performance Resource*

At its core, a Capacity Performance Resource must be capable of sustained, predictable operation that allows the resource to be available to provide energy and reserves whenever PJM determines an emergency condition exists. Rather than establishing prescriptive eligibility requirements such as delineating acceptable fuel transportation arrangements, storage requirements for dual fuel capable units, or weatherization requirements, PJM proposes that an offer as a Capacity Performance Resource includes a representation (described in more detail below) that the Capacity Market Seller has made, or will make, the necessary investment to ensure the resource has the capability to provide energy when called upon by PJM. All annual Capacity Resources are eligible to offer in as Capacity Performance Resources; indeed, unless such resources qualify for an exception under new section 6.6A of Attachment DD, such annual Capacity Resources must offer in as Capacity Performance Resources (*see* section III.F for a more detailed discussion of the “must offer” requirement”). Annual Capacity Resources are internal and external<sup>52</sup> Generation Capacity Resources, Annual Demand Response Resources, Annual Energy Efficiency Resources,<sup>53</sup> Capacity Storage

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<sup>52</sup> As described below, to offer as a Capacity Performance Resource, an external Generation Capacity Resource must qualify for the Capacity Import Limit Exception contained in section 1.7A of the RAA.

<sup>53</sup> As described below, to offer as a Capacity Performance Resources, an Annual Energy Efficiency Resource must meet the requirements in Schedule 6 of the RAA, as paralleled in Attachment DD-1 of the Tariff.

Resources,<sup>54</sup> and Qualifying Transmission Upgrades.<sup>55</sup>

a. Capacity Performance Resource Sell Offer Representations

While PJM is not prescribing specific eligibility requirements for Capacity Performance Resources, to ensure transparency for Capacity Market Sellers, proposed Tariff and RAA provisions related to Capacity Performance Resources specify certain minimum operational requirements and performance obligations. Specifically, as proposed here, a party wishing to submit a Sell Offer for a Capacity Performance Resource must represent that it:

- has made, or can and will make, the necessary investment to ensure the Capacity Resource has the capability for the entire relevant Delivery Year to provide energy at any time when called upon by the Office of the Interconnection;
- shall be capable of complying with the performance obligations specified in this Attachment DD of the Tariff and Schedule 1 of the Operating Agreement by the relevant Delivery Year;
- meets the criteria for obtaining an exception to the Capacity Import Limit as contained in section 1.7A of the RAA to the extent the underlying Capacity Resource is an external Generation Capacity Resource. and
- contemplates the physical delivery of the Capacity Performance Resource underlying such Sell Offer by no later than the commencement of the applicable Delivery Year. Capacity Market Sellers are cautioned that representations made that are knowingly false or otherwise inconsistent with the requirements of such section may constitute a violation of, and may subject the Capacity Market Seller to penalties under, the PJM Market Rules and the FERC Market Rules.

These requirements are intended to support and reinforce the essential attribute described above, i.e., that Capacity Performance Resources can, and will, deliver needed energy and reserves when called upon by PJM, particularly during emergency conditions. Foremost among those is that the seller has made, or can show it will make, any investments needed to enable the resource to meet that performance expectation. Similarly, external Generation Capacity Resources must meet the requirements for an

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<sup>54</sup> PJM proposes to add a definition for Capacity Storage Resources which shall mean: “any hydroelectric power plant, flywheel, battery storage or other such facility solely used for short term storage and injection of energy at a later time to participate in the PJM energy and/or Ancillary Services markets and which participates in the Reliability Pricing Model.” *See* proposed Tariff, Attachment DD, section 2.13A.

<sup>55</sup> *See* proposed Tariff, Attachment DD, section 5.5A(a).

exception to the Capacity Import Limit (i.e., being pseudo-tied to the PJM system and agreeing that it cannot be recalled by its host system) to eliminate possible impediments to an external resource responding to the PJM Region's needs for energy and reserves when needed. Thus, PJM is not dictating *how* a unit is capable or becomes capable of meeting the performance obligations; only that the unit *does* meet such obligations.

The Commission has found it is just and reasonable for PJM to have "reasonable assurance that resources offering into RPM Auctions will actually be able to provide the offered . . . capability so that PJM can meet its resource adequacy requirements."<sup>56</sup> The Commission has also found that PJM can reasonably require that PJM offers be submitted "with the 'reasonable expectation, based on [seller's] analyses as of the date of the [offer]' to deliver all megawatts that clear in the RPM Base Residual Auction by the specified Delivery Year."<sup>57</sup> These principles are as applicable to generation resources as they were to Demand Resources. Accordingly, PJM now proposes to extend these same principles to all Capacity Performance Resources.

Specifically, PJM proposes that, by submitting a Sell Offer into an RPM Auction, a Capacity Market Seller is making a legally binding and enforceable representation that its Sell Offer (1) meets the operational requirements and performance obligations applicable to Capacity Performance Resources; and (2) contemplates the physical delivery of the Capacity Performance Resource underlying such Sell Offer by no later than the commencement of the applicable Delivery Year. PJM proposes that such offer shall not meet the standard of physical delivery if at the time it is submitted in an RPM Auction, the Capacity Market Seller intends to satisfy its obligation for the applicable Delivery Year by subsequently securing a replacement Capacity Performance Resource through either an Incremental Auction or bilateral transaction(s). As part of the representation, PJM proposes that Capacity Market Sellers acknowledge and agree that the Office of the Interconnection will rely on this representation to meet the physical capacity resource adequacy objectives upon which RPM is based, and that if it cannot make this representation it shall not submit a Sell Offer into the RPM Auction for that resource. PJM also proposes that knowingly false representations by Capacity Market Sellers may constitute a violation of, and may subject the Capacity Market Seller to penalties under, the PJM Market Rules and the FERC Market Rules.<sup>58</sup>

While PJM initially proposed including an officer certification requirement to achieve the objectives stated above, the alternative of deeming each Sell Offer to be a representation by the Capacity Market Seller is easier to implement but still properly puts the responsibility on the seller to attest that its resource will meet the operational and performance standards applicable to Capacity Performance Resources and attest to the viability of its resource as a physical capacity resource. PJM cannot practically make this judgment and to do so would only invite litigation that would put the Commission in the equally impossible position of adjudicating the viability of projects. Because a Capacity

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<sup>56</sup> DR Sell Offer Order at P 22.

<sup>57</sup> DR Sell Offer Order at P 27.

<sup>58</sup> See proposed Tariff, Attachment DD, section 5.5A(c).

Market Seller knows its projects best, it is in the best position to make this sort of representation. Like any contractual representation, this representation is being relied upon by PJM in making the important decision to accept an offer. The representation must be true at the time made (when the resource is offered in). It is not continuing in nature; it is understood that circumstances can legitimately change. The representation must be made in good faith, and it must consider known or reasonably expected external forces that might impact the resource's development. PJM understands the high hurdle to showing that a representation was knowingly false or made in bad faith and that as a practical matter these representations could trigger enforcement review only in the most egregious situations.

b. Process for Support and Review of Capacity Performance Resource Offers

PJM proposes to reserve the ability for PJM or the IMM to obtain information and documentation from a Capacity Market Seller to evaluate whether the underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. PJM and the IMM shall review any requested information and PJM, after consideration of advice and recommendation from the IMM, shall reject a request for the resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate to the satisfaction of PJM that the resource meets the necessary requirements. The Commission has found in the context of PJM's DR Sell Offer Plan proposal that PJM reasonably can require information in support of proposed RPM offers and use that data to determine whether an offer conforms with the market rules.<sup>59</sup> PJM seeks to apply a similar approach here for Capacity Performance Resources, but on a more limited basis, PJM or the IMM seeking information as needed (e.g., if there are questions about whether a given resource will, in fact, be able to perform), rather than requiring sellers to submit a plan in support of every offer.<sup>60</sup> PJM intends this provision to reserve to PJM the ability to reject eligibility of the resource as a Capacity Performance Resource if PJM has reason to believe a Capacity Market Seller may be speculating about its ability to perform by the Delivery Year. But if the Capacity Market Seller can provide a satisfactory explanation of how it intends to meet the standard of performance to deliver energy during emergency conditions, with supporting documentation if requested, then PJM will accept that representation and allow the offer. Should the resource ultimately not be able to perform, it will be subject to a material non-performance charge as described in section III.E below.

As part of this process, PJM proposes to provide the Capacity Market Seller, as well as the IMM with any determination to reject an offer no later than 65 days prior to the commencement of the offer period for the relevant RPM Auction. The Capacity Market Seller may seek recourse with FERC if it does not agree with PJM's

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<sup>59</sup> *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,150, at P 27 (2014) ("DR Sell Offer Order").

<sup>60</sup> See proposed Tariff, Attachment DD, section 5.5A(a)(ii)(A).

determination.<sup>61</sup> These procedures thus coordinate with the process PJM proposes for requested exceptions to the new must-offer requirement for Capacity Performance Resources in section 6.6A of Tariff Attachment DD, which in turn relies on the existing process for consideration of exceptions to the Capacity Resource must offer requirement under section 6.6(g) of Attachment DD. Thus, PJM will use essentially the same pre-auction procedure to determine whether a resource *can* offer as a Capacity Performance Resource and whether a resource *must* offer as a Capacity Performance Resource.

## 2. *Base Capacity Resources*

As mentioned previously, PJM recognizes that not all Capacity Resources will be able to perform as Capacity Performance Resources in the near term. Thus, PJM proposes that a Base Capacity Resource product be eligible to offer into RPM Auctions for the 2018/2019 and 2019/2020 Delivery Year, subject to the Base Capacity Resource Constraints discussed in section III.H below. For those Delivery Years, and subject to the Capacity Performance Resource must-offer requirement in section 6.6A of Attachment DD of the Tariff as explained in section III.F below, the following types of resources may submit Sell Offers into RPM Auctions as Base Capacity Resources: internal and external Generation Capacity Resources, Intermittent Resources, Capacity Storage Resources, Annual Demand Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources.<sup>62</sup>

With the exception of Base Capacity Demand Resources, which are expected to be available only during the months of June through September, and Base Capacity Energy Efficiency Resources, which are expected to be available only during the months of June through August, Base Capacity Resources, like all Capacity Resources, are expected to be available throughout the Delivery Year. But, unlike Capacity Performance Resources, Base Capacity Resources will be subject to a Non-Performance Charge only when they fail to perform under emergency conditions during June through September.<sup>63</sup> Simply, Base Capacity Resources are those Capacity Resources which are not now, or which do not expect to be, capable of the sustained, predictable operation that allows the resource to be available to provide energy and reserves whenever PJM determines an emergency condition exists. And, while Base Capacity Resources will face a reduced exposure to Non-Performance Charges, the expectation is that they will clear at a lower market clearing price and cannot invoke a Market Seller Offer Cap up to the Net Cost of New Entry without having to submit the unit-specific data to establish an Avoidable Cost Rate.<sup>64</sup>

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<sup>61</sup> See proposed Tariff, Attachment DD, section 5.5A(a)(ii)(B).

<sup>62</sup> See proposed Tariff, Attachment DD, section 5.5A(b).

<sup>63</sup> See proposed Tariff, Attachment DD, section 10A(b).

<sup>64</sup> See proposed Tariff, Attachment DD, section 6.4.



## B. Transition to 100 Percent Capacity Performance Resources.

As discussed, the goal of the changes proposed in this filing is to ensure that all Capacity Resources perform when needed to ensure reliability through a shift to a 100 percent Capacity Performance Resource model by the 2020/2021 Delivery Year. To accomplish this transition in an orderly fashion and to mitigate any potential price volatility, PJM proposes to:

- for the 2016/2017 Delivery Year, hold a Capacity Performance Transition Incremental Auction to seek voluntary offers of Capacity Performance Resources for 60 percent of the PJM Region's Reliability Requirement (as updated at the time of the auction);
- for the 2017/2018 Delivery Year, hold a Capacity Performance Transition Incremental Auction to seek voluntary offers of Capacity Performance Resources for 70 percent of the PJM Region's Reliability Requirement (as updated);
- for the 2018/2019 and 2019/2020 Delivery Years, procure at least sufficient quantities of Capacity Performance Resources to be consistent with reliability (which is an amount equal to about 80 percent of the Reliability Requirement as determined by the Base Capacity Resource Constraint discussed in section III.H);
- for the 2018/2019 and 2019/2020 Delivery Years, allow resources that are physically incapable of meeting, or otherwise categorically exempt,<sup>65</sup> to submit sell offers as Base Capacity Resources; and
- starting with the 2020/2021 Delivery Year and for subsequent Delivery Years, procure only Capacity Performance Resources (i.e., 100 percent of the Reliability Requirement).<sup>66</sup>

Thus, PJM proposes an incremental shift to a single product type – Capacity Performance – that will meet the reliability needs of the PJM Region in both the summer and winter peak seasons, and a gradual phase-out of resources – the current Capacity Resource type and the new Base Capacity Resource type – that cannot meet the region's reliability needs throughout all portions of the year. Over the five-year transition period, PJM gradually will build up the quantity of Capacity Performance Resources and phase out Base Capacity Resources, starting with a 60/40 Capacity Performance/Base Capacity resource mix for 2016/2017, and incrementally shifting to 70/30 the following year and to

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<sup>65</sup> See section III.F.4 *infra*, concerning the Capacity Performance must offer requirement.

<sup>66</sup> PJM is not proposing any changes for the 2015/2016 Delivery Year in this filing.

approximately 80/20<sup>67</sup> for the final two transition years. Finally, in the 2020/2021 Delivery Year, only Capacity Performance Resources will be used to meet the PJM Region's reliability and resource adequacy needs.

Such an incremental transition over five years provides opportunity for resources to invest in, and sufficient time to build, improvements (e.g., dual fuel, firm gas contracts, etc.) necessary to meet the operational and performance requirements expected of Capacity Performance Resources. By implementing the transition over a five-year period, resources will be allowed to make gradual improvements, and thereby ease any burdens such improvements may impose. By contrast, an immediate switch to 100 percent Capacity Performance Resources could impose significant burdens on resources (e.g., securing sufficient financing to make all improvements at one time, having all improvements in place by the start of the 2018/2019 Delivery Year). Moreover, slowly increasing the required quantity of Capacity Performance Resources over five years should mitigate potential price volatility or shortage concerns that might be expected from an immediate requirement of 100 percent Capacity Performance Resources.

Although movement to a single Capacity Performance Resource product as of the 2020/2021 Delivery Year could impact seasonal capacity resources, such resources will continue to play an important role in meeting the PJM Region's resource adequacy needs. As discussed in section III.B.3, the proposed rules allow resources with inherent difficulties in providing capacity on a year-round basis to submit combined bids. This approach will allow, for example, a resource with strong performance in the winter (e.g., wind resources) to combine with a resource with strong summer performance (i.e. summer air conditioning programs).

Moreover, while the Commission approved an immediate shift to a single type of capacity product for ISO-NE starting June 1, 2018,<sup>68</sup> the PJM Region's circumstances call for a more gradual shift to a single capacity product. In particular, the PJM Region is considerably larger than ISO-NE in both geography and peak demand. (The reliability requirement for PJM's 2017/2018 BRA was 165,007.1 MW,<sup>69</sup> but the installed capacity requirement in ISO-NE's Forward Capacity Auction for the 2017/2018 Delivery Year (FCA 8) was 33,855 MW.<sup>70</sup>) The PJM Region also benefits from a more diverse

<sup>67</sup> The actual resource split will be determined by the Base Capacity Resource Constraint and will be posted with the auction parameters.

<sup>68</sup> See *ISO New England Inc.*, 149 FERC ¶ 61,009, at 1 (2014), *reh'g pending*.

<sup>69</sup> *Analysis of the 2017/2018 RPM Base Residual Auction*, Monitoring Analytics, LLC, Table 6 (Oct. 6, 2014), [http://www.monitoringanalytics.com/reports/Reports/2014/IMM\\_Analysis\\_of\\_the\\_2017\\_2018\\_RPM\\_Base\\_Residual\\_Auction\\_20141006.pdf](http://www.monitoringanalytics.com/reports/Reports/2014/IMM_Analysis_of_the_2017_2018_RPM_Base_Residual_Auction_20141006.pdf).

<sup>70</sup> *ISO New England Installed Capacity Requirement, Local Sourcing Requirements, and Maximum Capacity Limit for the 2017/18 Capacity Commitment Period*, ISO New England Inc., 1 (Jan. 2014), [http://www.iso-ne.com/genrtn\\_resrcs/reports/nepool\\_oc\\_review/2014/icr\\_2017\\_2018\\_report\\_final.pdf](http://www.iso-ne.com/genrtn_resrcs/reports/nepool_oc_review/2014/icr_2017_2018_report_final.pdf).

resource mix. Recognizing the unique characteristics of the PJM Region, a measured increase of Capacity Performance Resources, with a corresponding phase-out of Base Capacity Resources, is reasonable and appropriate for PJM.

Accordingly, the five-year transition period reflects an appropriate balance between (i) the realities of resource investment (both in terms of cost and timing) to meet the necessary operational and performance requirements, (ii) protecting consumers from price spikes, and (iii) resource adequacy and system reliability.

*1. Capacity Performance Transition Incremental Auctions for the 2016/2017 and 2017/2018 Delivery Years*

To facilitate the shift towards Capacity Performance Resources and to ensure better performing resources are available for the 2018/2019 and 2019/2020 Delivery Years, PJM proposes to hold a Capacity Performance Transition Incremental Auction for each of the 2016/2017 and 2017/2018 Delivery Years. As noted above, PJM will procure 60 and 70 percent of the Reliability Requirement, respectively, in those auctions.<sup>71</sup> PJM expects to hold these two Capacity Performance Transition Incremental Auctions in late April and early May of 2015 in accordance with parameters that will be posted on PJM's website. By procuring significant amounts of Capacity Performance Resources for these two interim Delivery Years, PJM is providing an immediate incentive for those resources that can meet the Capacity Performance requirements in the near future to do so.

The same basic structure and rules will apply to both Capacity Performance Transition Incremental Auctions. As an initial matter, participation is voluntary; there is no requirement for resources to be offered.<sup>72</sup> Any generation resources may be offered, regardless of whether it is already committed to provide capacity for the relevant Delivery Year.<sup>73</sup> Capacity payments for resources with prior commitments for the Delivery Year will be based on the clearing price of the Capacity Performance Transition Incremental Auction, replacing the previous commitment.<sup>74</sup> Importantly, sellers that commit as Capacity Performance Resources for either of these two years, as discussed below, will be exposed to the substantial risks associated with the new Non-Performance

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<sup>71</sup> See proposed Tariff, Attachment DD, section 5.14D. The BRAs for these Delivery Years were held in May 2013 and May 2014.

<sup>72</sup> See proposed Tariff, Attachment DD, section 5.14D.

<sup>73</sup> See proposed Tariff, Attachment DD, section 5.14D; *see also* proposed Tariff, Attachment DD, section 5.5 (providing that Capacity Market Sellers may submit sell offers into a Capacity Performance Transition Incremental Auction).

<sup>74</sup> See proposed Tariff, Attachment DD, section 5.14D.

Charge.<sup>75</sup> Therefore, even if clearing prices in these transition auctions exceed the prices previously set for the Delivery Year, sellers cannot take this commitment lightly.

External generation resources may offer into these auctions only to the extent that they meet the three requirements to obtain an exception from a Capacity Import Limit, with one minor adjustment. While resources seeking an exception from a Capacity Import Limit must demonstrate: (1) firm transmission service; (2) written commitment to be subject to the capacity must-offer requirement in section 6.6 of Attachment DD to PJM's Tariff; and (3) that the resource has or will become pseudo-tied into PJM,<sup>76</sup> for the purposes of being able to offer in a Capacity Performance Transition Incremental Auction, the resource must only be "reasonably expected" to be pseudo-tied by the applicable Delivery Year.<sup>77</sup> This recognizes the relative short time (one to two years) before the applicable Delivery Years, compared to the three years following receipt of a Capacity Import Limit exception for a BRA. This allows PJM to reject offers for external resources that cannot be reasonably expected to be pseudo-tied by the Delivery Year.

The Capacity Performance Transition Incremental Auctions will not affect the Fixed Resource Requirement ("FRR") plans for the applicable Delivery Year, and resources committed in an FRR plan may not offer in a Capacity Performance Transition Incremental Auction.<sup>78</sup> As FRR plans are submitted and approved three years in advance of the Delivery Year,<sup>79</sup> the plans for the interim Delivery Years are already well-established and thus imposing a non-voluntary change to acquire Capacity Performance Resources would not be appropriate. Additionally, FRR plan-committed resources would not have the option to submit offers for additional revenue to support investment in better performance, which would stand in contrast to voluntary submission of offers in RPM and the ability for resources to obtain greater compensation in exchange for the additional obligations.

Unlike other RPM Auctions, no locational requirements will be modeled in the Capacity Performance Transition Incremental Auctions.<sup>80</sup> In other words, PJM will

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<sup>75</sup> PJM is also proposing to deem confidential all information submitted to PJM in connection with a Capacity Performance Transition Incremental Auction. *See* proposed Tariff, Attachment DD, section 4.5.

<sup>76</sup> *See* RAA, section 1.7A.

<sup>77</sup> *See* proposed Tariff, Attachment DD, section 5.14D(B)(3).

<sup>78</sup> *See* proposed Tariff, Attachment DD, section 5.14D(B)(3).

<sup>79</sup> *See* proposed RAA, Schedule 8.1

<sup>80</sup> *See* proposed Tariff, Attachment DD, section 5.14D(B)(3). To ensure that the general rules for participation and procedure that apply for RPM Auctions extend to the Capacity Performance Transition Incremental Auctions, PJM proposes to amend the definition of RPM Auction to clarify that, "for the 2016/2017 and 2017/2018 Delivery Years, Capacity Performance Transition Incremental Auctions" are considered RPM Auctions. *See* proposed Tariff, Attachment DD, section 2.60.

procure a percentage of the PJM Region's Reliability Requirement, to be acquired through RPM (i.e., excluding FRR service areas-committed resources), for that Delivery Year on a gross basis, without regard for where the resource is located. Such an approach is reasonable given that it will facilitate two of the main purposes of the Capacity Performance Transition Incremental Auctions – incenting incremental growth in Capacity Performance Resources and ensuring reliability through resource adequacy.

To further ease the transition and recognizing the voluntary nature of any offer, PJM proposes to phase in the price and Non-Performance Charge aspects of the Capacity Performance Transition Incremental Auctions. Thus, while these values for the 2016/2017 and 2017/2018 Delivery Years are based on the same structure as applicable starting in the 2018/2019 Delivery Year and going forward, such price and Non-Performance Charge aspects are reduced to 50 percent for the 2016/2017 Delivery Year, and 60 percent for the 2017/2018 Delivery Year.

Accordingly, the price cap for the Capacity Performance Transition Incremental Auction for the 2016/2017 Delivery Year is 50 percent of the Net CONE for the PJM Region as established for the BRA of that Delivery Year, and the 2017/2018 price cap is 60 percent of the applicable Net CONE.<sup>81</sup> Resource offers for each of these interim transition Delivery Years will be capped at the same level as the clearing price cap, i.e., 0.5 Net CONE for 2016/2017 and 0.6 Net CONE for 2017/2018.<sup>82</sup> Thus, while the clearing price for each Capacity Performance Transition Incremental Auction will be set by marginal resource offers, if the target amount of Capacity Performance Resources is not cleared, the clearing price will still be capped.<sup>83</sup>

Similarly, while the same performance charge/payment structure in new section 10A of Attachment DD would apply to all resources committed as Capacity Performance Resources, the magnitude of non-performance charges is reduced to 50 percent of the 2018/2019 values for the 2016/2017 Delivery Year and to 60 percent of such values for the 2017/2018 Delivery Year.<sup>84</sup> Likewise, maximum Non-Performance Charge exposure in the stop-loss calculation is correspondingly reduced such that for 2016/2017 the stop-loss is based on 0.75 times Net CONE for the PJM Region and for 2017/2018, the stop-loss is based on 0.9 times Net CONE for the PJM Region.<sup>85</sup>

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<sup>81</sup> See proposed Tariff, Attachment DD, section 5.14D(B)(2).

<sup>82</sup> See proposed Tariff, Attachment DD, section 5.14D(B)(2).

<sup>83</sup> See proposed Tariff, Attachment DD, section 5.14D(B)(2).

<sup>84</sup> See proposed Tariff, Attachment DD, sections 10A(h) & (i).

<sup>85</sup> See proposed Tariff, Attachment DD, sections 10A(h) & (i). As discussed in section III.E.6, the annual stop-loss provision for Delivery Years starting with the 2018/2019 Delivery Year is based on 1.5 Net CONE. See proposed Tariff, Attachment DD, section 10A(f).

## 2. *Base Capacity Resources Sunset After 2019/2020 Delivery Year*

To complete the transition to a single capacity product, PJM must phase out Base Capacity Resources by the 2020/2021 Delivery Year. As discussed, PJM proposes a gradual build-up of Capacity Performance Resources, while ratcheting down its reliance on less-available resources to meet the region's capacity needs. Accordingly, for the two transition Delivery Years (2018/2019 and 2019/2020) for which a BRA has not been held, PJM proposes to allow the less-available Base Capacity Resources to offer and clear in RPM Auctions for the Delivery Years. However, the transition concludes at the end of the 2019/2020 Delivery Year; thereafter, Base Capacity Resources may no longer participate in RPM and will no longer be eligible to receive capacity payments.

The transition period for phase-out of Base Capacity Resources is reasonable and appropriate to advance the objective of this filing: ensuring that all capacity resources will be available and perform as promised and as needed to meet the PJM Region's reliability and resource adequacy needs. While PJM recognizes that different resources may provide different value, under this proposal, such differentiation in product value will not be administratively determined (e.g., Base Capacity Price Decrements when the Base Capacity Resource Constraint is binding) but rather will emerge through market forces in the implementation of the Performance Payments and Non-Performance Charges.

Moreover, as discussed in section III.H and explained by Mr. Falin, the limitations on availability and performance of Base Capacity Resources have adverse reliability implications.<sup>86</sup> The summer-only resources that are allowed to be Base Capacity have explicit availability limitations, and existing generators will be allowed to offer as Base Capacity only if they affirmatively demonstrate that they are, or will be, physically incapable of meeting the year-round performance expected of Capacity Performance Resources. PJM proposes to accommodate these inherent limitations of Base Capacity Resources by accepting a ten percent increase in LOLE from a 1 event in 10 years standard to a 1.1 in 10 LOLE level in calculating the constraint on clearing of these resources,<sup>87</sup> but such implicit relaxation of the 1-in-10 LOLE standard obviously is not optimal, and clearly should not be maintained indefinitely. At bottom, there should be only one capacity product, and it should provide the highest assurance of performance; PJM therefore proposes to move to that single product as soon as possible, while accommodating transition concerns in the region's large and varied resource base.

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<sup>86</sup> Affidavit of Thomas A. Falin on Behalf of PJM Interconnection, L.L.C. (Attachment E) ¶¶ 7-9 (“Falin Aff.”).

<sup>87</sup> See e.g., *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052, at P 11 (2014), *reh’g pending*; *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at P 74 (2011).

To effectuate the sun-setting of Base Capacity Resources, the proposed tariff revisions make explicit that Base Capacity Resource participation in RPM is for only “the 2018/2019 and 2019/2020 Delivery Years.”<sup>88</sup>

3. *PJM Proposes To Allow Resources Which May Not, Alone, Meet The Operational Requirements and Performance Obligations of a Capacity Performance Resource, To Combine Their Capabilities and Offer As One Resource*

As noted previously, as PJM transitions its proposal so that in the 2020/2021 Delivery Year all Capacity Resources will be Capacity Performance Resources, such movement to only Capacity Performance Resources could have an impact on resources such as Intermittent Resources or Capacity Storage Resources which may not be capable of sustained, predictable operation and be able to provide energy during both summer and winter emergency conditions. However, to encourage such resources’ continued participation in PJM’s capacity market, PJM proposes to allow Capacity Market Sellers which own one or more Capacity Storage Resources, Intermittent Resources, Demand Resources, or Energy Efficiency Resources that are located within the same LDA to submit an offer as a Capacity Performance Resource which represents the aggregated Unforced Capacity value of such resources.

For example, in PJM, the most prevalent Intermittent Resources are wind resources, however wind typically has a low capacity factor during summer peak conditions. PJM also has experience with managing short-term storage resources such as batteries which in their current application lack the ability to sustain output for a long enough period of time to meet the performance requirements for Capacity Performance Resources. PJM’s proposal allows for resources such as these two to be co-located and operated together to maximize the value of both assets as one. In this case of a wind resource and a battery, the battery can be used to improve the on-peak capacity factor of the wind resource so that the combined asset can operate during peak conditions while the wind resource provides low-cost energy that would allow the battery to charge inexpensively during the off-peak period. The combination of these two can provide the reliability and controllability PJM needs to maintain reliability during system emergencies.

To accommodate this, PJM proposes language regarding Sell Offer in section 5.6.1(h) of Attachment DD of the Tariff to allow for combined offers of Intermittent Resources, Capacity Storage Resources, Demand Resources and/or Energy Efficiency Resources. Specifically, for the 2018/2019 and 2019/2020 Delivery Years, these resources may be combined into one offer and can submit a Sell Offer as Capacity Performance Resource, a Base Capacity Resource, or can submit a coupled offer as both Capacity Performance and Base Capacity. For any such coupled offer, the offer price of

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<sup>88</sup> See proposed Tariff, Attachment DD, sections 2.2B, 2.2C, 2.2F, 2.2G, 3.2(e), 5.5A(b), 5.6.1(g) & (h), 5.10(c), 5.11(a)(vi), 5.12(a) & (b), 6.4(d); *id.*, Attachment DD-1, section L.2; proposed RAA, sections 1.2A, 1.2B; *id.*, Schedule 6, section L.2; *id.*, Schedule 8.1, sections D.2, D.5.

a Capacity Performance Resource offer must be at least \$0.1 per MW-day greater than the offer price of a coupled Base Capacity Resource price.<sup>89</sup> For the 2020/2021 Delivery Year and subsequent Delivery Years, these resources may be combined into one offer

**C. Demand Resources Can to Continue to Play a Role in Meeting the Region's Resource Adequacy Needs As Either Capacity Performance or Base Capacity Resources.**

The availability and performance concerns are not unique to Generation Capacity Resources. As PJM encountered during the 2014 Polar Vortex, a 1-in-10 LOLE event could occur during the winter peak season.<sup>90</sup> As part of PJM's evaluation of the 2014 winter weather events, PJM assessed the role of Demand Resources in meeting the regions capacity needs, and found significant value in capacity load reductions being available year-round.<sup>91</sup> However, the Demand Resources PJM called upon had no obligation to perform and reduce load solely on a voluntary basis. The significant value provided by Demand Resources during these winter events and the lack of performance obligation demonstrates a need for a shift to Demand Resources to solely Capacity Performance Resources in tandem with the transition for Generation Capacity Resources.

PJM appreciates the value Demand Resources bring to the system. PJM has worked diligently to incorporate Demand Resources into RPM<sup>92</sup> and has created three separate Demand Resource products – Annual Demand Resources,<sup>93</sup> Extended Summer Demand Resources,<sup>94</sup> and Limited Demand Resources.<sup>95</sup> The vast majority of Demand Resources (and all of the Energy Efficiency Resources) that have cleared RPM Auctions are obligated only to provide capacity during the summer peak season.<sup>96</sup> And, even

<sup>89</sup> This rule is consistent with how PJM has treated coupled offers with respect to the current Demand Response products. *See* Tariff, Attachment DD, section 5.6.1(e).

<sup>90</sup> *See generally* 2014 Cold Weather Report.

<sup>91</sup> 2014 Cold Weather Report at 20-21, 37.

<sup>92</sup> *See, e.g., PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,150, at PP 4-5 (2014), *reh'g pending*; *PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,138, at PP 2-3 (2012); *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at PP 2-3.

<sup>93</sup> Proposed RAA, section 1.1A (available for an unlimited number of interruptions, for up to 10 hours, between 10:00AM to 10:00PM in May through October and 6:00AM through 9:00PM in November through April).

<sup>94</sup> RAA, section 1.20C (available May through October for an unlimited number of interruptions for up to 10 hours between 10:00AM to 10:00PM).

<sup>95</sup> RAA, section 1.43A (available for 10 interruptions during June through September, for up to 6 hours at a time from 12:00PM (noon) to 8:00PM).

<sup>96</sup> For example, in the most recent BRA (for the 2017/2018 Delivery Year), 10,974.8 MW of Demand Resources cleared, but only 1,489.4 MW (13.6%) of that were Annual Demand Resources and 9,485.4 MW (86.4%) were Extended Summer and Limited Demand Resources. 2017/2018 BRA Results at 10, 12.



during those summer months, Limited Demand Resources are available for only 10 days and for a maximum of 6 hours a day. Such significant limitations on availability preclude PJM from calling on the majority of Demand Resources to meet the region's capacity needs outside of the summer months.

Accordingly and consistent with the overarching purpose of ensuring PJM load obtains from Capacity Resources what it pays for, PJM is proposing to transition from the current three Demand Resource products to a single Annual Demand Resource product that will meet the Capacity Performance Resource operational and performance requirements by the 2020/2021 Delivery Year. As with Generation Capacity Resources, Demand Resources may also participate in RPM Auctions for the final two transition years (i.e., the 2018/2019 and 2019/2020 Delivery Years) as Base Capacity Resources. To do so, however, Demand Resources must meet the criteria to qualify as the new Base Capacity Demand Resource product.<sup>97</sup> In other words, PJM is proposing to replace the Extended Summer and Limited Demand Resources at the end of the 2017/2018 Delivery Year with the new Base Capacity Demand Resource.

The new Base Capacity Demand Resource product reflects a combination of the characteristics of the Limited and Extended Summer Demand Resource products in that such resources are only obligated to perform during the months of June through September (like Limited Demand Resources) but are available for an unlimited number of interruptions lasting up to 10 hours each during that period (like Extended Summer Demand Resources). PJM developed the new Base Capacity Demand Resource product to retain much of the existing level of Demand Resource participation in RPM while ensuring that PJM would not exceed the current 1.1-in-10 LOLE standard.

*1. Demand Resource Providers Can Continue to Provide Capacity Products and Accommodate the PJM Region's Need for Resources with Greater Availability*

PJM proposes to continue the practice that the more-limited Demand Resources can aggregate to form a Base Capacity Resource or a Capacity Performance Resource. In this way, Base Capacity Demand Resources can compete with other resource types to provide capacity up to the new Base Capacity constraints, which are discussed in section III.H. Second, Demand Resources that, singularly or as part of an aggregated group, could serve as a Base Capacity Demand Resource can aggregate and submit a coupled offer as a Capacity Performance Resource and bypass the Base Capacity Demand Resource Constraints.<sup>98</sup> In addition, once the transition to a single capacity product is complete, Demand Resources that cannot satisfy the operation and performance requirements of Capacity Performance Resources will be able to combine and submit an

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<sup>97</sup> See proposed RAA, Art. 1, sections 1.2A and 1.13.

<sup>98</sup> See proposed Tariff, Attachment DD, section 5.6.1(g).

offer as a Capacity Performance Resource.<sup>99</sup> As discussed above in section III.B.3, PJM proposes specific tariff revisions to support such combined offers.

## 2. *Measurement of Demand Resource Compliance During Non-Summer Events*

Demand Resources that clear as Capacity Performance Resources may be required to reduce load on any day of the year, for an unlimited number of interruptions between the hours of 10:00am to 10:00pm for the months of June through October and the following May, and 6:00am through 9:00pm for the months of November through April, i.e., the same general requirements of an Annual Demand Resource, except that load reductions by Annual Demand Resources will no longer be limited to a maximum of 10 hours in duration.<sup>100</sup> However, given the new Performance Payment and Non-Performance Charge structure proposed in new section 10A of Attachment DD, compliance for PJM-dispatched load reductions should be based on real-time energy load reductions. Thus, PJM is proposing to measure the quantity of non-summer load reduction provided using the same Customer Baseline Load (“CBL”) methodology that is currently employed for measuring load reductions in the energy market.<sup>101</sup> However, for Demand Resources that employ Direct Load Control (“DLC”) to measure and ensure reductions in load based on the time period of the control signal, PJM does not propose to change non-summer compliance measurement to the CBL method, because DLC-based resources have established the ability to reduce load in response to a control signal and thus the control signal is sufficient to determine compliance. PJM also proposes no change in the measurement of load reductions during the summer months, regardless of whether the Demand Resource is a Base Capacity Resource or Capacity Performance Resource.

It is reasonable to use CBL methodology for measurement of load reductions that occur in non-summer months, as it provides a representation of what the Demand Resource’s energy consumption would have been in a relevant hour had PJM not dispatched it under emergency conditions during that hour. Thus, the CBL method should provide more timely and realistic calculation of what the load would have been absent the reduction on the actual day the reduction took place. By contrast, a non-summer Peak Load Contribution (“PLC”) or a non-summer Firm Service Level (“FSL”) approach would yield less accurate compliance measurement, given that such approaches rely on average consumption levels from certain days during the prior year and would not measure the actual reduction provided during the load reduction event.

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<sup>99</sup> See proposed Tariff, Attachment DD, section 5.6.1(h).

<sup>100</sup> See proposed RAA, Art. I, section 1.1A.

<sup>101</sup> See proposed RAA, Schedule 6, section G; proposed Tariff, Attachment DD-1, section G.

### 3. *Determination of Unforced Capacity Value of Demand Resources*

Starting with the 2018/2019 Delivery Year, PJM is proposing to determine the Unforced Capacity value of Demand Resources, whether Base Capacity Resources or Capacity Performance Resources, as simply the Nominated Value times the Forecast Pool Requirement and eliminate the step of multiplying that product by the DR Factor.<sup>102</sup>

The DR Factor is a vestige of PJM's now-replaced Active Load Management ("ALM") program, which is the precursor to Demand Resources, and the DR Factor (or ALM Factor as it was then known) was used to reduce the PJM Reliability Requirement by the amount of committed load reduction. Thus, the DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources (i.e., the peak load PJM can meet at the 1.1-in-10 LOLE), divided by the total Nominated Value of Demand Resources in the PJM Region and is determined using a probabilistic approach to determine reliability.<sup>103</sup> In other words, the DR Factor assumes that the quantity (in MW) of Demand Resources remains constant at any load level, even at a level higher than the load forecast, resulting in a DR Factor that discounts the actual capacity to 95 percent of the offered amount.

Moreover, given various rule changes in recent years designed to ensure that the system is provided the committed quantity of load reduction,<sup>104</sup> most demand resources must reduce their load levels down to the committed megawatt quantity below the resource's peak load contribution ("PLC").<sup>105</sup> Therefore, greater reductions are required during high load periods, and DR Factor discounting due to assumed constant quantities of load reductions at high load levels is no longer necessary.

Given the retention of the FPR gross-up (meaning that PJM is not procuring reserves for the quantity of load demand responders are committing to reduce), in determining the Unforced Capacity value for Demand Resources, PJM is proposing to require Demand Resources to perform at the actual capacity commitment level for that Delivery Year. The application of Performance Payments and Non-Performance Charges to Demand Resources is discussed in section III.E of this transmittal letter.

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<sup>102</sup> See proposed RAA, Schedule 6, section L; proposed Tariff, Attachment DD, section 5.11(a)(iii).

<sup>103</sup> See RAA, Schedule 6, section B; proposed Tariff, Attachment DD-1, section B.

<sup>104</sup> See, e.g., Submittal of PJM Interconnection, L.L.C., Docket No. ER11-3322-000 (Apr. 7, 2011), *accepted in PJM Interconnection, L.L.C.*, 135 FERC ¶ 61,212 (2011).

<sup>105</sup> PLC represents the end-use customer's actual contribution to the region's capacity obligation as measured by its actual consumption at the time of the five peak hours of the prior year. See RAA, Schedule 6, section J.

**D. Energy Efficiency Resources, Like Demand Resources, Can Participate As Either Capacity Performance or Base Capacity Resources.**

As Energy Efficiency Resources should be treated comparably with Demand Resources, PJM is proposing several changes to transition Energy Efficiency Resources to the Capacity Performance model similar to those discussed above for Demand Resources.

As an initial matter, like Demand Resources, Energy Efficiency should be allowed to offer as Capacity Performance Resources and, for the 2018/2019 and 2019/2020 Delivery Years, as Base Capacity Resources. Accordingly, PJM is proposing to broaden the definition of Energy Efficiency Resources to allow for winter-peak reductions (in addition to summer-peak reductions) during those two transition years.<sup>106</sup> In addition, PJM is proposing a new Energy Efficiency Resource product – the Annual Energy Efficiency Resource<sup>107</sup> – and renaming the existing product as Base Capacity Energy Efficiency Resource, with no change in performance requirements.<sup>108</sup>

As the name suggests, an Annual Energy Efficiency Resource is a resource designed to achieve a continuous reduction in energy consumption in both the summer and winter peak seasons. For Annual Energy Efficiency Resources, the reduction timeframe of from 2:00pm to 6:00pm over the summer months (June through August) is the same as for Base Capacity Energy Efficiency Resources. The winter peak season, however, is from January through February and, given that winter peak days have peaks in the morning and early evening hours, Annual Energy Efficiency Resources must be able to provide a continuous reduction in energy consumption from 7:00am to 9:00am and from 6:00pm to 8:00pm each day.<sup>109</sup>

An Annual Energy Efficiency Resource may offer as either (or both) a Capacity Performance Resource or a Base Capacity Resource, while a Base Capacity Energy Efficiency Resource may only offer as a Base Capacity Resource. Energy Efficiency Resources may also aggregate and submit offers, whether coupled or not, as a Base or Capacity Performance Resource. As a result, energy efficiency technologies that otherwise might not meet the annual requirements of capacity performance, can still monetize their value in the PJM markets by combining with other resources so as to meet the annual requirements. PJM believes that the ability of RPM to incentivize such resource combinations has great promise to incent the development of new technologies

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<sup>106</sup> See RAA, section 1.20A.

<sup>107</sup> See RAA, section 1.2B & Schedule 6, section L.2; proposed Tariff, Attachment DD-1, section L.2.

<sup>108</sup> See proposed RAA, Schedule 6, section L(2); proposed Tariff, Attachment DD-1, section L(2).

<sup>109</sup> See proposed RAA, Schedule 6, section L(2); proposed Tariff, Attachment DD-1, section L(2).

such as storage resources which can complement wind, demand response, and energy efficiency products.

Parallel to the changes proposed for Demand Resources, PJM is proposing to eliminate consideration of the DR Factor from the determination of an Energy Efficiency Resource's Unforced Capacity value.<sup>110</sup> For the same reasons discussed above, the DR Factor should no longer be applied and the Unforced Capacity value of each Energy Efficiency Resource should be determined solely based on the Nominated Energy Efficiency Value of the resource times the Forecast Pool Requirement.<sup>111</sup>

**E. RPM Requires a Strong Performance Incentive; PJM's Proposed Non-Performance Charge and Performance Credit, Which Is Patterned Closely on ISO-NE's Pay-for-Performance Two-Settlement Provision, Meets that Need.**

As explained above in section II.A of this letter, PJM's PHPA Charge provision, the RPM provision that was specifically intended to improve Generation Capacity Resources' availability and performance, is clearly inadequate to that task. PJM therefore proposes to replace the PHPA Charge provision, which is comparable to the NEPOOL proposal that the Commission rejected in *ISO-NE Pay for Performance*, with a charge and credit provision that is much like the ISO-NE proposal that the Commission accepted in that order.

*1. Overview*

PJM's proposed Non-Performance Charge/Performance Credit provision<sup>112</sup> will compare each Capacity Resource's<sup>113</sup> Expected Performance against its Actual Performance during each Emergency Action declared by PJM. If the Actual Performance of a Capacity Resource falls short of the Expected Performance of the resource, then that shortfall will be subject to a Non-Performance Charge that is based on either yearly Net CONE (for Capacity Performance Resources) or the yearly resource clearing price (for Base Capacity Resources) and a relatively small divisor (i.e., an assumed 30 Emergency Action hours per year). As discussed in more detail in section III.E.5 below, the only permissible excuses for a performance shortfall are that the resource was on a planned or maintenance outage approved by PJM, or was not dispatched (or was dispatched down) by PJM. But it is *not an acceptable* excuse if the resource was not dispatched, or was dispatched down, because of resource parameter limitations specified by the seller, or

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<sup>110</sup> See proposed RAA, Schedule 6, section L(3); proposed Tariff, Attachment DD-1, section L(3).

<sup>111</sup> See proposed RAA, Schedule 6, section L.3; proposed Tariff, Attachment DD-1, section L.3.

<sup>112</sup> See proposed Tariff, Attachment DD, section 10A.

<sup>113</sup> As discussed in section III.E.8 below, this provision will apply to both Base Capacity Resources and Capacity Performance Resources.

because the seller had submitted a market-price based offer higher than a cost-based offer.

Similar to ISO-NE, PJM proposes “stop-loss” provisions to limit the total Non-Performance Charges assessed. For Capacity Performance Resources, PJM will limit maximum charges for a calendar month, and for a calendar year. For a month, the maximum Non-Performance Charge proposed for such resources is 0.5 Times Net CONE times the installed capacity committed by the resource. For a year, the Non-Performance Charge proposed for such resources is 1.5 times Net CONE, the sum of which is multiplied by the installed capacity committed by the resource. For Base Capacity Resources, there will be a calendar year limit on total Non-Performance Charges, equal to the total capacity revenues due to the resource for the Delivery Year.

Revenue collected from payment of Non-Performance Charges will be distributed to resources (of any type, even if they are not Capacity Resources) that perform above expectations. A resource with Actual Performance above its Expected Performance is considered to have provided “Bonus” Performance, and will be assigned a share of the collected Non-Performance Charge revenues based on the ratio of its Bonus Performance to the total Bonus Performance (from all resources) for the same Performance Assessment Hour. For this purpose, *all* performance from a resource with no capacity commitment is considered Bonus Performance.

With that overview, PJM discusses below several aspects of this performance charge and credit provision.

2. *PJM’s Proposal Closely Tracks the “Capacity Performance Payment” that was Approved for ISO-NE Earlier This Year*

Like ISO-NE, PJM proposes to “link[] capacity revenues to resource performance during [times of critical system need].”<sup>114</sup> ISO-NE proposed what it called a two-settlement system, in which the auction clearing-price payment earned through forward commitment of a resource served as the first settlement, and a positive or negative payment based on the resource’s performance during critical periods of the Delivery Year constituted the second settlement.<sup>115</sup> As the Commission explained:

The second settlement entails a Capacity Performance Payment, determined for each resource by measuring its performance against its forward position (i.e., its share of the system’s requirements at the time of each Capacity Scarcity Condition). If a resource provides more than its share of energy and reserves, it will receive a positive Capacity Performance Payment; if it provides less than its share, it will receive a negative Capacity Performance Payment.<sup>116</sup>

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<sup>114</sup> *ISO-NE Pay for Performance* at P 4.

<sup>115</sup> *Id.* at PP 5-6.

<sup>116</sup> *Id.* at P 6.

PJM proposes this same basic approach. Sellers that clear a Capacity Resource in an RPM Auction will earn a fixed payment, based on the auction clearing price, for that forward commitment. Like ISO-NE, PJM proposes no changes to the current rules governing those payments. Like ISO-NE, PJM does propose, however, a new performance-based charge or credit that could greatly increase, or greatly reduce, the total net payment due the Capacity Market Seller—even to the point of turning the payment *to* the seller into a net payment *from* the seller. Like ISO-NE, PJM proposes to assess performance on the resource’s provision of its expected “share” of the energy and reserves needed at certain critical times; and, like ISO-NE, PJM proposes to base that share (at least for generation resources<sup>117</sup>) on the ratio of the resource’s capacity commitment to the total capacity commitments of all other committed resources.

Accordingly, just as it found for ISO-NE, the Commission should find here that “a two-settlement capacity market design that measures the performance of capacity resources during Capacity Scarcity Conditions represents a just and reasonable approach to addressing resource performance concerns.”<sup>118</sup> ISO-NE’s performance problems were more severe than PJM has experienced to date,<sup>119</sup> but this is a difference of degree, not of kind. While ISO-NE’s forced outage rate nearly doubled, PJM’s increased by “only” about 60% from the 2006/2007 Delivery Year to the 2013/2014 Delivery Year.<sup>120</sup> And while ISO-NE’s average resource availability dropped to 71%, PJM’s “only” fell to 78% during the January 7, 2014 forced outages. RPM exhibits the same fundamental shortcoming as ISO-NE’s Forward Capacity Market—a focus on resource commitment, without equivalent attention to resource performance. As the Commission observed, it is not enough to commit resources to a particular desired level and then assume resource adequacy is satisfied.<sup>121</sup> Capacity Resources are not paid merely to stand by; they are paid to perform. While performance has always been expected, market rule changes are needed to ensure that basic expectation will be satisfied by the resources that are committed and compensated as capacity in the PJM Region.

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<sup>117</sup> As discussed below, PJM proposes to base the Expected Performance of Demand Resources, Energy Efficiency Resources, and Qualifying Transmission Upgrades on their capacity commitment at its cleared MW value, rather than on a ratio basis.

<sup>118</sup> *Id.* at P 36.

<sup>119</sup> ISO-NE’s forced outage rates had doubled and average resource availability had fallen to 71%. *Id.* at P 26.

<sup>120</sup> *See* section II.D, *supra*. As can be seen from the EFORd graph in section II.D above, the region’s forced outage rate increased from about 6.2 % to about 9.8 % since 2005.

<sup>121</sup> *ISO-NE Pay for Performance* at P 36 (noting that “resource performance . . . deteriorated” due to ISO-NE making such an assumption).

### 3. *Capacity Performance Will Reasonably Be Judged During Emergency Conditions*

In one departure from ISO-NE's performance assurance improvements, PJM proposes to assess performance during emergencies, rather than only during scarcity conditions. Specifically, PJM's proposed Performance Assessment Hours will be delineated by PJM's declaration of Emergency Actions, which are defined as "locational or system-wide capacity shortages" that cause "pre-emergency mandatory load management reductions or . . . a more severe action."<sup>122</sup> PJM is basing this definition on the conditions and events identified in PJM Manual 13, section 2.3, as "Warnings" or "Actions" for capacity emergencies,<sup>123</sup> and, thus, the proposed definition states that Emergency Actions include: Voltage Reduction Warnings, Manual Load Dump Warnings, Voltage Reduction Actions, and Manual Load Dump Actions.<sup>124</sup> Manual 13 specifies the standards and procedures that govern each of these actions. In addition, PJM's declarations of these actions must be consistent with the NERC and ReliabilityFirst emergency operating procedures.<sup>125</sup> In accordance with these well-established procedures, PJM declares start times and end times for each of these actions. In the 2013/2014 Delivery Year, the PJM Region had 23 hours during which such actions were in effect.

Assessing Capacity Resource performance during emergencies is reasonable. Capacity Market Sellers should assume that their resources will be needed, at a minimum, any time the PJM Region is under a declared emergency for capacity shortages. Moreover, this approach also avoids the flaw in the PHPA Charge of judging performance or availability over *too many* hours. That flawed PHPA approach allows poor performance during the most critical times to be masked by adequate performance during other, less critical, times that fall within some broader definition of peak hours. The proposed Non-Performance Charge takes a better approach, by focusing on declared capacity emergencies, i.e., the times when performance by committed capacity is most critical.

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<sup>122</sup> See proposed Tariff, Attachment DD, section 2.23A.

<sup>123</sup> See *PJM Manual 13: Emergency Operations*, PJM Interconnection, L.L.C., 14 (June 1, 2014), <http://www.pjm.com/~media/documents/manuals/m13.ashx>.

<sup>124</sup> See proposed Tariff, Attachment DD, section 2.23A.

<sup>125</sup> *PJM Manual 13: Emergency Operations*. at 13.



4. *The Proposed Non-Performance Charge Rate for Capacity Performance Resources is Reasonably Based on Net CONE and a Reasonably Expected Allowance for the Annual Hours of Emergency Actions*

PJM proposes a Non-Performance Charge Rate for Capacity Performance Resources equal to the Net CONE (in MWs per day) for the relevant LDA,<sup>126</sup> times 365 to state the rate on an annual basis, divided by 30, which is intended to represent the number of hours during a year that Emergency Actions could reasonably be expected to be in effect. The two key determinants of the rate, therefore, are: 1) Net CONE as the measure of the value of a Performance Shortfall; and 2) the rate divisor of an assumed 30 hours per year. Both of these elements of the rate are reasonable.

Net CONE is the proper measure of the value of capacity. Net CONE is the cost to obtain capacity from a representative new plant of the type that would be expected to be marginal for capacity. In other words, it is the replacement cost of capacity. Net CONE (under a different name) was the basis for the capacity deficiency charge that preceded RPM. If a Load Serving Entity (“LSE”) failed to provide sufficient capacity to cover its loads, it was assessed a Net CONE-based charge, because that represented the cost to the power pool of obtaining a marginal resource to cover the LSE’s loads.<sup>127</sup>

When RPM was adopted, Net CONE became the fundamental cost determinant of the administratively determined capacity demand curve, i.e., the Variable Resource Requirement (“VRR”) Curve. As Net CONE is an estimate of the cost of a new capacity resource of the type expected to be marginal, it represents what should be the long-term equilibrium clearing point for the capacity market. Accordingly, if a Capacity Performance Resource fails to provide its share of energy and reserves at the very time, i.e., during emergencies, that the Capacity Resource was procured to address, the Non-Performance Charge Rate *should* be based on the generic value of capacity to the system—which is Net CONE. A Capacity Performance Resource that does not perform during emergencies is tantamount, from the perspective of system loads, to never having obtained the capacity in the first place. The charge to the underperforming seller therefore should be the generic cost to the system of obtaining capacity that *does* perform, i.e., the Net CONE value that is embedded in VRR Curve.

PJM proposes 30 hours as a reasonable, forward-looking allowance for the number of hours that Emergency Actions could be in effect each year. As noted above, there were 23 such hours in the 2013/2014 Delivery Year. This recent demonstration that there can be as many as 23 hours of Emergency Actions indicates that PJM should not set

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<sup>126</sup> As discussed below, PJM proposes to use the resource clearing price, rather than Net CONE, for Base Capacity Resources for the two years that such resources will be subject to the Non-Performance Charge.

<sup>127</sup> See Settlement Agreement and Explanatory Statement of the Settling Parties Resolving All Issues, Docket Nos. ER05-1410-000, et al., at Settlement Agreement, section II.O.6 (Sept. 29, 2006).

the rate divisor any *lower* than that level. If a Capacity Market Seller is in effect “paying for” the shortfall in its emergency performance via Non-Performance Charges, then it should be paying for at least as many hours as PJM has recently experienced. PJM is reasonably adding some additional hours to that value to reflect the possibility that there could be a higher number of emergency hours in any given Delivery Year in the future. Allowing for additional capacity shortage emergency hours is reasonable, given the supply resource concerns that the Commission highlighted just last month in accepting PJM’s revised VRR Curve.<sup>128</sup> Increasing the hours in this manner also tends to moderate the hourly rate, which also is reasonable for initial implementation of this new proposed charge. PJM could always file to change this rate divisor (up or down) if warranted by future experience.

5. *Resources Reasonably Are Allowed Only Very Limited Excuses for Non-Performance*

As discussed above in section II.A, a serious flaw in the PHPA Charge is that it broadly excuses unavailability for any of numerous conditions that are defined by NERC (for other purposes) as “outside management control” or “OMC.” These overly generous excuses for Capacity Resource underperformance are inappropriate. Even purportedly “OMC” events listed by NERC may be debatable when applied to specific circumstances, thus leaving Capacity Market Sellers too much opportunity and incentive to attempt to argue away their responsibility for nonperformance. To address this, PJM proposes changes in this filing to discontinue treating what are considered OMC events differently for purposes of calculating EFORd and PHPA Charge calculations beginning with the 2018/2019 Delivery Year. While currently events classified as OMC do not count as outages for purposes of calculating the forced outage rate or peak-hour period penalties, beginning with the 2018/2019 Delivery Year and for subsequent Delivery Years, PJM will include such events as outages.<sup>129</sup>

Excuses for nonperformance must be strictly circumscribed. In this section 205 filing, however, PJM chooses not to go quite as far as the total “no excuses” approach

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<sup>128</sup> *PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183, at P 25 (2014) (“Triennial Review Order”) (alterations in original) (quoting Submittal of PJM Interconnection, L.L.C., Docket No. ER14-2940-000, Affidavit of Dr. Paul M. Sotkiewicz on Behalf of PJM Interconnection, L.L.C. (Attachment C) ¶ 11 (Sept. 25, 2014)) (“PJM is ‘facing fast changing and uncertain market, policy and legal conditions’ including: ‘[(i)] approximately 26,000 MW of generation retirements from 2009 to 2016 due to the Mercury and Air Toxics Standards and the emergence of low-cost shale gas; [(ii)] continued improvements in the efficiency and economies of scale in combined cycle gas technology; [(iii)] the recent D.C. Circuit Court decision [vacating] Order No. 745[;] and [(iv)] uncertainty regarding the manner in which states will implement the [Environmental Protection Agency’s] Greenhouse Gas Rule and the resulting changes in resource configuration.’”).

<sup>129</sup> Proposed RAA, Schedule 5.

advanced by ISO-NE and accepted by the Commission in *ISO-NE Pay for Performance*. PJM is sympathetic to the perspective expressed in that order analogizing appropriate capacity compensation to “a fully-functioning and uncapped energy market, [in which] resources only earn scarcity revenue if they can actually deliver energy during periods of scarcity [such that] if a resource fails to perform it is not compensated, regardless of fault.”<sup>130</sup> That perspective certainly comes closer to the proper approach to this question than the approach embedded in PJM’s current rules.

Rather than an absolute “no excuses” approach, however, PJM proposes a bright line test for circumstances in which *PJM*, not the resource owner or operator, ultimately determines whether the resource was made available or deployed. Specifically, proposed section 10A(d) provides that a performance shortfall shall not be assessed a charge if the resource was unavailable during the hour *solely* because it “was on a Generator Planned Outage or Generator Maintenance Outage approved by [PJM], or was not scheduled to operate by [PJM], or was online but was scheduled down, by [PJM], for reasons other than (i) limitations specified by such seller in the resource operating parameters, or (ii) the submission by such seller of a market-based offer higher than its cost-based offer.”

In the case of Generator Planned Outages and Generator Maintenance Outages, PJM can approve or deny a resource operator’s proposed timing for such an outage, and PJM can and does consider reliability implications as part of its analysis of proposed outages.<sup>131</sup> PJM therefore has the ability to guard against possible mis-use of the outage process by sellers that are attempting to evade their performance responsibilities. But once PJM approves an outage (and elects not to later rescind its approval), the resource will not be available during that time. If an unexpected emergency then arises while the resource is on an approved outage, it is reasonable that a seller will not be assessed a Non-Performance Charge for that PJM-approved unavailability.

Similarly, PJM controls resource scheduling and dispatch decisions, and PJM makes those determinations based on its independent assessment of the needs of the bulk power system at any given point in time. If PJM did not schedule a Capacity Resource, or dispatched it down, then that unavailability is at PJM’s direction, and not due to actions of the seller. It is reasonable, therefore, that the seller will not be assessed a Non-Performance Charge to the extent its non-performance was solely due to PJM-directed unavailability. Moreover, assessing a Non-Performance Charge in those circumstances could create a disincentive for resources to follow PJM’s dispatch directions.

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<sup>130</sup> *ISO-NE Pay for Performance* at P 63.

<sup>131</sup> In PJM’s section 206 filing which is being submitted concurrently with this filing, PJM proposes modifications the Generator Planned Outage and Generator Maintenance Outage provisions in sections 1.9.2 and 1.9.3 of Schedule 1 of the Operating Agreement and the parallel provisions in Attachment K-Appendix of the Tariff. PJM’s proposal is to add details to the approval process, including relating to withholding, withdrawing, and rescinding prior approvals.

Some scheduling decisions, however, *can* be clearly traced back to the seller's actions, and scheduling will *not* be an excuse in those circumstances. Thus, not scheduling a resource, or dispatching it down, due to parameter limitations specified by the seller in its energy market offer are attributable to choices made by the seller, rather than actions dictated by PJM. Even physically based resource parameter limits reflect choices controlled by the seller as to the nature of the resource that it is offering to the PJM Region as capacity. Parameter limits should not be viewed as a permanent entitlement to underperform. Instead, those limits should be exposed to financial and market consequences: if sellers of resources with fewer operating limits earn more from the capacity market (after taking Non-Performance Charge and Performance credits into account) than sellers of resources with more restrictive operating limits, then all sellers will be incented to find ways to minimize those operating limits, which should over time increase overall fleet performance and benefit loads in the region. As the Commission correctly recognized for ISO-NE, "suppliers, not consumers, are in the best position to assess and price the performance risk associated with their resources."<sup>132</sup>

The same principle is even more clearly at work when the seller submits a market-based offer higher than its cost-based offer. In such a case, the seller is conceding that it *could* perform at the lower, cost-based price. If PJM honors the higher, market-based price offer when determining whether to schedule the resource, that is simply acceding to an economic decision controlled by the seller. In those circumstances, the seller's economic decision should not entitle it to an excuse for non-performance.

6. *A Stop-Loss Provision Properly Bounds a Seller's Worst-Case Charge for Poor Performance While Still Preserving a Strong Performance Incentive Through the Possibility of a Large Net Charge to the Seller*

Similar to ISO-NE, PJM proposes a "stop-loss" provision to circumscribe a Capacity Market Seller's exposure to Non-Performance Charges. Such a provision is needed because a combination of an unusually high number of Emergency Actions and/or very poor resource performance could lead to a total net charge liability that is out of all proportion to the risks a resource reasonably should undertake in committing capacity. By establishing a well-defined ceiling on Non-Performance Charge liability, a stop-loss aids in risk management and facilitates rational capacity offers. But that well-defined ceiling should not eliminate risk. To the contrary, a stop-loss can help set maximum Non-Performance Charge payments at a specific level that best serves the desired incentive purposes.

The Commission correctly articulated these principles in rejecting arguments that ISO-NE's proposed stop loss was set too high, finding that "the ability for a market participant's capacity revenues to become negative is an important aspect of its proposed market design because it provides an incentive for resource owners to make investments and maintain their resources to help mitigate the risk of non-performance and helps

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<sup>132</sup> *ISO-NE Pay for Performance* at P 64.

ensure paying consumers receive commensurate reliability benefits.”<sup>133</sup> The Commission also observed that “for a resource to reach the annual stop-loss limit, the number of hours of Capacity Scarcity Conditions would have to significantly exceed the amount of such scarcity conditions the region has experienced in recent years.”<sup>134</sup>

PJM applies these same principles to its proposed stop loss, known as the Non-Performance Charge Limit. Moreover, like ISO-NE, PJM proposes both a monthly and annual stop-loss, with the annual level set at three times the monthly level. PJM uses a different measure of capacity value than ISO-NE, however, because PJM uses a VRR Curve with a Net CONE value, rather than an “Auction Starting Price” as used in ISO-NE’s current rules.

Specifically, PJM proposes to set the annual stop-loss at 1.5 times Net CONE, which corresponds to the maximum clearing price allowed by PJM’s VRR Curve. This is reasonable as a measure of maximum Non-Performance Charge exposure. First, given the VRR Curve, any given RPM Auction could clear at 1.5 times Net CONE, so the maximum charge exposure must accommodate that possibility. Indeed, the Commission just approved a change to PJM’s VRR Curve that extends the portion of the VRR Curve at the 1.5 times Net CONE price, so the chances of clearing at the level have increased, beginning with the same May 2015 BRA for which these capacity performance changes are intended.<sup>135</sup> Second, in repeatedly holding that a VRR Curve price of 1.5 times Net CONE is reasonable for the PJM Region,<sup>136</sup> the Commission already has established that a 1.5 times Net CONE value is just and reasonable. Lastly, a maximum annual stop-loss of 1.5 times Net CONE will provide a strong incentive to perform—which is exactly what RPM now needs. While RPM Auctions *can* clear at 1.5 times Net CONE, they have yet to do so. And the farther a clearing price falls below 1.5 times Net CONE, the greater an underperforming seller’s exposure to foregoing all of its capacity revenue and incurring a net charge obligation. Accordingly, PJM’s proposed annual stop-loss value is just and reasonable.

For the monthly stop loss value, PJM follows the approach approved for ISO-NE and sets the monthly value at one-third of the annual value, i.e., for PJM’s market, 0.5 times Net CONE. This monthly stop loss is reasonable. It preserves the incentive value of the Non-Performance Charge by exposing sellers to significant financial risk for sustained or repetitive non-performance that spans multiple events and multiple months, but at the same time, protects suppliers from excessive impacts from one (or a few) events during a month.

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<sup>133</sup> *ISO-NE Pay for Performance* at P 70.

<sup>134</sup> *Id.*

<sup>135</sup> Triennial Review Order at PP 16, 52.

<sup>136</sup> *See PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331, at PP 55, 88, 130 (2006), *order on reh’g*, 119 FERC ¶ 61,318 (2007); *PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,062, at P 80, *order on reh’g*, 139 FERC ¶ 61,031 (2012).

PJM notes that, to allow for appropriate cash-flow mitigation given the potential magnitude of Non-Performance Charges, even after accounting for the stop-loss, PJM proposes to spread billing of any Non-Performance Charges incurred in any given month over the remaining months in the Delivery Year. PJM otherwise proposes to bill charges and credits for performance during Performance Assessment Hours within three calendar months after the calendar month that included such Performance Assessment Hours.<sup>137</sup>

7. *All Capacity Resources Must Be Accountable for Their Performance; the Non-Performance Charge Therefore Properly Applies to Base Capacity Resources, but on a More Limited Basis*

PJM proposes in this filing to permit two capacity products, i.e., Capacity Performance Resources and Base Capacity Resources, for a transitional period. Both of these products are Capacity Resources, however, and both are expected to perform during emergencies. PJM therefore proposes that the Non-Performance Charge should apply to *both* of these products, although on a more limited basis in the case of Base Capacity Resources, as described below.

First, the Non-Performance Charge will apply to Base Capacity Resources only for the 2018/2019 and 2019/2020 Delivery Years. Because anticipation of the Non-Performance Charge could significantly affect Capacity Market Sellers' decisions on how they offer their resources into a BRA, and PJM has already conducted the BRAs for all Delivery Years through the 2017/2018 Delivery Year, sellers should not be subject to the Non-Performance Charge for those near-term Delivery Years.<sup>138</sup> And PJM also proposes to eliminate the Base Capacity Resource product entirely in 5-1/2 years, i.e., by May 31, 2020, which permits a reasonable amount of time for all sellers to adapt their resources to the Capacity Performance Resource requirements. Consequently, Base Capacity Resources will only be subject to the Non-Performance Charge for two Delivery Years.<sup>139</sup>

Second, the Non-Performance Charge Rate will be based on each Base Capacity Resource's particular clearing price, rather than on Net CONE (as proposed for Capacity Performance Resources). To the extent resource clearing prices are below Net CONE (which has generally been the case for most Delivery Years and LDAs to date), a charge based on the resource clearing price exposes the seller to loss of its capacity revenues, but

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<sup>137</sup> See proposed Tariff, Attachment DD, section 10A(j).

<sup>138</sup> Except to the extent a seller voluntarily offers and commits a Capacity Performance Resource through the supplemental IAs that PJM proposes for those Delivery Years. See section III.B of this letter for a discussion of those transitional provisions.

<sup>139</sup> Base Capacity Resources can earn Performance *Credits*, however, by performing above expectations any time the Non-Performance Charge is applied to Capacity Performance Resources and generates revenue.

does not expose it to an additional net charge beyond loss of those revenues. This approach is appropriate for a capacity product that is being phased out, because the incentives intended through a net charge exposure are not needed to encourage a seller to invest in improvements in a Base Capacity Resource. Rather, the necessary incentive for sellers with long-term plans for their Base Capacity Resources will be provided by the anticipated application of the full charge rate to the resource when it converts to Capacity Performance Resource status beginning June 1, 2020. That incentive should be more than sufficient to encourage sellers with Base Capacity Resources to work steadily over the next five years to ensure that their resources will meet the performance expectations of a Capacity Performance Resource by 2020.

Third, the stop-loss for a Base Capacity Resource will be the resource's capacity revenues for the relevant year, rather than 1.5 times Net CONE (as proposed for Capacity Performance Resources). The rationale for this distinction is essentially the same as for the different Non-Performance Charge Rate. Provisions of this sort should not punish market participants; rather, they should create an incentive for desired conduct. Exposing a Base Capacity Resource to loss of all of its capacity revenue should create a sufficient incentive to assure good performance in the two Delivery Years at issue. Beyond May 31, 2020, the full Non-Performance Charge Rate will provide a sufficient incentive for the seller to make improvements to its resource so that it can continue to serve as a Capacity Resource in PJM when Capacity Performance Resources will be the only resources allowed.

Fourth, Base Capacity Resources will be exposed to Non-Performance Charges only for their performance during Emergency Actions in the summer months. This is a critical element of the transition for Base Capacity Resources. Those resources include summer-only Demand Resources and Energy Efficiency Resources, as well as Generation Capacity Resources that may have significant concerns with their expected winter-time performance, and which qualify for an exception to the Capacity Performance Resource must-offer requirement. PJM is proposing that these types of resources do *not* need to convert to Capacity Performance Resource status before June 1, 2020. It follows that PJM should not subject those resources to Non-Performance Charges for poor winter-time performance. Moreover, PJM is limiting the quantity of such resources that can clear the RPM Auctions for the 2018/2019 and 2019/2020 Delivery Years precisely because these resources are not required to perform in the winter, or because their performance under extreme winter conditions (such as seen last January) is expected to be poor. The Non-Performance Charge *can* provide a strong incentive for these resources to perform well in the summer, consistent with the manner in which the region has relied on these resources in the past. Assessing a Non-Performance Charge on these resources for poor winter performance, by contrast, would likely be merely punitive.

8. *The Measures of Expected Performance and Actual Performance for Demand Resources, Energy Efficiency Resources, and Qualifying Transmission Upgrades Reasonably Reflect Differences Inherent in Those Products*

To determine whether a Capacity Resource must pay a Non-Performance Charge, PJM will compare each Capacity Resource's Expected Performance against its Actual Performance. If a resource's Actual Performance is below its Expected Performance, then it has a Performance Shortfall and will (absent a valid excuse, or application of the stop-loss) be assessed a Non-Performance Charge.

The measure of Expected Performance and Actual Performance will differ, however, for certain different resource types. Generation Capacity Resources (and Capacity Storage Resources) are expected to provide a share of the hourly needs for energy and reserves based on the ratio of each generator's capacity commitment to the total capacity commitment of all Generation Capacity Resources (and Capacity Storage Resources).<sup>140</sup> For a Qualifying Transmission Upgrade ("QTU"), however, Expected Performance is simply the megawatt quantity of its cleared capacity commitment. Once a QTU is installed, it provides a specified increase in the Capacity Emergency Transfer Limit ("CETL") into a given LDA.

PJM also will base the Expected Performance of a Demand Resource or an Energy Efficiency Resource on its committed capacity, but the rationale is different for these load reduction resources than it was for QTUs. The Unforced Capacity amount of capacity cleared by Demand Resources and Energy Efficiency Resources in the RPM Auctions is adjusted by the Forecast Pool Requirement, i.e., by the reserve requirement associated with that load. PJM therefore does not buy reserves (e.g., from generation) for that increment of load, and PJM compensates that load reduction resource for the system's benefit in *avoiding* procurement of that portion of reserves. But when it comes to performance, the system will expect and need the Demand Resource or Energy Efficiency Resource to provide its *full* committed reduction and thus validate PJM's choice to rely on that product and not purchase the related installed reserve increment from a generation resource. Accordingly, for Demand Resources and Energy Efficiency Resources, Expected Performance will equal their committed capacity level.

Actual Performance of QTUs and Energy Efficiency Resources likewise will be based on their committed capacity value—so long as the resource was timely installed and in place during the particular emergency. For Demand Resources, however, their Actual Performance will be the load reductions they provided during the emergency, as determined through the customary load response settlement process.

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<sup>140</sup> See section 10A(c). For the hourly load and reserves part of this calculation, PJM will simply look at the energy output of all generation and storage resources that are satisfying that need for energy and reserves in that hour, plus all imports (which also help meet that need), and plus any net over-performance by Demand Resources (which reduces the energy and reserve PJM requires from generators and storage resources). *Id.*



9. *Performance Should Be Encouraged From All Resources; All Resources that Exceed Performance Expectations Therefore Should Be Allowed to Share in the Non-Performance Charge Revenues Collected from Under-Performing Resources*

PJM proposes that all revenues collected from assessment of Non-Performance Charges for a Performance Assessment Hour will be distributed “to each Market Participant, whether or not such Market Participant committed [capacity] for [that hour], that provided energy or load reductions above the levels expected for such resource during such hour.”<sup>141</sup> Similar to the Non-Performance Charge calculation, PJM will compare a resource’s Expected Performance against its Actual Performance. But where Actual Performance *below* Expected Performance produces a Performance Shortfall that can lead to a Non-Performance Charge, Actual Performance *above* Expected Performance yields Bonus Performance that can lead to a Performance Payment.

For Capacity Resources, Expected Performance is calculated in the same way as for the Non-Performance Charge: Generation (and Storage) Capacity Resources are expected to provide a share of the hourly needs for energy and reserves based on the ratio of each generator’s capacity commitment to the total capacity commitment of all Generation (and Storage) Capacity Resources, while Demand Resources, Energy Efficiency resources, and QTUs are expected to provide the same megawatt quantity as their cleared capacity commitment.

But, as noted, Performance Payments also will be made to “any Market Participant” that provides the energy or load reductions needed in an emergency. For these non-capacity resources, their *entire* performance is considered Bonus Performance, as section 10A(g) makes clear: “Expected Performance shall be zero for any resource that is not a Capacity Resource or Locational UCAP, or that is a Capacity Resource or Locational UCAP, but for which the Performance Assessment Hour occurs outside the resource’s capacity obligation period,” such as a summer-only demand resource providing load reductions in the winter.

This approach is reasonable. During an emergency, all resource performance is beneficial, and all resources, whether or not the resource has made a forward capacity commitment, should be encouraged to perform. Extending the opportunity for Performance Payments to any resource that responds during an emergency is a reasonable way to encourage that performance. Notably, loads incur no additional costs from such “capacity” payments to energy resources. Rather, an underperforming Capacity Resource is in effect sending part of its fixed capacity payment to an over-performing energy resource that “stood in” for the Capacity Resource.

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<sup>141</sup> Proposed Tariff, Attachment DD, section 10A(g).

10. *The Non-Performance Charge Provision Will Displace Certain Existing Capacity Performance Provisions Effective June 1, 2018*

The new Non-Performance Charge will, once it is implemented, supplant several existing provisions aimed at ensuring resource availability and performance. Specifically, the Peak-Season Maintenance Compliance Penalty Charge in section 9 of Attachment DD, the Peak-Hour-Period Availability Charges (i.e., the PHPA Charge) in section 10 of Attachment DD, and the Demand Resource Compliance Penalty Charge in section 11 of Attachment DD will no longer be required upon implementation of the Non-Performance Charge. Moreover, for the capacity deficiency charges that will remain in effect alongside the Non-Performance Charge, a seller should not incur both charges for the same deficiency/non-performance event; PJM proposes instead to assess only the greater of the two charges when they are applicable to the same event or occurrence. PJM also proposes a change to the Qualifying Transmission Upgrade Charge, to conform that charge to the compliance charge rate used in the other similar provisions.

The Peak-Season Maintenance Compliance Penalty Charge assesses a charge on a Generation Capacity Resource that takes an *unapproved* planned or maintenance outage during peak periods, without obtaining a replacement resource.<sup>142</sup> This charge would thus be duplicative, at least in purpose, with the new Non-Performance Charge, which will charge a resource for non-performance during an Emergency Action, but which will also allow an excuse if the resource is unavailable due to a PJM-approved Planned or Maintenance Outage. There is no need to have two availability/performance charges directed at essentially the same conduct. PJM therefore proposes to sunset the Peak-Season Maintenance Compliance Penalty Charge as of the end of the 2017/2018 Delivery Year.

As demonstrated in section II.A above, as the PHPA Charge provision was specifically intended to address Generation Capacity Resources' availability and performance, but has proven inadequate to that task. The new Non-Performance Charge is designed to replace the PHPA Charge and to better incent Capacity Resource performance and availability.

The Demand Resource Compliance Penalty Charge is the companion to the PHPA Charge for Demand Resources, as it is intended to ensure Demand Resources' performance and availability.<sup>143</sup> As the Non-Performance Charge provisions will apply to all types of Capacity Resources, there is no need to maintain and impose a separate charge only for Demand Resources.

Accordingly, PJM is proposing to sunset the PHPA Charge and Demand Resource Compliance Penalty Charge at the end of the 2017/2018 Delivery Year to coincide with the advent of the requirement that all capacity resources be either Capacity Performance

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<sup>142</sup> See Tariff, Attachment DD, section 9(b).

<sup>143</sup> Tariff, Attachment DD, section 11(a).

Resources or Base Capacity Resources. Additionally, any resources that voluntarily commit to be Capacity Performance Resource for the 2016/2017 and/or 2017/2018 Delivery Years will be subject only to the Non-Performance Charge provisions in section 10A and will not be subject to the capacity performance provisions in Attachment DD, sections 9 and 10.<sup>144</sup>

Certain capacity deficiency charges will remain in effect, however, alongside the Non-Performance Charge, including the generator testing provision in Attachment DD, section 7, the capacity deficiency charge provision in section 8, and the Demand Resource testing provision in section 11A. While performance during emergencies is not the focus of these provisions, it is conceivable that the same conduct, occurrence, or event could give rise to charges under one of these sections *and* under the Non-Performance Charge. However, that would be punitive. A seller should not have to incur both charges for the same deficiency/non-performance event. PJM proposes instead to assess only the greater of the two charges when they are applicable to the same event or occurrence, and is modifying each of these provisions to make that clear.

Lastly, PJM also proposes a change to the Qualifying Transmission Upgrade Charge, to conform that charge to the compliance charge rate used in the other similar provisions. In particular, PJM proposes to change the charge rate for QTUs from 2.0 times the Locational Price Adder to 1.2 times the clearing price, which tracks the form of the charge assessed on other types of resources for their capacity deficiencies.

#### **F. The Proposed Changes to the RPM Market Design Require Conforming Changes to the RPM Market Power Mitigation Rules.**

The proposed market design changes to encourage better performance by resources that commit as capacity through RPM require supportive changes to the rules on market power mitigation in RPM. Capacity Market Sellers that now will face more harsh financial consequences for a failure to perform during emergencies (with no limit on *when* such emergencies arise) will likely need to invest in plant design changes or new equipment, or increase operating budgets to accommodate more staff, firm fuel delivery arrangements, greater inventories, or changed operating practices. PJM is not prescribing *how* sellers ensure their resources will perform. Rather, the market rules should allow sellers to make those determinations for their resources, and then compete against *other* sellers making the same determinations for *their* resources. The RPM Auctions will determine which strategies to improve performance are cost effective (by clearing some and not others), and the Non-Performance Charge/Performance Payment mechanism will determine which strategies are ultimately successful (by rewarding some and charging others). But for this approach to function effectively, sellers must have room in the first instance to submit offers that cover their expected new costs of improving the performance of their resources. As noted, particular approaches to performance improvements (e.g., dual-fuel vs. on-site storage vs. new pipeline capacity) may entail

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<sup>144</sup> As only Generation Capacity Resources may commit as Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years, the Demand Resource Compliance Penalty Charge in section 11 would not apply in any event.

costs that are too high to clear in the RPM Auctions, and even if a resource following one of these approaches clears, that approach may prove to be more or less effective during the Delivery Year. But for the market to make that judgment, sellers need to be able to propose those different performance improvement approaches in their RPM offers in the first place.

RPM's current offer-capping rules are not flexible enough to facilitate that process. As discussed above in section II.B of this letter, Existing Generation Capacity Resources can (in most circumstances) offer no more than their Avoidable Cost Rate ("ACR") less expected net energy and ancillary service market revenues, determined in accordance with a strict formula. Those rules must be relaxed, to allow sellers of Capacity Performance Resources to compete against one another based on their costs of improving performance and perceived risks of non-performance. The necessary rule changes are described and discussed below. In addition, as also discussed below, to prevent physical withholding of resources with the capability to meet the region's needs for resources that will perform during emergencies, Capacity Performance Resources should have a distinct "must-offer" requirement in addition to the current "must-offer" requirement for all Capacity Resources.

*1. The Net Cost of New Entry Is a Reasonable Offer Cap Given the Responsibilities and Risks Associated with Capacity Performance Resource Offers*

So that sellers of Capacity Performance Resources can submit offers that recover the costs, investments, and expenses needed to ensure that their resources can perform during emergencies occurring at any time of year, PJM proposes to increase the Market Seller Offer Cap for Capacity Performance Resources to the applicable Net Cost of New Entry. Specifically, PJM proposes that "the Market Seller Offer Cap for any Capacity Performance Resource shall be the Net Cost of New Entry applicable for the Delivery Year and Locational Deliverability Area for which such Capacity Performance Resource is offered."<sup>145</sup>

A Net CONE offer cap is reasonable in these circumstances. The costs of dual-fuel retrofits and firm gas transportation and other gas service can vary widely by pipeline and location, and perceptions of risk by resource owners could vary widely as well. Rather than PJM and the IMM attempting to verify the legitimacy of such costs, it makes sense to allow market participants to find the least cost manner to ensure performance. Moreover, by this filing, PJM is putting the risk of non-performance on Capacity Market Sellers, and for Capacity Performance Resources that risk can extend as high as 1.5 times Net CONE times all of a resource's committed capacity. This has two very important consequences. First, the corollary to making sellers strictly responsible for resource performance is that sellers will determine what measures, and at what cost, are needed to ensure that their resources perform. The offer cap rules should allow sellers, within reason, room to make that determination—and to craft Sell Offers that compete with the Sell Offers of other Capacity Market Sellers that are making that same

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<sup>145</sup> Proposed Tariff, Attachment DD, section 6.4(a).

determination for their Capacity Performance Resources. Second, the Non-Performance Charge, with its 1.5 times Net CONE stop-loss level, will now become a potential cost of doing business as a PJM Capacity Resource—a quite substantial potential cost. Sellers will now need to take that potential cost into account when developing their offers, and submit price offers at which they are willing to undertake that risk by becoming committed as Capacity Performance Resources in PJM—especially going forward, as only Capacity Performance Resource offers will be accepted for the 2020/2021 and subsequent Delivery Years. Under these circumstances, Net CONE is a reasonable offer cap for resources that face potential payments of 1.5 times Net CONE.

Moreover, Net CONE is explicitly intended be a just and reasonable measure of the value of capacity in PJM to exactly meet the reliability objective of a 1-day-in-10-year loss of load expectation.<sup>146</sup> Net CONE is the estimated Capacity Resource cost level that anchors RPM’s VRR Curve. By design, over time the marginal offer needed to clear the market will be priced at Net CONE, and all other resources that clear the market will be compensated at that Net CONE price. This assumes that PJM’s estimated Net CONE reasonably reflects the true costs to develop a generating unit and bring that unit to market to participate as capacity in PJM. That assumption is particularly reasonable here, as the Commission just approved changes to RPM to ensure that Net CONE is just and reasonable, and that the method to update Net CONE for the next three years is also just and reasonable.<sup>147</sup> Accordingly, since some departure is needed from a strict “going-forward cost” offer-price limitation in order to accommodate additional costs sellers must incur to ensure resource performance, Net CONE, as a just and reasonable overall price for capacity in PJM, reasonably fulfills that need.

To provide further assurance to sellers that they will be permitted to submit offers up to Net CONE, PJM is revising the section 6.4(a) of Attachment DD of the Tariff to clarify that “the submission of a Sell Offer with an Offer Price at or below the revised Market Seller Offer Cap permitted under this proviso [i.e., up to Net CONE] shall not, in and of itself, be deemed an exercise of market power in the RPM market.” This clarification is appropriate, given the possibility that alleged exercises of market power or market manipulation could, in some cases, include actions that are within the letter of a tariff provision.<sup>148</sup> This clarification therefore will eliminate a possible disincentive to potential sellers of Capacity Performance Resources committing to the capital and operating expenses they need to improve performance, and submitting an offer up to Net CONE that recovers those costs. And while establishing an offer cap at or below Net

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<sup>146</sup> See *PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183, at P 55 & n.41 (2014) (rejecting challenges to PJM’s RPM changes designed to maintain at least a 1-in-10 LOLE).

<sup>147</sup> Triennial Review Order at PP 125-26.

<sup>148</sup> See *In Re Make-Whole Payments & Related Bidding Strategies*, 144 FERC ¶ 61,068, at P 83 & n.8 (2013) (“Many of the Commission’s major enforcement actions under Rule 1c . . . have concerned . . . market manipulation in the absence of a violation of a specific tariff provision . . .”).

CONE will not trigger the review requirements under section 6.4(b) of Attachment DD, a seller must still provide the information regarding a list of generation units owned or controlled by the market participant and associated offer cap and the MW to which the offer cap applies.<sup>149</sup>

This change also requires a conforming change to current section 6.4(d), which establishes an offer cap for the Third Incremental Auction of 1.1 times the Base Residual Auction clearing price. The Commission approved this rule change in settlement of a complaint that contended that sellers required to offer all of their remaining capacity (as determined by the final EFORD calculation before the Delivery Year) into the Third Incremental Auction at the ACR price faced a risk because that capacity would then be unavailable to them as replacement capacity should they face deficiency charges during the Delivery Year.<sup>150</sup> That concern remains, so the offer cap of 1.1 times the BRA price must be retained. But depending on the BRA price, that offer cap could be below Net CONE. If so, then sellers offering Capacity Performance Resources in the Third Incremental Auction would not have the opportunity otherwise provided by these proposed rule changes to offer at up to Net CONE. Accordingly, PJM is revising section 6.4(d) to provide that the Market Seller Offer Cap will *the greater of* Net CONE or 1.1 times the BRA price.

PJM notes, however, that it does not intend to prevent a seller from submitting a cost-justified offer above Net CONE. If a Capacity Market Seller seeks, and can support, an Avoidable Cost Rate Offer that is above Net CONE, then that option will be available. PJM therefore is clarifying that “if a Capacity Performance Resource seek[s] a Market Seller Offer Cap that exceeds the Net Cost of New Entry, it shall be subject to and comply with [the Avoidable Cost Rate provisions] of this section 6.4.”<sup>151</sup> As discussed below, an ACR-based offer for a Capacity Performance Resource will now permit the costs of gas transportation and other gas service as well as a documented and verifiable risk premium.

## 2. *The Avoidable Cost Rate Must Be Revised to Include, Expressly, the Costs of Firm Fuel Delivery*

As explained above, the current ACR formula does not expressly include (nor does it expressly exclude) costs to obtain fuel on a firm basis. As also noted, PJM’s understanding is that the IMM has taken the position with Capacity Market Sellers that firm natural gas transmission costs are not allowed in their ACR calculations. The best way to resolve this ambiguity, and to ensure that ACR includes costs necessary to satisfy performance expectations during winter Emergency Hours, is to revise the ACR formula to add a component on firm fuel availability.

<sup>149</sup> See proposed Tariff, Attachment DD, section 6.7(a).

<sup>150</sup> See *Mirant Energy Trading, LLC v. PJM Interconnection, LLC*, 122 FERC ¶ 61,007 (setting complaint for hearing and settlement), 124 FERC ¶ 61,140 (2008) (order accepting settlement).

<sup>151</sup> *Id.*

PJM therefore proposes to add a new element, “Avoidable Fuel Availability Expenses,” (“AFAE”) to the ACR formula and define it as “avoidable operating expenses related directly to fuel availability and delivery for the generating unit that can be demonstrated by the Capacity Market Seller based on data for the twelve months preceding the month in which the data must be provided, or on reasonable projections for the Delivery Year supported by executed contracts, published tariffs, or other data sufficient to demonstrate with reasonable certainty the level of costs that have been or shall be incurred for such purpose.”

PJM’s proposed “AFAE” category lists, as examples of such expenses, costs “incurred for: (a) firm gas pipeline transportation; (b) natural gas storage costs; (c) costs of gas balancing agreements; and (d) costs of gas park and loan services.” These examples are not intended to be exclusive. In particular, while natural gas firm delivery costs have been the area of most concern recently, this provision is not intended to be limited solely to natural gas expenses.

This revision to the ACR formula is necessary and appropriate. Failure of natural gas-fired plants to obtain firm fuel supplies has contributed to outages, price volatility, and high uplift costs. The Commission has recognized as much in its recent order requiring RTOs, like PJM, to demonstrate the actions they are taking to promote fuel assurance.<sup>152</sup> This proposed change falls squarely within the category of just and reasonable changes that will help contribute to a solution to that very issue.

3. *PJM’s Offer-Capping Rules Must Allow for a Risk Premium Related to the Risks of Offering as a Capacity Performance Resource, Similar to the Risk Premium Approved for ISO-NE*

PJM also proposes to include in the ACR formula a new term specifically to allow sellers of Capacity Performance Resources to include a premium for quantifiable risks associated with such resources. In this respect, PJM’s proposal tracks that risk premium approved for ISO-NE. As the Commission explained in approving ISO-NE’s proposal, it “allows suppliers to include in their bids ‘[a]ny risk that can be quantified and analytically supported and that is not already reflected in the formula for net going forward costs.’”<sup>153</sup> The Commission added that the proposal “allows each company to evaluate its risks using its own methodology, rather than following a single methodology dictated by the [ISO-NE Market Monitor].”<sup>154</sup> The Commission specifically rejected arguments that ISO-NE’s approach “creates an overly vague standard of review or hinders the detection and mitigation of market power,” noting that the proposal requires

<sup>152</sup> *Centralized Capacity Markets in Reg’l Transmission Orgs. & Indep. Sys. Operators*, 149 FERC ¶ 61,145, at P 20 (2014).

<sup>153</sup> *ISO-NE Pay for Performance* at P 96 (alteration in original) (quoting Filings of Performance Incentives Market Rule Changes of ISO New England, Inc. and New England Power Pool, Docket No. ER14-1050-000, at proposed tariff section III.13.1.2.3.2.1.4 (Jan. 17, 2014) (“ISO-NE Filing”)).

<sup>154</sup> *Id.*

market participants to “provide ‘documentation separately detailing any risk premium included in the bid.’”<sup>155</sup>

Finally, the Commission observed that, because any offer with a risk premium will be submitted in an auction where it must compete against other offers, this approach (which PJM also proposes here) “creates an incentive for resources to submit offers that accurately reflect their risks, rather than inflating them, in order to increase the likelihood that they will clear” in the capacity auction.<sup>156</sup>

Accordingly, PJM proposes to add to the ACR formula a new element on “Capacity Performance Quantifiable Risk,” consisting of “the documented and quantifiable costs of mitigating the risks associated with submission of a Capacity Performance Resource offer, such as insurance expenses solely attributable to the risk of being a Capacity Performance Resource.” The Tariff addition makes clear that “CPQR applies solely for offers of a Capacity Performance Resource.”<sup>157</sup>

4. *To Ensure No Withholding of Resources that Are Capable of Performing to the Level Required, Capacity Market Sellers Will Properly Be Required to Submit Capacity Performance Resource Offers for All of Their Resources that Are Physically Capable of Meeting the Capacity Performance Resource Requirements*

PJM presently requires all generation resources in the PJM Region that are capable of qualifying as Capacity Resources to submit Capacity Resource offers in the RPM Auctions.<sup>158</sup> Exceptions are allowed if a resource will not be available for the relevant Delivery Year; for example, if it will retire, or will be committed to a firm sale outside the PJM Region.<sup>159</sup> The exception process requires review by both PJM and the IMM.<sup>160</sup> If a resource does not obtain an exception, but fails to submit an offer, then it faces various sanctions, including a ban on submitting offers in certain other RPM Auctions.<sup>161</sup> Given the market concentration in the capacity market, this “must-offer” requirement is a reasonable solution to the problem of possible physical withholding of Capacity Resources, which could otherwise be used as a tactic to reduce competition.<sup>162</sup>

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<sup>155</sup> *Id.*

<sup>156</sup> *Id.* at 98.

<sup>157</sup> Proposed Tariff, Attachment DD, section 6.8.

<sup>158</sup> *See* Tariff, Attachment DD, section 6.6.

<sup>159</sup> *See id.*

<sup>160</sup> *See id.*

<sup>161</sup> *See id.*

<sup>162</sup> *See N.Y. Indep. Sys. Operator, Inc.*, 122 FERC ¶ 61,211, at P 50, *order on reh’g*, 124 FERC ¶ 61,301, at P 51 (2008), *order on reh’g*, 131 FERC ¶ 61,170 (2010); *Cal. Indep. Sys. Operator Corp.*, Opinion No. 492, 117 FERC ¶ 61,348, at P 110



PJM proposes a similar “must-offer” requirement for Capacity Performance Resources.<sup>163</sup> Such a requirement is essential. For the next two forward Delivery Years, i.e., the 2018-2019 and 2019-2020 Delivery Years, Capacity Performance Resources will be the overwhelming majority of the capacity committed in PJM;<sup>164</sup> and they will be the *only* resources in subsequent Delivery Years. Moreover, during the two transition years, Capacity Performance Resources can be paid a higher price than Base Capacity Resources.<sup>165</sup> The level of that price depends, in part, on the quantity of Capacity Performance Resources offered into the auction. Sellers with multiple resources that *could* qualify as Capacity Performance Resources therefore may have an incentive to withhold some of those resources, and offer them only as Base Capacity Resources, in an attempt to increase the Capacity Performance Resource clearing price for the benefit of their other resources.

In this context, it is not enough for a seller with a Capacity Resource merely to offer it as a Base Capacity Resource. If the resource *can* be offered as a Capacity Performance Resource, it is critical that it in fact *is* offered as a Capacity Performance Resource. This must-offer requirement is required to prevent physical withholding which otherwise could be utilized to manipulate the market.

Accordingly, PJM proposes that, beginning with the 2018/2019 Delivery Year, “the installed capacity of every Generation Capacity Resource located in the PJM Region that is capable (or that reasonably can become capable) of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource” in all RPM Auctions for each Delivery Year.<sup>166</sup>

As with the existing must-offer provision, each resource’s installed capacity will be determined on the day when bidding opens in the relevant RPM Auction.<sup>167</sup> Sellers calculate and include an EFORD adjustment with their Sell Offers, and the existing must-offer provision includes extensive provisions for calculation and review of those EFORD values, to ensure that an overstated forced outage rate does not become a vehicle for

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(2006), *order on reh’g*, 121 FERC ¶ 61,193 (2007), *petition for review denied sub nom. City of Anaheim v. FERC*, No. 11-1442 2013 U.S. App. LEXIS 22510 (D.C. Cir. Nov. 5, 2013) (per curiam); *PJM Interconnection, L.L.C.*, 115 FERC ¶ 61,079, at P 115 (2006); *PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331, at P 33.

<sup>163</sup> See proposed Tariff, Attachment DD, section 6.6A.

<sup>164</sup> As discussed in section III.B, procurement of Base Capacity resources will be limited by reliability concerns during these two transition years to a level of roughly 20% of the total procurement.

<sup>165</sup> See section III.H.2 of this letter.

<sup>166</sup> See proposed Tariff, Attachment DD, section 6.6A(a).

<sup>167</sup> See *id.*

withholding.<sup>168</sup> As the same issue can arise with Capacity Performance Resources, PJM proposes that EFORd and Unforced Capacity determinations made under the general “must-offer” rule “as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.”<sup>169</sup>

As with the general “must-offer” requirement, PJM proposes to allow exceptions to the Capacity Performance Resource “must-offer” requirement. However, those exceptions will be permitted “only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be physically incapable of satisfying the requirements of a Capacity Performance Resource.”<sup>170</sup> In this regard, a seller *cannot* claim a reasonable expectation that its resource will be physically incapable of serving as a Capacity Performance Resource simply because the seller declines to make the investments, or allocate the operating budget, needed to bring the resource’s performance up to the necessary level. “Physically incapable” is specifically not an economic feasibility test. Rather the “physically incapable” excuse would be reserved for those resources that, for example, require capital improvements, or new fuel delivery infrastructure, that cannot be arranged, permitted, and completed in time for the Delivery Year. However, while economic considerations will not be an excuse to the must-offer requirement, they can be reflected through submission of coupled offers (as discussed below) that reflect the cost differences between committing a particular resource as Base Capacity Resource and committing it as a Capacity Performance Resource.

Exceptions will be determined “using the same timeline and procedures as specified in section 6.6.”<sup>171</sup> Briefly, those procedures entail: (i) the seller’s submission of a request for an exception (with all supporting information) by no later than 120 days before the offer window opens for the relevant auction; (ii) initial review of the exception request by the IMM; and (iii) final review, and a final determination, by PJM no later than 65 days before the auction offer window.<sup>172</sup>

However, PJM’s proposed “must-offer” provision clarifies that “Intermittent Resources, Capacity Storage Resources, Demand Resources, and Energy Efficiency

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<sup>168</sup> See Tariff, Attachment DD, section 6.6(g).

<sup>169</sup> See proposed Tariff, Attachment DD, section 6.6A(b).

<sup>170</sup> *Id.*, Attachment DD, section 6.6A(c).

<sup>171</sup> *Id.*

<sup>172</sup> Given that 120 days prior to the 2015 BRA will be in early January, 2015, i.e., while this filing is still pending, PJM clarifies that it will entertain and process requests for exceptions to the Capacity Performance Resource must-offer requirement while this filing is pending. PJM notes that if the Commission accepts these proposed changes, then the must-offer requirement *will apply* to the 2015 BRA. Therefore, any seller that believes its resource needs an exception to that requirement is urged to follow the exception procedures outlined in this filing, in order to obtain such an exception. For its part, PJM will ensure that any such exception requests are timely considered and resolved.

Resources shall not be required by this provision to submit an offer as a Capacity Performance Resource.” But while they are not *required* to offer as Capacity Performance Resources, these types of resources can *choose* to offer as Capacity Performance Resources if the Capacity Market Seller wishes to do so, and can demonstrate that its resource (at the MW quantity it is offering) can meet the requirements of a Capacity Performance Resource.<sup>173</sup> This rule tracks the current must-offer rule, which applies only to generation resources. As a practical matter, these types of resources do not raise the same physical withholding concerns as do existing generation resources (ownership of which is relatively concentrated). Moreover, a must-offer requirement would be difficult to enforce against these types of resources. It is not clear, for example, how PJM could compel a party to offer load reductions into RPM, or demand that an intermittent resource assume its resource will operate when solar or wind conditions do not allow operation, or require the operator of a storage resource to take an unreasonable risk on the amount of charging time it will have for its resource before an Emergency Action occurs.

PJM notes that the must-offer requirements of this section are coordinated with the resource coupling provisions of section 5.6.1. When considered together, these provisions embody the following principles: 1) any resource that can qualify as a Capacity Performance Resource must offer as a Capacity Performance Resource, unless it falls in one of the categorically excluded resource types; 2) a resource that can qualify as a Capacity Performance Resource, but requires substantial investment to do so, is not excused from the Capacity Performance Resource must-offer requirement, but may submit a coupled offer as both Capacity Performance Resource and Base Capacity Resource, with a price difference that reflects the costs necessary for it to become a Capacity Performance Resource; 3) a resource in one of the excluded categories is not required to offer as a Capacity Performance Resource, but may do so if it qualifies, and may do so along with a coupled offer as a Base Capacity Resource if appropriate to reflect higher costs it must incur to become a Capacity Performance Resource by the Delivery Year; and 4) a resource that can qualify as a Capacity Performance Resource, but only at an offer price above Net CONE, *must* submit a coupled offer as both a Capacity Performance Resource and a Base Capacity Resource. This last principle ensures that a seller cannot use a high-price Capacity Performance Resource offer as a form of economic withholding, and thereby effectively remove its resource from the PJM Region supply stack and put upward pressure on RPM clearing prices.

PJM also proposes to attach to this must-offer requirement the consequences that attach to a violation of the general “must-offer” requirement, by stating that a resource that can qualify as a Capacity Performance Resource but “does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.”<sup>174</sup> This means that a seller would be barred from offering its resource into subsequent auctions for the same Delivery Year (or otherwise receiving RPM compensation for that resource

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<sup>173</sup> See proposed Tariff, Attachment DD, section 6.6A(c).

<sup>174</sup> *Id.*, Attachment DD, section 6.6A(d).

for that Delivery Year), and could be subject to other remedies pursued by PJM or the IMM.<sup>175</sup>

**G. PJM Proposes Changes to the Load Serving Entity Capacity Obligation Allocation To Better Align Such Charges With The Benefit Provided By Capacity Performance Resources.**

By this filing, PJM proposes to reorient its RPM rules to focus on the essential purpose of capacity, i.e., the advance commitment of a resource to provide energy and reserves when called upon during emergencies. The proposed Non-Performance Charge will impose serious adverse financial consequences on resources that do not perform during emergencies. A seller even risks turning its RPM revenue stream into an RPM expense stream if its resource performs poorly in multiple emergencies during the Delivery Year. Conversely, the Performance Credit provision will provide substantial additional revenues to resources that perform well during emergencies.

As a result of the incentives created by this market rule change, sellers can be expected to focus their capital investment funds and operating budgets on improving the performance of their resources during emergencies. The resources that sellers offer into the RPM Auctions will, increasingly, be resources that are designed to perform well during emergencies. And the resources that LSEs *pay for* in RPM will be resources that are expected to perform well in emergencies, committed to perform well in emergencies, and designed to perform well in emergencies.

Emergency performance is not, however, how RPM currently determines LSE capacity obligations. Instead, RPM determines LSE capacity obligations, which in turn determine LSE capacity costs, based on the contribution of the LSE's loads to the most recent summer peak load. More precisely, PJM determines an overall capacity obligation for each Zone based on the Zone's share of the PJM Region's forecasted summer peak, and then the Electric Distribution Company ("EDC") in the Zone determines each LSE's share of the most recent zonal weather-adjusted summer peak. PJM's market rules prescribe that each LSE's capacity obligation is based on "the weather adjusted coincident summer peak" of the LSE's loads in the summer before the Delivery Year,<sup>176</sup> but do not otherwise dictate how the EDC must determine each LSE's coincident summer peak. Hours when the region was experiencing a capacity emergency are not expressly considered, although the summer peak could coincide with a declared capacity emergency. The current RPM rules do not require any consideration of winter peaks.

Consequently, if the other RPM reforms in this filing are adopted, and no change is made to the LSE capacity obligation rules, then the emergency hours for which capacity resources will be procured, for which they will be incented to perform, and for

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<sup>175</sup> See Tariff, Attachment DD, sections 6.6(h) & (i).

<sup>176</sup> RAA, Schedule 8, section A. PJM uses essentially the same capacity allocation methodology for entities that meet their needs through an FRR Plan. See RAA, Schedule 8.1, section D.3.

which, increasingly over time, they will be designed to perform, will not match the hours used to determine LSE responsibility to pay for those capacity resources. PJM therefore proposes to revise RPM's rules on determination of capacity obligations, in order to better align the hours used to determine capacity resource performance with the hours used to determine LSE obligations to pay for those capacity resources.

To that end, as discussed in more detail below, PJM proposes to add winter peak hours and Performance Assessment Hours to the summer peak hours currently used to determine LSE capacity obligations. Including at least one winter peak hour will appropriately reflect that Capacity Performance Resources (which will comprise the vast majority, and then all, of the committed Capacity Resources over the next several years) are expected to perform during emergencies in both the summer and the winter. Including some Performance Assessment Hours will appropriately reflect that those are the hours for which the resources are procured, and for which they will be expected and designed to perform.

Better matching the LSE's capacity obligation hours with RPM's resource performance hours will also correctly incent LSEs to shave their peaks during the hours when the PJM region most needs capacity. Just as resource sellers will now focus closely on the expected performance of their resources during PJM capacity emergencies, LSEs will now focus closely on (and attempt to reduce) their contribution to peak loads during those very same emergencies—if this change to the LSE capacity obligation rules is adopted. Put more simply, these rules will align the interests of both suppliers and LSEs (i.e., both sides to the capacity transaction) with helping PJM manage the system at the times when PJM has the greatest need for capacity.

#### 1. *The Current Capacity Cost Allocation Methodology.*

As discussed, the current capacity cost allocation methodology is based on load levels experienced during summer peak periods. Each transmission Zone is allocated a pro-rata share of the RTO Unforced Capacity Obligation for a Delivery Year, i.e., the total unforced capacity obligations procured in the BRA and subsequent Incremental Auctions conducted for that Delivery Year, based on each Zone's share of the forecasted RTO summer peak load for that Delivery Year. The capacity obligation allocated to each Zone in this manner is called the Zonal Unforced Capacity Obligation. Each Zone's weather-normalized peak at the time of the RTO weather-normalized peak from the prior summer period is called the Zonal Obligation Peak Load and LSEs within each Zone are assigned a MW value, as determined by the EDC, representing the contribution to the Zonal Obligation Peak Load of the end-users served by the LSE. Each day of the Delivery Year, the EDC assigns to each LSE responsible for load in the Zone a share of the Zonal Obligation Peak Load. A Zonal RPM Scaling Factor is applied to each LSE's share of the Zonal Obligation Peak Load in order to scale the Zonal Obligation Peak Load (and each LSE's share of the Zonal Obligation Peak Load) to match the Zonal Unforced Capacity Obligation.<sup>177</sup> While the RAA does not instruct the EDCs how to

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<sup>177</sup> This scaling is needed because RPM's *Variable* Resource Requirement Curve will commit a total quantity of resources that could be more or less than the expected

allocate the Zonal Obligation Peak Load to each LSE within its service territory, the RAA does require PJM to determine the Zonal Obligation Peak Load, and also requires that the sum of all LSEs' allocated shares of the Zonal Obligation Peak Load must equal this Zonal Obligation Peak Load.<sup>178</sup>

The Zonal Unforced Capacity Obligation, Zonal RPM Scaling Factor and Zonal Obligation Peak Load are first calculated for a Delivery Year after the Base Residual Auction is conducted for that Delivery Year. These values are then updated after each Incremental Auction for that Delivery Year using the most recent data available, including each Zone's share of the weather-normalized RTO summer peak of the summer preceding that auction, and each Zone's share of the latest RTO summer peak load forecast for the Delivery Year.

2. *The Updated Capacity Allocation Methodology Better Matches Benefits and Costs.*

PJM proposes to expand the peak load data used to allocate capacity obligations, and associated costs, beyond the summer peak hours, to now include the highest winter peak hour and Performance Assessment Hours. PJM is not proposing to change the foundation of the capacity allocation methodology, i.e., (1) each transmission Zone is allocated a pro-rata share of the RTO Unforced Capacity Obligation; and (2) each LSE serving load in that Zone is then allocated a share of that Zonal Obligation Peak Load. Each Zonal Unforced Capacity Obligation will still be determined by multiplying the Zonal Obligation Peak Load times an RPM Scaling Factor and the FPR. PJM's essential proposed change is simply to expand, beyond sole reliance on the summer peak, the peak load data set used to determine the Zonal Unforced Capacity Obligation, so as to account for the winter peak loads and the loads during the Performance Assessment Hours.

As explained above, this proposal is reasonable because it will align the hours of declared capacity emergencies that will become the focus of capacity commitment and performance with the hours that will determine each LSE's responsibility to pay for that capacity.

To implement this change, PJM will determine the Zonal Obligation Peak Load by deriving the average zonal load at the time of: (i) the four highest summer peak hours experienced by the PJM Region, (ii) the single highest winter peak hour for the PJM Region, and (iii), for each day containing Performance Assessment Hours, the hour with the highest PJM Region load level in that day.<sup>179</sup> Although the load levels experienced

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peak load and reserve margin. The scaling factor is the means by which the variable quantity of capacity actually procured in the RPM Auctions is allocated among Zones, and LSEs, for the relevant Delivery Year.

<sup>178</sup> RAA, Schedule 8.D.

<sup>179</sup> RAA, Schedule 8, proposed section B. For load levels during Performance Assessment Hours to be considered, a region-wide alert must have been declared. Thus, load levels experienced during Performance Assessment Hours for which

during Performance Assessment Hours will be considered, no single hour (or day) will be double counted. Accounting for summer and winter peak load levels provides a better metric for measuring the benefit load receives from the capacity and thus satisfies cost causation principles. Moreover, just increasing the data set and basing allocations on more and a wider variety of hours should inherently provide for a more appropriate allocation of capacity costs.

The hours described in (i)-(iii) above will be compiled for the twelve-month period ending October 31 of the calendar year preceding the most recent Auction for the relevant Delivery Year.<sup>180</sup> Thus, for example, the data used to determine the Zonal OPL to allocate capacity costs for the 2018/2019 Delivery Year will be the peak loads experienced during the period from November 1, 2016 through October 31, 2017. This data would be the most recent data available before the Third (and final) Incremental Auction (held in February 2018) for the 2018/2019 Delivery Year.

PJM is also making several changes to Schedule 8 of the RAA to clarify the presentation of the capacity allocation methodology. Initially, PJM is modifying the definition of Obligation Peak Load that is assigned to each LSE to be the LSE's "share of the Zonal Obligation Peak Load as assigned by the EDC . . . ,"<sup>181</sup> rather than specifying that an LSE's OPL is based on the summer peak load. Revised section B provides that the Zonal OPL for Delivery Years through May 31, 2018 will still be determined based on weather-normalized summer peak loads, and that starting with the 2018/2019 Delivery Year and subsequent Delivery Years, Zonal OPL will be determined based on the average of the expanded peak load hours discussed above. Thus, this change allows the OPL definition to apply to all Delivery Years.

In revised section B, PJM is removing the complicated formulae for determining "Base" Zonal Obligation Peak Load and RPM Scaling Factor and stating how Zonal Obligation Peak Load is determined for all Delivery Years through May 31, 2018 and for the 2018/2019 Delivery Year (which starts on June 1, 2018) and subsequent Delivery Years. The formulae are already simply stated with words in the current section C of Schedule 8, however, section C describes updating the Base values to arrive at the "Final" values used to determine the actual obligations for which costs will be imposed.<sup>182</sup>

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no region-wide alert was declared (i.e., a locational event) would not be considered in allocating capacity costs.

<sup>180</sup> RAA, Schedule 8, proposed section B.

<sup>181</sup> RAA, Schedule 8, proposed section A.

<sup>182</sup> As noted in the following section, PJM proposes almost identical capacity allocation changes for the Fixed Resource Requirement alternative, but PJM is not making in FRR the change noted here regarding the references to Base and Final values, given the differences between FRR Plans and RPM Auctions.

Thus, PJM proposes to rename section C as section B, and make the existing section C more generally applicable by removing the qualifier “Final” before each term applicable to determining the Zonal Obligation Peak Load for Delivery Years through May 31, 2018. PJM also is revising the section to clarify that the applicable Zonal Peak Load Forecast will be that made prior to “the most recent RPM Auction conducted for such Delivery Year.”<sup>183</sup> The description of the going-forward methodology for determining Zonal Obligation Peak Load is stated in this revised section B.

PJM is not proposing any change to the rules in Schedule 8 section D that the EDC is the entity with responsibility for allocating capacity obligations to all LSEs within the EDC’s service territory, or that all LSEs’ capacity obligations within a zone must sum to the Zonal Obligation Peak Load. However, PJM is proposing a few clarifying edits consistent with the other revisions to Schedule 8. Specifically, with the merger of sections B and C, PJM proposes to rename section D as section C. To make the newly-renamed section C.1 more generally applicable, PJM is proposing to replace “Weather Normalized Summer Peak” with “Zonal Obligation Peak Load.”

PJM is also proposing to modify newly-renamed section C.2 as follows:

During the Delivery Year, no later than 36 hours prior to the start of each operating day, the Electric Distributor shall provide to PJM for each Party to this Agreement serving load in such Electric Distributor’s Zone the Obligation Peak Load ~~for all end-use customers served by such Party in such Zone.~~

The stricken phrase is unnecessary and redundant, given that the Obligation Peak Load for each LSE necessarily is for serving all the LSE’s end-use customers in that zone.

*3. The New Capacity Allocation Methodology Will Be Applied To FRR Capacity Plans Starting With The 2018/2019 Delivery Year*

Given that FRR entities employ the same capacity allocation methodology as those entities that meet their resource adequacy needs through RPM, PJM is making a corresponding change to the capacity allocation methodology applicable to FRR entities. Specifically, PJM is revising sections D(3) and F(1) of RAA Schedule 8.1, regarding FRR Capacity Plans, to add the requirement that, for the 2018/2019 Delivery Year and subsequent Delivery Years, the allocation of obligation peak load, and associated costs, will be based on the average of: (i) the four highest summer peak hours experienced by the PJM Region, (ii) the single highest winter peak hour for the PJM Region, and (iii) for each day containing Performance Assessment Hours, the hour with the highest PJM Region load level in that day.

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<sup>183</sup> RAA, Schedule 8, proposed section B.



## H. Methodology for Clearing Base Capacity Resources.

As Base Capacity Resources do not provide the same availability as Capacity Performance Resources, Base Capacity Resources cannot provide the same reliability benefit and therefore, PJM must limit the amount of Base Capacity Resources that can be procured consistent with reliability. The Commission has previously found PJM increasing the risk of LOLE by 10 percent to facilitate the commitment of less-available resources to be “an acceptable level of risk.”<sup>184</sup> The current Tariff allows for the commitment of Limited and Extended Summer Demand Resources to commit up to a level that provides for an LOLE of 1.1-in-10, i.e., 10 percent above the standard 1-in-10 LOLE.

As PJM is proposing to replace Limited and Extended Summer Demand Resources with the Base Capacity Demand Resource product, the tariff mechanisms used to limit commitment of such less-available resources must also be replaced. Additionally, given that existing Generation Capacity Resources will be allowed to offer as Base Capacity Resources only if they can demonstrate that they are physically incapable of meeting the performance requirements of a Capacity Performance Resource (such as, for example, not being able to assure availability during the peak winter week), PJM must also install a mechanism for limiting the total amount of Base Capacity Resources, including Base Capacity Demand and Energy Efficiency Resources, that can be procured while maintaining acceptable levels of reliability.

As explained by Mr. Falin, the concern with Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources is that if PJM commits too much of these summer-only resources, and too little of the year-round resources, then PJM could have insufficient year-round resources to manage an emergency arising outside the summer.<sup>185</sup> The concern with Base Capacity Resources that are generation resources, which are obligated to respond any time of the year, is that such resources may have performance issues during an extreme winter peak (as seen in January 2014), and therefore, if PJM commits too much of those resources, and too little of the Capacity Performance Resources, then PJM could have insufficient Capacity Performance Resources that can be counted upon to perform during an extreme winter peak. The distinct reliability concerns related to the limited availability of these products requires PJM to set a distinct maximum amount of Base Capacity Demand Resources and Energy Efficiency Resources that can be committed (as a subset of the total allowance for all Base Capacity Resources).<sup>186</sup>

This raises the question of the appropriate reliability tolerance for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources. As explained above, PJM proposes to set the overall constraint for all Base Capacity Resources at the level that results in a ten percent increase in the 1-in-10 LOLE. The question therefore

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<sup>184</sup> *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at P 74 (2011).

<sup>185</sup> Falin Affidavit at ¶ 14.

<sup>186</sup> Falin Affidavit at ¶ 14.

can be more precisely stated as how much of that ten percent tolerance should be allocated between the two types of Base Capacity Resources, i.e., generation and summer-only. As a just and reasonable approach that provides both resource types a fair opportunity to compete in the RPM Auctions to be committed as Capacity Resources, PJM proposes to simply divide that allowance equally between the two resource types. Therefore, to calculate the distinct constraint on Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, PJM proposes to identify the level of such resources that results in *half* of the maximum increase in LOLE that is tolerated for this transition, i.e., an increase in LOLE to 1.05 events in 10 years.

To accomplish this, PJM proposes to impose constraints on the amount of Base Capacity Resources and Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that can commit for the two Delivery Years for which such resources may be procured in RPM Auctions. Specifically, PJM proposes to employ a Base Capacity Demand Resource Constraint and a Base Capacity Resource Constraint to establish maximum levels at which the less-available capacity resources may clear in RPM Auctions. In committing resources in RPM Auctions for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraint will apply to Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the Base Capacity Resource Constraint will apply to all Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources.

These constraints will act just like the existing Limited Resource Constraint and the Sub-Annual Resource Constraint in limiting the amount of less-available capacity resources that can be committed. In addition, the constraints will be determined in a manner similar to that for the existing resource constraints.

The proposed Base Capacity Resource Constraints and Base Capacity Demand Resource Constraints will operate like PJM's locational constraints. Thus, just as a locational constraint stops procuring any capacity located outside a constrained LDA to serve load in that LDA after the constraint binds, triggering of these constraints means that the auction algorithm will stop procuring these resource types to serve PJM load.

Given that, to be consistent with reliability, PJM must limit the amount of all Base Capacity Resources, including Demand Resource and Energy Efficiency, that can commit while meeting a 1.1-in-10 LOLE, PJM has determined to divide that 10 percent increase in LOLE evenly between (1) Base Capacity Demand Resource and Energy Efficiency and (2) generation resources that clear as Base Capacity. Thus, the Base Capacity Resource Constraint is set at the combined amount of Base Capacity Resources, including Base Capacity Demand Resource and Energy Efficiency, that produces no more than a 10 percent increase in LOLE, and the Base Capacity Demand Resource Constraint is set at the amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency that produces no more than a 5 percent increase in LOLE. Both constraints are stated as a percentage of unrestricted annual peak load.

### 1. *Methodology for Determining Base Capacity Constraints*

As explained by Mr. Falin,<sup>187</sup> PJM will determine the Base Capacity Resource Constraints, for both the PJM Region and each modeled LDA, through an iterative process similar to that the Commission approved earlier this year for setting the constraint on sub-annual resources.<sup>188</sup> First, PJM determines a reference annual LOLE that assumes no Base Capacity Resources, including no Base Capacity Demand Resource or Energy Efficiency. Next, PJM uses hundreds of weekly load distributions from the study used to determine the Installed Reserve Margin (“IRM”) for the relevant Delivery Year and iteratively shifts the load distributions to account for differing assumptions on weather patterns. PJM also develops corresponding weekly distribution of the expected available capacity resources, based on the distributions developed for that year’s IRM study.

For the Base Capacity Demand Resource Constraint, PJM models the commitment of varying levels of Base Capacity Demand Resource and Energy Efficiency as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year, correspondingly reduces the level of Capacity Performance Resources committed, and calculates the impact on system LOLE. The constraint is set at a level of Base Capacity Demand Resource and Energy Efficiency Resources that provides a 5 percent increase in system LOLE (i.e., to 1.05 in 10 LOLE).

For the Base Capacity Resource Constraint, PJM models the amount of Base Capacity Demand Resource and Energy Efficiency permitted by the Base Capacity Demand Resource Constraint. Then, PJM models the commitment of varying levels of generation Base Capacity Resources as unavailable during the peak winter week and available the rest of the Delivery Year, correspondingly reduces the level of Capacity Performance Resources committed, and calculates the impact on system LOLE. Consistent with the common use of a 10 percent statistical confidence level in probabilistic models, the constraint is set at a level of Base Capacity Resources, including Base Capacity Demand Resource and Energy Efficiency Resources, that provides a 10 percent increase in system LOLE (i.e., to 1.1 in 10 LOLE).

To effectuate this change, PJM is proposing to amend the capacity market rules to consider the Base Capacity Demand Resource Constraint and Base Capacity Resource Constraint in the RPM Auctions for the 2018/2019 and 2019/2020 Delivery Years and the Limited Resource Constraint and Sub-Annual Resource Constraint only through the 2017/2018 Delivery Year.<sup>189</sup>

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<sup>187</sup> Falin Aff. ¶ 18-26.

<sup>188</sup> See *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052 (2014).

<sup>189</sup> See proposed Tariff, Attachment DD, sections 2.2B, 2.2F, 2.24C, 2.25, 2.36B, 2.36C, 3.2(d) and (e), 5.10(c), 5.11(a)(vi), and 5.12(a) and (b). As Limited Demand Resources and Extended Summer Resources will not exist for the 2018/2019 Delivery Year and subsequent Delivery Years, PJM is also clarifying

In short, the Base Capacity Resource Constraint sets the level of Base Capacity Resources that provides a 10 percent increase in the risk of an LOLE, and incorporates the 5 percent increase permitted through the commitment of Base Capacity Demand and Energy Efficiency Resources.

The Commission approved a similar methodology for determining the amount of sub-annual Demand Resources that can be procured at an acceptable level of risk, finding that the “methodology is consistent with PJM’s prior use of 90 percent confidence intervals in determining the amount of capacity it must procure.”<sup>190</sup> The Commission also found that the limit is “based on the fact that over procurement of these resources may cause reliability problems”<sup>191</sup> and the “difference in availability requirements . . . are sufficient to justify PJM’s decision to place a limit on the procurement” of less-available resources.<sup>192</sup> These findings apply equally to the proposed Base Capacity constraints, as they allow for the maximum amount of Base Capacity Resources to be committed that is consistent with maintaining system reliability as the 1.1-in-1- LOLE.

## 2. *Determining Clearing Prices for Base Capacity Resources*

The Base Capacity Resource Constraints and Base Capacity Demand Resource Constraints limit the amount of less-available capacity resources that can be procured and thereby ensure that the capacity procured above the reserve margin is of a type that provides the greatest incremental reliability benefit, i.e., Capacity Performance Resources, and allows the sloped portion of the demand curve for to set the price for the most-beneficial type of capacity. Accordingly, Capacity Performance Resources will send the proper price signals to investors and induce greater long-term investment in the resources that provide the greatest reliability benefit.

Currently, the Tariff recognizes the Annual Resource price as the “base” price and calls for locational price adders, for capacity procured in a transmission constrained LDA to be calculated as additions to the “base” Annual Resource price. Price differences for the lower-availability products, like Limited and Extended Summer Demand Response, are less than the Annual Resource price whenever prices separate and are accounted for through decremental adjustments to the Annual Resource price.<sup>193</sup> Such price decrements are simply a mathematical consequence of implementing ceilings on the lower-availability products. When those constraints bind, they “move” the price of the affected

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that the price decrements (and since replaced adders) used in establishing clearing prices for those resources will not be applied after the 2017/2018 Delivery Year. See proposed Tariff, Attachment DD, sections 2.24B, 2.36D, and 2.65C.

<sup>190</sup> *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at P 74.

<sup>191</sup> *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052, at P 66.

<sup>192</sup> *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052, at P 69.

<sup>193</sup> See Tariff, Attachment DD, sections 2.36D (defining Limited Resource Price Decrement) & 2.65C (defining Sub-Annual Resource Price Decrement).

resources, and specifically they move it relative to the only product that is not subject to constraints, i.e., Annual Resources.

Because there is a ceiling on the lower-availability products (i.e, Base Capacity Demand Resources and Base Capacity Energy Efficient Resources) within the larger category of Base Capacity Resources, in this filing, PJM proposes to apply the same price decrement methodology to Base Capacity Resources through the proposed Base Capacity Demand Resource Price Decrement and Base Capacity Resource Price Decrement. The Base Capacity Demand Resource Price Decrement simply equals the difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for all other Base Capacity Resources and represents the cost to procure additional Capacity Performance Resources or other Base Capacity Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.<sup>194</sup> Similarly, the Base Capacity Resource Price Decrement simply equals the difference between the clearing prices for Base Capacity Resources and Capacity Performance Resources and represents the cost to procure additional Capacity Performance Resources out-of-merit order when the Sub-Annual Resource Constraint is binding.<sup>195</sup>

Clearing Base Capacity Resources at a price lower than that for Capacity Performance Resources is just and reasonable and the Commission has approved a nearly identical arrangement for the various types of Demand Resources.<sup>196</sup>

**I. Conforming Changes Are Needed to the RPM Credit Provisions to Reflect Increased Credit Exposure from the Non-Performance Charge.**

The proposed Non-Performance Charge necessitates a conforming change to the PJM credit requirement for participation in RPM Auctions. Attachment Q of PJM's Tariff, which specifies credit requirements generally applicable to any market participant in PJM, includes a special credit requirement to address risks that are particularly associated with forward commitments of capacity from planned resources in RPM. A resource that clears an RPM Auction is committing itself to meet the region's capacity needs in three years, and is taking on the risk that, if it does not provide that capacity, it could pay one or more of several deficiency or non-performance charges in the RPM market rules. The risk of non-performance is higher for resources that do not exist at the time a seller submits an offer committing to deliver that resource in three years. For this reason, Attachment Q requires Capacity Market Sellers offering resources for which there

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<sup>194</sup> See proposed Tariff, Attachment DD, section 2.2C.

<sup>195</sup> See proposed Tariff, Attachment DD, sections 2.2G and 5.14(a).

<sup>196</sup> See *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at P 34 (“Extended Summer DR can receive higher prices than the Limited DR product because it provides more capacity over a longer time. Similarly, Annual DR can receive higher prices because it will be available to PJM for an entire year.”).

is a materially increased risk of non-performance to comply with an additional credit requirement.<sup>197</sup>

In particular, Attachment Q requires a Capacity Market Seller submitting a Sell Offer from such resources to satisfy a credit requirement equal to the megawatts offered times an “RPM Auction Credit Rate.”<sup>198</sup> This RPM Auction Credit Rate is based on two factors: (i) the expected final per-MW price to be paid to capacity resources in the Delivery Year; and (ii) a Capacity Market Seller’s possible deficiency charge exposure.<sup>199</sup> Under the existing credit requirements, a Capacity Market Seller’s deficiency charge exposure is measured on a “net basis.” To illustrate, consider a Capacity Market Seller that fails to deliver committed capacity and is assessed a capacity deficiency charge under section 8 of Attachment DD, equal to the weighted average Capacity Resource Clearing Price plus the greater of 0.20 times such clearing price or \$20/MW-day.<sup>200</sup> Since the Capacity Market Seller continues to collect the Capacity Resource Clearing Price for having cleared the resource in an RPM auction, the net deficiency charge to the seller is the greater of 0.2 times the Resource Clearing Price or \$20/MW-day. This “net amount” reflects the seller payment obligation that would be most at risk in the event of a default, because the seller would not be able to cover it from its RPM capacity revenues.

This potential net charge exposure therefore is the focus of the RPM credit requirement. With the addition of the proposed Non-Performance Charge, this net charge has the potential to increase substantially. To provide reasonable assurance that a seller can satisfy those potential payment obligations, corresponding changes are needed to the RPM credit rules.

Under PJM’s proposal, however, net charge exposure will increase only for Capacity Performance Resources. Base Capacity Resources will be subject to the Non-Performance Charge (beginning with the 2018/2019 Delivery Year), but the annual stop-loss will cap their total charge exposure at the level of their RPM capacity revenues. Therefore, Base Capacity Resources face no increase in net charge exposure under PJM’s proposal. Similarly, Capacity Resources, other than Capacity Performance Resources, that are committed for the 2015/2016, 2016/2017, or 2017/2018 Delivery Years face no increase in net charge exposure, because the Non-Performance Charge will not apply to those resources.

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<sup>197</sup> See Tariff, Attachment Q, section IV.A. Resources subject to this additional credit requirement include Planned Generation Capacity Resources, Planned Demand Resources or Energy Efficiency Resources, and Qualifying Transmission Upgrades. *Id.*

<sup>198</sup> *Id.*, Attachment Q, section IV.B.

<sup>199</sup> See *id.*, Attachment Q, section IV.D.

<sup>200</sup> See Tariff, Attachment DD, section 8.2.

Capacity Performance Resources, by contrast, will face Non-Performance Charges as high as the annual stop-loss of 1.5 times Net CONE times all of the resource's committed capacity. The net exposure, i.e., after accounting for the revenues the seller will receive under RPM, depends on the gap between the Capacity Resource Clearing Price and 1.5 times Net CONE. Because 1.5 times Net CONE is generally the highest clearing price possible under PJM's VRR Curve,<sup>201</sup> the Capacity Resource Clearing Price will in most cases be below 1.5 times Net CONE. The lower the clearing price, the larger that "net exposure" gap will be. PJM's proposed changes to the RPM credit requirement, therefore, are limited to Capacity Performance Resources, and are focused on that net exposure between (i) the revenues a Capacity Performance Resource would earn in RPM, and (ii) the annual stop-loss exposure of 1.5 times Net CONE.

Given this focus on Capacity Performance Resources, PJM's proposed changes expressly preserve all of the current RPM credit rules for "all Capacity Resources other than Capacity Performance Resources."<sup>202</sup>

For Capacity Performance Resources, PJM is changing the Auction Credit Rate for each of the different time periods or scenarios identified under the current RPM credit rules, i.e., before the BRA, after the BRA for resources committed in the BRA, before an Incremental Auction, and after the Incremental Auction for resources committed in the Incremental Auction..

First, for sellers seeking to offer Capacity Performance Resources in a BRA, the Auction Credit Rate will be "(the greater of (A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in [the] Delivery Year."<sup>203</sup> Before the BRA, the clearing price is not known, so some assumption must be made about the net exposure between the clearing price and 1.5 times Net CONE. For this purpose, PJM reasonably sets the implicit clearing price at Net CONE, i.e., the Market Seller Offer Cap applicable to Capacity Performance Resources.<sup>204</sup> With a Net CONE clearing price, and potential Non-Performance Charge exposure of up to 1.5 times Net CONE, an Auction Credit Rate of 0.5 times Net CONE is reasonable for Capacity Performance Resources offering into a

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<sup>201</sup> See *PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,062, at PP 72, 85 (accepting PJM's proposal to set a cap on the VRR Curve price axis be revised to equal the greater of the Gross CONE, or 1.5 times the Net CONE because "high historical E&AS Revenues from equaling the Gross CONE of the PJM region [could] result[] in the collapse of the entire VRR Curve.").

<sup>202</sup> Proposed Tariff, Attachment Q, sections IV.D.a(i), IV.D.b(i), IV.D.c(i), and IV.D.d(i).

<sup>203</sup> Proposed Tariff, Attachment Q, section IV.D.a(ii).

<sup>204</sup> Because all Capacity Performance Resources can offer at a price *up to* Net CONE, there is a significant possibility that the offer of the *marginal* Capacity Performance Resource will be *at* Net CONE, and thus will set that clearing price for all other Capacity Performance Resources.

BRA. The \$20 per MW-day minimum Auction Credit Rate is the same minimum rate used for all other provisions of the RPM credit requirement, and is appropriately applied here.

Second, following the posting of the BRA results, the Auction Credit Rate for ongoing credit requirements for Capacity Performance Resources committed in the BRA will be the greater of the following daily rates, times the number of days in the Delivery Year:<sup>205</sup>

- \$20/MW-day; or
- 0.2 times the Capacity Resource Clearing Price, in MW-day; or
- the lesser of (i) 0.5 times the PJM Region Net CONE or (ii) 1.5 times the PJM Region Net CONE (stated on an installed capacity basis) minus the applicable Capacity Resource Clearing Price for the resource, in MW-day.

The first two elements simply carry forward the alternative possible Auction Credit Rates that are applicable to any resource (that is subject to the RPM credit rule) that commits capacity in a BRA. If either of those alternatives produces the greatest rate, among all three of the alternatives, then that alternative will be used. In most cases, however, the Auction Credit Rate will likely be set by the third alternative. That alternative will set the Auction Credit Rate at 1.5 times Net CONE for the PJM Region minus the clearing price that the Capacity Performance Resource earned by clearing in the BRA, but will cap that credit rate—which could be large if the clearing price is relatively low—at 0.5 times Net CONE, i.e., the same rate as before the BRA. This places reasonable bounds on the seller’s credit rate, and provides sellers with advance certainty on the maximum credit rate, while still providing reasonable assurance that a seller can mostly satisfy its payment obligations in PJM, even if it defaults.

Third, for any Capacity Performance Resource that has not previously been committed for a Delivery Year and that a seller seeks to offer in an Incremental Auction, the Auction Credit Rate will be “the (greater of (A) 0.5 times Net Cost of New Entry or (B) \$20/MW-day) times the number of days in such Delivery Year.”<sup>206</sup> Thus, this is essentially the same Auction Credit Rate PJM has proposed for a Capacity Performance Resource that seeks to offer into a BRA.

Fourth, following the posting of the Incremental Auction results, the Auction Credit Rate for ongoing credit requirements for Capacity Performance Resources committed in the auction will be calculated in the same way as described above for resources committed in a BRA, except that the clearing price in the Incremental Auction will be used in the calculation, rather than the clearing price in the BRA.<sup>207</sup>

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<sup>205</sup> Proposed Tariff, Attachment Q, section IV.D.b(ii).

<sup>206</sup> Proposed Tariff, Attachment Q, section IV.D.c(ii).

<sup>207</sup> Proposed Tariff, Attachment Q, section IV.D.d(ii).



These changes to the RPM Auction Credit Rate for Capacity Performance Resources are reasonable. The essence of this filing is PJM's proposal to make sellers bear direct, and significant, financial consequences for poor performance by their capacity resources. Under these proposed rules, a seller that offers a planned resource as a Capacity Performance Resource will now face financial consequences (in the form of Non-Performance Charges) for failure to deliver its resource that are potentially much higher than the consequences such a resource would face under the existing rules. As the scale of the potential financial consequences increases, the RPM credit requirement must increase commensurately, to ensure obligations incurred as a PJM market participant can be satisfied. That is all PJM is doing here. It is appropriate to place the burden of protecting against this exposure on the market participant that takes the action giving rise to the risk by offering into an auction.<sup>208</sup> PJM's proposed changes seek to comply with this well-established principle by requiring Capacity Market Sellers to provide credit sufficient to ensure that PJM Members are protected against the risk of default.

#### **J. Elimination of the Short-Term Resource Procurement Target.**

The Short-Term Resource Procurement Target (which is commonly known as the "2.5 percent holdback") reduces the Reserve Requirement, which sets the amount of capacity to meet the PJM Region's reliability needs, used in a BRA by 2.5 percent, and spreads that 2.5 percent to be procured over the three Scheduled Incremental Auctions. The 2.5 percent holdback was introduced to ensure RPM participation for short-lead time resources that can better commit one or two years in advance of the Delivery Year, rather than the three years needed for BRA participation.<sup>209</sup>

However, the 2.5 percent holdback is no longer needed. The three-year forward aspect of the BRA has proved to be little impediment to the participation of resources like demand response, energy efficiency, generation upgrades, or external resources.<sup>210</sup> In fact, Demand Resource participation in the BRA has grown to such an extent that PJM was required to place constraints on the amount of non-annual Demand Resources that could clear while maintaining reliability.<sup>211</sup> Similarly, PJM also adopted rules ensuring that the

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<sup>208</sup> See, e.g., *Midwest Indep. Transmission Sys. Operator*, 139 FERC ¶ 61,253, at P 69 (2012) (explaining that "the Commission's cost causation policy requires that costs be borne by those who cause them").

<sup>209</sup> See *PJM Interconnection, L.L.C.*, 126 FERC ¶ 61,275, at PP 68, 83-85, modified by 127 FERC ¶ 61,036, order on clarification, 127 FERC ¶ 61,104, order on clarification and reh'g, 128 FERC ¶ 61,157 (2009).

<sup>210</sup> The Commission stated that "[s]hort lead time resources can include demand response and energy efficiency resources, upgrades to existing generation units, and imports of capacity from areas outside of PJM." *PJM Interconnection, L.L.C.*, 126 FERC ¶ 61,275, at P 84 n.42 (2009).

<sup>211</sup> See *PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052 (approving constraints on less-available demand resources).

level of capacity imported into the PJM Region does not exceed the quantity of energy that can actually be transmitted into and received by PJM.<sup>212</sup>

In addition, the 2.5 percent holdback should be eliminated for policy reasons, as it suppresses BRA clearing prices by withholding demand. The IMM has repeatedly explained that the 2.5 percent holdback “unreasonably and unjustly suppresses prices in the Base Residual Auctions”<sup>213</sup> in both comments to the Commission and in its State of the Market reports.<sup>214</sup> In fact, the Commission has “agree[d] with PJM that it is more efficient for those demand response resources that are able to offer their resource three years forward in the Base Residual Auction to do so, rather than wait” and offer in the Incremental Auctions.<sup>215</sup>

Moreover, there is no basis for retaining the 2.5 percent holdback as a means of addressing load forecast error. The two issues are and should be distinct: 1) PJM should prepare a reasonable load forecast; *and* 2) to set an appropriate clearing price, the Base Residual Auction should seek to procure capacity to meet *all* of the region’s projected capacity needs. On the first point, PJM can report that it has conducted considerable analysis of peak load forecast error and has discussed this issue at multiple stakeholder meetings. As a result of those analyses and discussions, PJM has adopted a number of load forecast adjustments that, overall, will reduce the peak load forecast for the 2018/2019 Delivery Year by 2.5-3%. For subsequent Delivery Years, PJM and its stakeholders continue to examine load forecasting issues in the Load Analysis Subcommittee, and are moving closer to other modeling changes, including the

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<sup>212</sup> See *PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,060 (2014) (approving limits on capacity imports).

<sup>213</sup> Comments of the Independent Market Monitor for PJM, Docket No. ER14-504-000, at 4 (Dec. 20, 2013); *see also* Motion for Leave to Answer and Answer of the Independent Market Monitor for PJM, Docket No. ER14-504, at 1-2 (Jan. 8, 2014); Motion for Leave to Answer and Answer of the Independent Market Monitor for PJM, Docket No. ER12-513-000, at 2-7 (Jan. 30, 2012); Motion for Leave to Answer and Answer of the Independent Market Monitor for PJM, Docket No. ER12-513-000, at 2-5 (Jan. 6, 2012); Protest of the Independent Market Monitor for PJM, Docket No. ER12-513-000, at 1-2 (Dec. 22, 2011).

<sup>214</sup> See, e.g., *Analysis of the 2017/2018 RPM Base Residual Auction*, Monitoring Analytics, LLC, 4 (Oct. 6, 2014), [www.monitoringanalytics.com/reports/Reports/2014/IMM\\_Analysis\\_of\\_the\\_2017\\_2018\\_RPM\\_Base\\_Residual\\_Auction\\_20141006.pdf](http://www.monitoringanalytics.com/reports/Reports/2014/IMM_Analysis_of_the_2017_2018_RPM_Base_Residual_Auction_20141006.pdf) (“The Short-Term Resource Procurement Target had a significant impact on the auction results. The removal of 2.5 percent of demand significantly reduced the clearing prices and quantities for all the RPM LDA markets. The clearing quantities of Annual Resources, including generation and DR, were reduced as a result of the 2.5 percent demand reduction.”).

<sup>215</sup> *PJM Interconnection, L.L.C.*, 126 FERC ¶ 61,275, at P 84.

incorporation of recent electric usage trends, such as energy efficiency and energy usage behavior, into the PJM load forecast model.<sup>216</sup>

To effectuate the elimination of the 2.5 percent holdback, PJM is revising Attachment DD, sections 2.69A, 5.4(c)(2)(i), 5.10(a), and 5.12(a) and (b) to provide that the Short-term Resource Procurement Target will only be used for clearing RPM Auctions for the Delivery Years through May 31, 2018. In other words, the proposed revisions ensure that, starting with the 2018/2019 Delivery Year, the 2.5 percent holdback will be eliminated.

#### **K. Application of Capacity Performance Rules to Treatment of Fixed Resource Requirement Alternative.**

PJM permits load-serving entities an alternative means of addressing capacity obligations, outside of RPM Auctions, through a long-term commitment of resources. This alternative, known as the Fixed Resource Requirement Alternative (“FRR Alternative”) requires an FRR Entity to submit its FRR Capacity Plan at least one month prior to the BRA and subjects the FRR Entity to nearly the same deficiency and non-performance charge structure that applies to Capacity Market Sellers in RPM. The Capacity Performance proposal in this filing requires conforming changes to the FRR rules, to ensure comparable rules between RPM Auction participants and FRR Entities.<sup>217</sup>

First, just as PJM must, due to reliability concerns, limit the amount of Base Capacity Resources (including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources) that can clear the RPM Auctions for the 2018/2019 and 2019/2020 Delivery Years, PJM also must limit (at the same percentages as in RPM) the quantities of Base Capacity Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources that an FRR Entity may include in its FRR Capacity Plans for those Delivery Years.

These limitations will apply to any updated amounts the FRR Entity is required to include in its FRR Capacity Plan relevant to a Delivery Year if, for example, its load increases.<sup>218</sup> Similar to the approach in the RPM Auctions, PJM also proposes that after the transition, starting with the 2020/2021 Delivery Year, the FRR Capacity Plan submitted by an FRR Entity must consist *entirely* of Capacity Performance Resources.<sup>219</sup>

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<sup>216</sup> See PJM Interconnection, L.L.C. - Load Analysis Subcommittee, <http://www.pjm.com/committees-and-groups/subcommittees/las.aspx>. (last visited Dec. 11, 2014).

<sup>217</sup> As noted in Section III.G, *supra*, PJM proposes conforming changes to RAA Schedule 8.1 to uses essentially the same capacity allocation methodology for entities that meet their needs through an FRR Plan.

<sup>218</sup> See proposed RAA, Schedule 8.1, section D.2.

<sup>219</sup> See proposed RAA, Schedule 8.1, section D.1.1.

Second, PJM proposes to allow FRR Entities to choose between financial or physical satisfaction of any Performance Shortfalls arising from failure of any of the resources in the FRR Plan to perform during Performance Assessment Hours. Under the financial option, an FRR Entity may opt, if one or more of its resources fails to perform during one or more Performance Assessment Hours, to be subject to the Non-Performance Assessment Charge under proposed section 10A of the Tariff just like any other Capacity Resource.<sup>220</sup> Under the physical option, the FRR Entity would be required to add to its FRR Plan of committed resources 0.5 MW for each megawatt of Performance Shortfall calculated under the formulae in section 10A(c) of Attachment DD of the PJM Tariff. This added commitment of physical resources to the FRR Plan is *in addition to* any other resources already in the plan, including the resource that underperformed or failed to perform. If it elects the physical option, the FRR Entity shall not be eligible to share in any distribution of Non-Performance Charge revenues under section 10A(g).<sup>221</sup>

PJM proposes the option for a physical non-performance assessment to reflect the distinct approach to resource adequacy embodied in the FRR Alternative. FRR Entities recover costs for the physical generation capability needed to meet their Fixed Resource Requirement through their retail tariffs. Providing the option for physical repayment of penalties, rather than financial, will allow FRR Entities to cover their risk of non-performance as it may be more likely they can recover costs for adding additional megawatts to their FRR Capacity Plans and recovering those costs through their retail tariffs, than it would be to obtain approval for passing a financial non-performance charge through their retail tariffs. An FRR Entity must make this choice at the time it submits its first FRR Capacity Plan (or, for an FRR Entity which is already in the FRR Alternative prior to the 2018/2019 Delivery Years, then the election must be made at the time it submits its FRR Capacity Plan for the 2018/2019 Delivery Year).<sup>222</sup>

#### **L. Clarification of Requirements for Existing and Planned Generation Capacity Resources.**

Currently, PJM's rules define an Existing Generation Capacity Resource, for purposes of the must offer requirement and mitigation rules, to include resources which have not yet achieved commercial operation and for which Interconnection Service has not yet commenced if such resource has offered into and cleared an RPM Auction.<sup>223</sup> At that point, by definition, the resource becomes an "Existing Generation Capacity Resource." Once the resource achieves "Existing" status under the definition, it has a continuing obligation to offer into all subsequent RPM auctions.<sup>224</sup> This can be problematic as a resource which may not be in commercial operation in time for the

<sup>220</sup> See proposed RAA, Schedule 8.1, section G.1.

<sup>221</sup> See proposed RAA, Schedule 8.1, section G.2.

<sup>222</sup> See proposed RAA, Schedule 8.1, section C.1.

<sup>223</sup> See RAA, section 1.20B.

<sup>224</sup> Tariff, Attachment DD, section 6.6(g).

Delivery Year may still be required to offer in to the RPM Auctions. When such resource determines it is unable to reach commercial operation and commence Interconnection Service before the start of the Delivery Year it must secure replacement capacity or face the greater of a Capacity Resource Deficiency Charge or a Non-Performance Charge. Given the expectation of performance for all Capacity Resources under this proposal, PJM believes it is appropriate that resources not yet in commercial operation have the ability to offer in to the RPM market if they believe they will be in operation prior to the Delivery Year but that such ability to offer should be voluntary rather than mandatory. Thus, PJM proposes that resources which are not yet commercially operational may still voluntarily offer into the RPM auctions (subject to conditions, including the representation proposed in this filing) but they will not be obligated to offer in to the RPM Auctions.

PJM's Tariff allows for exceptions to the must offer requirement for reasons including that a planned resource which is "Existing" because it has cleared a prior RPM Auction, but that can provide an offer certification that it "will not" be commercially operational by the Delivery Year.<sup>225</sup> However, the exception must be requested and granted for each auction, adding layers of administration that are simply unnecessary. For instance, PJM has witnessed hesitation on the part of such resources to certify they "will not" be commercially operational by the Delivery Year and thus PJM knows that resources are offering in that are likely not going to be there. Further, resources may not know until just prior to the RPM Auction they are not going to reach commercial operation by the Delivery Year, and having failed to meet the exception timeframes (which are necessary to ensure PJM and the MMU have the opportunity to review and act on exception requests in advance of the auctions), are required to seek waiver from the Commission.<sup>226</sup> PJM does not need such resources to offer in, and in fact does not want such resources to offer in until such resources are able to represent they will be physically capable of being there by the Delivery Year.

To effectuate the changes defined above, PJM has modified the definitions of Existing Generation Capacity Resource,<sup>227</sup> Planned Generation Capacity Resource,<sup>228</sup> and Planned External Generation Capacity Resources<sup>229</sup> to make clear that a resource will continue to fall within the definitions concerning "Planned" resources until such time as

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<sup>225</sup> Tariff, Attachment DD, section 6.6(g)(D).

<sup>226</sup> Tariff, Attachment DD, section 6.6(g) ("[I]f a Capacity Market Seller doesn't timely seek . . . an exception to the must-offer requirement, the Generation Capacity Resource shall only . . . be approved for an exception . . . upon the Capacity Market Seller requesting and receiving an order from FERC, prior to the close of the offer period for the applicable RPM Auction, directing the Office of the Interconnection . . . [to] grant[] an exemption to the must-offer requirement or a waiver of the must-offer requirement as to such resource.").

<sup>227</sup> See proposed RAA, section 1.20B.

<sup>228</sup> See proposed RAA, section 1.70.

<sup>229</sup> See proposed RAA, section 1.69A.

the resource achieves full commercial operation and for which Interconnection Service<sup>230</sup> has commenced, which are both indicative of the resource being physically capable of meeting its commitments. For instance, PJM removed the provision in the definition of Existing Generation Capacity Resource that provides that a resource is “Existing” if it has cleared any RPM Auctions for any prior Delivery Year.<sup>231</sup>

PJM also modified the milestone for when a Planned Generation Capacity Resource greater than 20 MWs can offer into a BRA to greatly increase the likelihood that offered planned generation resources will reach commercial operation and be able to perform. Currently, Planned Generation Capacity Resources must execute a System Impact Study Agreement as a precondition to offering the resource into a BRA. A System Impact Study is the second of the three studies typically required for generator interconnection.

When RPM was first implemented, an agreement to complete the third type of interconnection study – an Interconnection Facilities Study Agreement (“FSA”) – was the stated pre-condition to participating in the BRA. When PJM filed in 2008 to change this rule and require only an executed SISA, PJM had little over one year’s experience with RPM, and not experience with any planned generator offering into a three-year forward capacity auction and then achieving commercial operation. Now that RPM has been in place for many years, PJM has a much better understanding of the relationship between the interconnection process milestones and the probability of timing project delivery.<sup>232</sup>

Therefore, PJM is reasonably changing the milestone for BRA participation by Planned Generation Capacity Resources over 20 MWs to increase the confidence that the offered resource will achieve commercial operation.

Consistent with other rules distinguishing between Small and Large Generator Interconnections, PJM proposes changing the milestone only for Planned Generation Capacity Resources that are greater than 20 MWs in size. Smaller facilities can be constructed more quickly and are thus more likely to move from the SISA stage to commercial operation by the time of the Delivery Year. PJM will not implement this

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<sup>230</sup> Interconnection Service commences when various conditions precedent, which are spelled out in Appendix 2 sections 1.2 and 1.4 of Attachment O of the Tariff, are met. This includes synchronization to the transmission system and/or energization of the resource.

<sup>231</sup> Proposed RAA, section 1.20B.

<sup>232</sup> For instance, only approximately 43% of projects for which a System Impact Study has been completed reach commercial operation. By contrast, approximately 77% of projects for which an Interconnection Facilities Study has been completed reach commercial operation. Just as important as the greatly increased likelihood of project completion, this data also shows that most projects (i.e., 57%) that reach the SIS stage do not reach commercial operation. That is an unacceptably low success rate for projects that may clear a BRA and set capacity prices for the region.

change for the 2015 BRA. Instead, to allow market sellers sufficient time to incorporate this rule change in their planning, PJM proposes to apply it to BRAs conducted for the 2019/2020 Delivery Year and subsequent Delivery Years.<sup>233</sup>

Finally, PJM made a conforming change to both the definition of Existing Generation Capacity Resource as well as a modified section 6.5 of Attachment DD of the Tariff to remove language that becomes mooted by the proposed changes. Specifically, in those two sections, there is language that would preserve a planned resource's status as "Planned" that would have otherwise become "Existing" on the basis to clearing an RPM auction if it cleared only because it had been mitigated. But, since PJM proposes not to move such resource to "Existing" status in the first place, there is no reason to move them back to "Planned" status.<sup>234</sup>

**M. The Changes Proposed in this Filing Are Forward-Looking and Will Not Impose Any Changes to Capacity Commitments That Have Already Been Made.**

The reforms that PJM is proposing in this filing will not involuntarily affect any capacity commitments made for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years. Thus, to avoid confusion about when new provisions would apply, PJM has clearly delineated the Delivery Years for which the provisions will be in effect, or, as in the case of market rules being eliminated (e.g., the Short-Term Resource Procurement Target, Limited Resource Constraint), will no longer be in effect.<sup>235</sup> In addition, the more general market reforms that do not directly displace any existing market rules, e.g., the Tariff section outlining the requirements and obligations of Capacity Performance Resources and Base Capacity Resources,<sup>236</sup> do not require any start-date or end-date specification, so none is provided.

Accordingly, PJM is clearly specifying in the proposed Tariff and RAA revisions the changes proposed in this filing apply only beginning with the 2018/2019 Delivery Year.<sup>237</sup> However, as discussed, Capacity Market Sellers may voluntarily elect to offer in

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<sup>233</sup> See proposed RAA, sections 1.69B and 1.70.

<sup>234</sup> RAA, section 1.20B; Tariff, Attachment DD, section 6.5.

<sup>235</sup> See, e.g., proposed Tariff, Attachment DD, section 5.12(a) ("For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target; For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement.").

<sup>236</sup> See proposed Tariff, Attachment DD, section 5.5A.

<sup>237</sup> See, e.g., proposed Tariff, Attachment DD, section 5.6.1(i) ("For the 2018/2019 Delivery Year and subsequent Delivery Years, a Capacity Market Seller that owns or controls one or more Capacity Storage Resources and Intermittent Resources may submit . . ."); *id.*, Attachment DD, section 6.6A(a) ("For the 2018/2019 Delivery Year and subsequent Delivery Years, the installed capacity of every Generation Capacity Resource . . ."); *id.*, Attachment DD-1, section K ("For Load

to a Capacity Performance Transitional Incremental Auction to convert their existing Generation Capacity Resource capacity commitments to Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years, and become subject to the enhanced performance provisions in new section 10A, as well as any enhanced market rules that the Commission may accept in the concurrent section 206 filing. Thus, PJM is proposing that the Tariff revisions applicable to the Capacity Performance Transition Incremental Auctions and any resources that clear as Capacity Performance Resources in those auctions will clearly specify that such provisions apply for the 2016/2017 and 2017/2018 Delivery Years.<sup>238</sup>

#### IV. EFFECTIVE DATE

The enclosed revisions incorporate an effective date of April 1, 2015.

#### V. CORRESPONDENCE

The following individuals are designated for inclusion on the official service list in this proceeding and for receipt of any communications regarding this filing:

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Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years: Compliance is determined . . .”); proposed RAA, Schedule 6(K) (“For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years: Compliance is determined . . .”).

<sup>238</sup> See, e.g., proposed Tariff, Attachment DD, section 5.14D(A) (“This transition provision applies only for procuring Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years.”); *id.*, Attachment DD, section 10A(h) (“The provisions of this section 10A shall apply during the 2016/2017 Delivery Year, provided that: . . .”).



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## VI. DOCUMENTS ENCLOSED

This filing consists of the following:

1. This transmittal letter;
2. Revisions to the PJM Tariff and the RAA in redlined as Attachment A in electronic tariff filing format as required by Order No. 714);
3. Revisions to the PJM Tariff and RAA in non-redlined format Attachment B in electronic tariff filing format as required by Order No. 714); and
4. Affidavit of Thomas A. Falin on Behalf of PJM, as Attachment C.

## VII. SERVICE

PJM has served a copy of this filing on all PJM members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,<sup>239</sup> PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx> with a specific link to the newly-filed document, and will send an e-mail on the same date as this filing to all PJM members and all state utility regulatory commissions in the PJM Region<sup>240</sup> alerting them that this filing has been made by PJM and is available by following such link. PJM also serves the parties listed on the Commission's official service list for this docket. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

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<sup>239</sup> See 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3).

<sup>240</sup> PJM already maintains, updates and regularly uses e-mail lists for all PJM members and affected state commissions.

## VIII. CONCLUSION

Accordingly, PJM requests that the Commission accept the enclosed Tariff and RAA revisions effective April 1, 2015.

Respectfully submitted,

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December 12, 2014

# Attachment A

## Revisions to the PJM Open Access Transmission Tariff and PJM Reliability Assurance Agreement

(Marked / Redline Format)

Section(s) of the  
PJM Open Access Transmission Tariff  
(Marked / Redline Format)

## **ATTACHMENT Q**

### **PJM CREDIT POLICY**

#### **POLICY STATEMENT:**

It is the policy of PJM Interconnection, LLC (“PJM”) that prior to an entity participating in the PJM Markets, or in order to take Transmission Service, the entity must demonstrate its ability to meet PJMSettlement’s credit requirements.

Prior to becoming a Market Participant, Transmission Customer, and/or Member of PJM, PJMSettlement must accept and approve a Credit Application (including Credit Agreement) from such entity and establish a Working Credit Limit with PJMSettlement. PJMSettlement shall approve or deny an accepted Credit Application on the basis of a complete credit evaluation including, but not be limited to, a review of financial statements, rating agency reports, and other pertinent indicators of credit strength.

#### **POLICY INTENT:**

This credit policy describes requirements for: (1) the establishment and maintenance of credit by Market Participants, Transmission Customers, and entities seeking either such status (collectively “Participants”), pursuant to one or more of the Agreements, and (2) forms of security that will be deemed acceptable (hereinafter the “Financial Security”) in the event that the Participant does not satisfy the financial or other requirements to establish Unsecured Credit.

This policy also sets forth the credit limitations that will be imposed on Participants in order to minimize the possibility of failure of payment for services rendered pursuant to the Agreements, and conditions that will be considered an event of default pursuant to this policy and the Agreements.

These credit rules may establish certain set-asides of credit for designated purposes (such as for FTR or RPM activity). Such set-asides shall be construed to be applicable to calculation of credit requirements only, and shall not restrict PJMSettlement’s ability to apply such designated credit to any obligation(s) in case of a default.

PJMSettlement may post on PJM's web site, and may reference on OASIS, a supplementary document which contains additional business practices (such as algorithms for credit scoring) that are not included in this document. Changes to the supplementary document will be subject to stakeholder review and comment prior to implementation. PJMSettlement may specify a required compliance date, not less than 15 days from notification, by which time all Participants must comply with provisions that have been revised in the supplementary document.

#### **APPLICABILITY:**

This policy applies to all Participants.

## **IMPLEMENTATION:**

### **I. CREDIT EVALUATION**

Each Participant will be subject to a complete credit evaluation in order for PJMSettlement to determine creditworthiness and to establish an **Unsecured Credit Allowance**, if applicable; provided, however, that a Participant need not provide the information specified in section I.A or I.B if it notifies PJMSettlement in writing that it does not seek any Unsecured Credit Allowance. PJMSettlement will identify any necessary Financial Security requirements and establish a Working Credit Limit for each Participant. In addition, PJMSettlement will perform follow-up credit evaluations on at least an annual basis.

If a **Corporate Guaranty** is being utilized to establish credit for a Participant, the guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

PJMSettlement will provide a Participant, upon request, with a written explanation for any change in credit levels or collateral requirements. PJMSettlement will provide such explanation within ten Business Days.

If a Participant believes that either its level of unsecured credit or its collateral requirement has been incorrectly determined, according to this credit policy, then the Participant may send a request for reconsideration in writing to PJMSettlement. Such a request should include:

- A citation to the applicable section(s) of the PJMSettlement credit policy along with an explanation of how the respective provisions of the credit policy were not carried out in the determination as made
- A calculation of what the Participant believes should be the correct credit level or collateral requirement, according to terms of the credit policy

PJMSettlement will reconsider the determination and will provide a written response as promptly as practical, but no longer than ten Business Days of receipt of the request. If the Participant still feels that the determination is incorrect, then the Participant may contest that determination. Such contest should be in written form, addressed to PJMSettlement, and should contain:

- ◆ A complete copy of the Participant's earlier request for reconsideration, including citations and calculations
- ◆ A copy of PJMSettlement's written response to its request for reconsideration
- ◆ An explanation of why it believes that the determination still does not comply with the credit policy

PJMSettlement will investigate and will respond to the Participant with a final determination on the matter as promptly as practical, but no longer than 20 Business Days.

Neither requesting reconsideration nor contesting the determination following such request shall relieve or delay Participant's responsibility to comply with all provisions of this credit policy.

#### **A. Initial Credit Evaluation**

In completing the initial credit evaluation, PJMSettlement will consider:

##### **1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

##### **2) Financial Statements and Related Information**

Each Participant must submit with its application audited financial statements for the most recent fiscal quarter, as well as the most recent three fiscal years, or the period of existence of the Participant, if shorter. All financial and related information considered for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any.
- b. If privately held:
  - i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### **3) References**

PJMSettlement may request Participants to provide with their applications at least one (1) bank and three (3) utility credit references. In the case where a Participant does not have the required utility references, trade payable vendor references may be substituted.

### **4) Litigation, Commitments and Contingencies**

Each Participant is also required to provide with its application information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJMSettlement or are applying for membership with PJMSettlement. Each Participant is also required to disclose the existence of any ongoing investigations by the Securities and Exchange Commission (“SEC”), Federal Energy Regulatory Commission (“FERC”), Commodity Futures Trading Commission (“CFTC”), or any other governing, regulatory, or standards body. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

## **B. Ongoing Credit Evaluation**

On at least an annual basis, PJMSettlement will perform follow-up credit evaluations on all Participants. In completing the credit evaluation, PJMSettlement will consider:

### **1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor’s, Moody’s Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

### **2) Financial Statements and Related Information**

Each Participant must submit audited annual financial statements as soon as they become available and no later than 120 days after fiscal year end. Each Participant is also required to provide PJMSettlement with quarterly financial statements promptly upon their issuance, but no later than 60 days after the end of each quarter. All financial and related information considered



for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement. If financial statements are not provided within the timeframe required, the Participant may not be granted an Unsecured Credit Allowance.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any, immediately upon issuance.
- b. If privately held:
  - i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### **3) Material Changes**

Each Participant is responsible for informing PJMSettlement immediately, in writing, of any Material change in its financial condition. However, PJMSettlement may also independently establish from available information that a Participant has experienced a Material change in its financial condition without regard to whether such Participant has informed PJMSettlement of the same.

For the purpose of this policy, a Material change in financial condition may include, but not be limited to, any of the following:

- a. a downgrade of any debt rating by any rating agency;
- b. being placed on a credit watch with negative implications by any rating agency;
- c. a bankruptcy filing;
- d. insolvency;

- e. a report of a quarterly or annual loss or a decline in earnings of ten percent or more compared to the prior period;
- f. restatement of prior financial statements;
- g. the resignation of key officer(s);
- h. the filing of a lawsuit that could adversely impact any current or future financial results by ten percent or more;
- i. financial default in another organized wholesale electric market futures exchange or clearing house;
- j. revocation of a license or other authority by any Federal or State regulatory agency; where such license or authority is necessary or important to the Participants continued business for example, FERC market-based rate authority, or State license to serve retail load; or
- k. a significant change in credit default spreads, market capitalization, or other market-based risk measurement criteria, such as a recent increase in Moody's KMV Expected Default Frequency (EDF<sup>tm</sup>) that is noticeably greater than the increase in its peers' EDF<sup>tm</sup> rates, or a collateral default swap (CDS) premium normally associated with an entity rated lower than investment grade.

If PJMSettlement determines that a Material change in the financial condition of the Participant has occurred, it may require the Participant to provide Financial Security within two Business Days, in an amount and form approved by PJMSettlement. If the Participant fails to provide the required Financial Security, the Participant shall be in default under this credit policy.

In the event that PJMSettlement determines that a Material change in the financial condition of a Participant warrants a requirement to provide Financial Security, PJMSettlement shall provide the Participant with a written explanation of why such determination was made. However, under no circumstances shall the requirement that a Participant provide the requisite Financial Security be deferred pending the issuance of such written explanation.

#### **4) Litigation, Commitments, and Contingencies**

Each Participant is also required to provide information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon initiation or change or as requested by PJMSettlement.

#### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJM or are applying for membership within PJM. Each Participant is also required to disclose the existence of any ongoing investigations by the SEC, FERC, CFTC or any other governing, regulatory, or standards body. These disclosures shall be made upon initiation or change, or as requested by PJMSettlement.

### **C. Corporate Guaranty**

If a Corporate Guaranty is being utilized to establish credit for a Participant, the Guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

An irrevocable and unconditional Corporate Guaranty may be utilized as part of the credit evaluation process, but will not be considered a form of Financial Security. The Corporate Guaranty will be considered a transfer of credit from the Guarantor to the Participant. The Corporate Guaranty must guarantee the (i) full and prompt payment of all amounts payable by the Participant under the Agreements, and (ii) performance by the Participant under this policy.

The Corporate Guaranty should clearly state the identities of the “Guarantor,” “Beneficiary” (PJMSettlement) and “Obligor” (Participant). The Corporate Guaranty must be signed by an officer of the Guarantor, and must demonstrate that it is duly authorized in a manner acceptable to PJMSettlement. Such demonstration may include either a Corporate Seal on the Guaranty itself, or an accompanying executed and sealed Secretary’s Certificate noting that the Guarantor was duly authorized to provide such Corporate Guaranty and that the person signing the Corporate Guaranty is duly authorized, or other manner acceptable to PJMSettlement.

A Participant supplying a Corporate Guaranty must provide the same information regarding the Guarantor as is required in the “Initial Credit Evaluation” §I.A. and the “Ongoing Evaluation” §I.B. of this policy, including providing the Rating Agency Reports, Financial Statements and Related Information, References, Litigation Commitments and Contingencies, and Other Disclosures. A Participant supplying a Foreign or Canadian Guaranty must also satisfy the requirements of §I.C.1 or §I.C.2, as appropriate.

If there is a Material change in the financial condition of the Guarantor or if the Corporate Guaranty comes within 30 days of expiring without renewal, the Participant will be required to provide Financial Security either in the form of a cash deposit or a letter of credit. Failure to provide the required Financial Security within two Business Days after request by PJMSettlement will constitute an event of default under this credit policy. A Participant may request PJMSettlement to perform a credit evaluation in order to determine creditworthiness and to establish an Unsecured Credit Allowance, if applicable. If PJMSettlement determines that a Participant does qualify for a sufficient Unsecured Credit Allowance, then Financial Security will not be required.

The PJMSettlement Credit Application contains an acceptable form of Corporate Guaranty that should be utilized by a Participant choosing to establish its credit with a Corporate Guaranty. If the Corporate Guaranty varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a Corporate Guaranty and meeting the policy provisions are the responsibility of the Participant.

### **1) Foreign Guaranties**

A Foreign Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in a country other than the United States or Canada. The entity providing a Foreign Guaranty on behalf of a Participant is a Foreign Guarantor. A Participant may provide a Foreign

Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met:

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Foreign Guaranty at any time, including for material adverse circumstances or occurrences.

- a. A Foreign Guaranty:
- i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  - iv. Will not be accepted towards a Participant's Unsecured Credit Allowance for more than the following limits, depending on the Foreign Guarantor's credit rating:

Rating of Foreign Guarantor	Maximum Accepted Guaranty if Country Rating is AAA	Maximum Accepted Guaranty if Country Rating is AA+
A- and above	USD50,000,000	USD30,000,000
BBB+	USD30,000,000	USD20,000,000
BBB	USD10,000,000	USD10,000,000
BBB- or below	USD 0	USD 0

- v. May not exceed 50% of the Participant's total credit, if the Foreign Grantor is rated less than BBB+.
- b. A Foreign Guarantor:
- i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.
  - ii. Must be an Affiliate of the Participant.
  - iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
  - iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Foreign Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
  - v. Must have a Senior Unsecured (or equivalent, in PJMSettlement's sole discretion) rating of BBB (one notch above BBB-) or greater by any and all agencies that provide rating coverage of the entity.
  - vi. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance

- vii. Must provide a Secretary's Certificate certifying the adoption of Corporate Resolutions:
  1. Authorizing and approving the Guaranty; and
  2. Authorizing the Officers to execute and deliver the Guaranty on behalf of the Guarantor.
- viii. Must be domiciled in a country with a minimum long-term sovereign (or equivalent) rating of AA+/Aa1, with the following conditions:
  1. Sovereign ratings must be available from at least two rating agencies acceptable to PJMSettlement (e.g. S&P, Moody's, Fitch, DBRS).
  2. Each agency's sovereign rating for the domicile will be considered to be the lowest of: country ceiling, senior unsecured government debt, long-term foreign currency sovereign rating, long-term local currency sovereign rating, or other equivalent measures, at PJMSettlement's sole discretion.
  3. Whether ratings are available from two or three agencies, the lowest of the two or three will be used.
- ix. Must be domiciled in a country that recognizes and enforces judgments of US courts.
- x. Must demonstrate financial commitment to activity in the United States as evidenced by one of the following:
  1. American Depository Receipts (ADR) are traded on the New York Stock Exchange, American Stock Exchange, or NASDAQ.
  2. Equity ownership worth over USD100,000,000 in the wholly-owned or majority owned subsidiaries in the United States.
- xi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this credit policy.
- xii. Must pay for all expenses incurred by PJMSettlement related to reviewing and accepting a foreign guaranty beyond nominal in-house credit and legal review.
- xiii. Must, at its own cost, provide PJMSettlement with independent legal opinion from an attorney/solicitor of PJMSettlement's choosing and licensed to practice law in the United States and/or Guarantor's domicile, in form and substance acceptable to PJMSettlement in its sole discretion, confirming the enforceability of the Foreign Guaranty, the Guarantor's legal authorization to grant the Guaranty, the conformance of the Guaranty, Guarantor, and Guarantor's domicile to all of these requirements, and such other matters as PJMSettlement may require in its sole discretion.

## **2) Canadian Guaranties**

A Canadian Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in Canada and satisfies all of the provisions below. The entity providing a Canadian Guaranty on behalf of a Participant is a Canadian Guarantor. A Participant may provide a Canadian Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met.

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Canadian Guaranty at any time for reasonable cause, including adverse material circumstances.

- a. A Canadian Guaranty:
  - i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  
- b. A Canadian Guarantor:
  - i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.
  - ii. Must be an Affiliate of the Participant.
  - iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
  - iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Canadian Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
  - v. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance.
  
  - vi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this Credit Policy.

## **Ia. MINIMUM PARTICIPATION REQUIREMENTS**

### **A. PJM Market Participation Eligibility Requirements**

To be eligible to transact in PJM Markets, a Market Participant must demonstrate in accordance with the Risk Management and Verification processes set forth below that it qualifies in one of the following ways:

1. an "appropriate person," as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act, or;
2. an "eligible contract participant," as that term is defined in Section 1a(18), or successor provision, of the Commodity Exchange Act, or;
3. a business entity or person who is in the business of: (1) generating, transmitting, or distributing electric energy, or (2) providing electric energy services that are necessary to support the reliable operation of the transmission system, or;

4. a Market Participant seeking eligibility as an “appropriate person” providing an unlimited Corporate Guaranty in a form acceptable to PJMSettlement as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty, or;
5. a Market Participant providing a letter of credit of at least \$5 million to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Market Participant acknowledges is separate from, and cannot be applied to meet, its credit requirements to PJMSettlement.

If, at any time, a Market Participant cannot meet the eligibility requirements set forth above, it shall immediately notify PJMSettlement and immediately cease conducting transactions in the PJM Markets. PJMSettlement shall terminate a Market Participant’s transaction rights in the PJM Markets if, at any time, it becomes aware that the Market Participant does not meet the minimum eligibility requirements set forth above.

In the event that a Market Participant is no longer able to demonstrate it meets the minimum eligibility requirements set forth above, and possesses, obtains or has rights to possess or obtain, any open or forward positions in PJM’s Markets, PJMSettlement may take any such action it deems necessary with respect to such open or forward positions, including, but not limited to, liquidation, transfer, assignment or sale; provided, however, that the Market Participant will, notwithstanding its ineligibility to participate in the PJM Markets, be entitled to any positive market value of those positions, net of any obligations due and owing to PJM and/or PJMSettlement.

## **B. Risk Management and Verification**

All Participants shall provide to PJMSettlement an executed copy of the annual certification set forth in Appendix 1 to this Attachment Q. This certification shall be provided before an entity is eligible to participate in the PJM Markets and shall be initially submitted to PJMSettlement together with the entity’s Credit Application. Thereafter, it shall be submitted each calendar year by all Participants during a period beginning on January 1 and ending April 30, except that new Participants who became eligible to participate in PJM markets during the period of January through April shall not be required to resubmit such certification until the following calendar year. Except for certain FTR Participants (discussed below) or in cases of manifest error, PJMSettlement will accept such certifications as a matter of course and Participants will not need further notice from PJMSettlement before commencing or maintaining their eligibility to participate in PJM markets. A Participant that fails to provide its annual certification by April 30 shall be ineligible to transact in the PJM markets and PJM will disable the Participant’s access to the PJM markets until such time as PJMSettlement receives the Participant’s certification.

Participants acknowledge and understand that the annual certification constitutes a representation upon which PJMSettlement will rely. Such representation is additionally made under the PJM Tariff, filed with and accepted by FERC, and any inaccurate or incomplete statement may subject the Participant to action by FERC. Failure to comply with any of the criteria or

requirements listed herein or in the certification may result in suspension of a Participant's transaction rights in the PJM markets.

Certain FTR Participants (those providing representations found in paragraph 3.b of the annual certification set forth in Appendix 1 to this Attachment Q) are additionally required to submit to PJMSettlement (at the time they make their annual certification) a copy of their current governing risk control policies, procedures and controls applicable to their FTR trading activities, except that if no substantive changes have been made to such policies, practices and/or controls applicable to their FTR trading activities, they may instead submit to PJMSettlement a certification stating that no changes have been made. PJMSettlement will review such documentation to verify that it appears generally to conform to prudent risk management practices for entities trading in FTR-type markets. If principles or best practices relating to risk management in FTR-type markets are published, as may be modified from time to time, by a third-party industry association, such as the Committee of Chief Risk Officers, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the fundamental sufficiency of the FTR Participant's risk controls. Those FTR Participants subject to this provision shall make a one-time payment of \$1,000.00 to PJMSettlement to cover costs associated with review and verification. Thereafter, if such FTR Participant's risk policies, procedures and controls applicable to its FTR trading activities change substantively, it shall submit such modified documentation, without charge, to PJMSettlement for review and verification at the time it makes its annual certification. Such FTR Participant's continued eligibility to participate in the PJM FTR markets is conditioned on PJMSettlement notifying such FTR Participant that its annual certification, including the submission of its risk policies, procedures and controls, has been accepted by PJMSettlement. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph, however, in all circumstances, PJMSettlement and any third-party it may retain will treat as confidential the documentation provided by an FTR Participant under this paragraph, consistent with the applicable provisions of PJM's Operating Agreement.

An FTR Participant that makes the representation in paragraph 3.a of the annual certification understand that PJMSettlement, given the visibility it has over a Participant's overall market activity in performing billing and settlement functions, may at any time request the FTR Participant provide additional information demonstrating that it is in fact eligible to make the representation in paragraph 3.a of the annual certification. If such additional information is not provided or does not, in PJMSettlement's judgment, demonstrate eligibility to make the representation in paragraph 3.a of the annual certification, PJMSettlement will require the FTR Participant to instead make the representations required in paragraph 3.b of the annual certification, including representing that it has submitted a copy of its current governing risk control policies, procedures and controls applicable to its FTR trading activities. If the FTR Participant cannot or does not make those representations as required in paragraph 3.b of the annual certification, then PJM will terminate the FTR Participant's rights to purchase FTRs in the FTR market and may terminate the FTR Participant's rights to sell FTRs in the PJM FTR market.



PJMSettlement shall also conduct a periodic compliance verification process to review and verify, as applicable, Participants' risk management policies, practices, and procedures pertaining to the Participants' activities in the PJM markets. Such review shall include verification that:

1. The risk management framework is documented in a risk policy addressing market, credit and liquidity risks.
2. The Participant maintains an organizational structure with clearly defined roles and responsibilities that clearly segregates trading and risk management functions.
3. There is clarity of authority specifying the types of transactions into which traders are allowed to enter.
4. The Participant has requirements that traders have adequate training relative to their authority in the systems and PJM markets in which they transact.
5. As appropriate, risk limits are in place to control risk exposures.
6. Reporting is in place to ensure that risks and exceptions are adequately communicated throughout the organization.
7. Processes are in place for qualified independent review of trading activities.
8. As appropriate, there is periodic valuation or mark-to-market of risk positions.

If principles or best practices relating to risk management in PJM-type markets are published, as may be modified from time to time, by a third-party industry association, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the sufficiency of the Participant's risk controls. PJMSettlement may select Participants for review on a random basis and/or based on identified risk factors such as, but not limited to, the PJM markets in which the Participant is transacting, the magnitude of the Participant's transactions in the PJM markets, or the volume of the Participant's open positions in the PJM markets. Those Participants notified by PJMSettlement that they have been selected for review shall, upon 14 calendar days notice, provide a copy of their current governing risk control policies, procedures and controls applicable to their PJM market activities and shall also provide such further information or documentation pertaining to the Participants' activities in the PJM markets as PJMSettlement may reasonably request. Participants selected for risk management verification through a random process and satisfactorily verified by PJMSettlement shall be excluded from such verification process based on a random selection for the subsequent two years. PJMSettlement shall annually randomly select for review no more than 20% of the Participants in each member sector.

Each selected Participant's continued eligibility to participate in the PJM markets is conditioned upon PJMSettlement notifying the Participant of successful completion of PJMSettlement's verification of the Participant's risk management policies, practices and procedures, as discussed

herein. However, if PJMSettlement notifies the Participant in writing that it could not successfully complete the verification process, PJMSettlement shall allow such Participant 14 calendar days to provide sufficient evidence for verification prior to declaring the Participant as ineligible to continue to participate in PJM's markets, which declaration shall be in writing with an explanation of why PJMSettlement could not complete the verification. If, prior to the expiration of such 14 calendar days, the Participant demonstrates to PJMSettlement that it has filed with the Federal Energy Regulatory Commission an appeal of PJMSettlement's risk management verification determination, then the Participant shall retain its transaction rights, pending the Commission's determination on the Participant's appeal. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph. PJMSettlement and any third party it may retain will treat as confidential the documentation provided by a Participant under this paragraph, consistent with the applicable provisions of the Operating Agreement. If PJMSettlement retains such outside expertise, a Participant may direct in writing that PJMSettlement perform the risk management review and verification for such Participant instead of utilizing a third party, provided however, that employees and contract employees of PJMSettlement and PJM shall not be considered to be such outside expertise or third parties.

Participants are solely responsible for the positions they take and the obligations they assume in PJM markets. PJMSettlement hereby disclaims any and all responsibility to any Participant or PJM Member associated with Participant's submitting or failure to submit its annual certification or PJMSettlement's review and verification of an FTR Participant's risk policies, procedures and controls. Such review and verification is limited to demonstrating basic compliance by an FTR Participant with the representation it makes under paragraph 3.b of its annual certification showing the existence of written policies, procedures and controls to limit its risk in PJM's FTR markets and does not constitute an endorsement of the efficacy of such policies, procedures or controls.

### **C. Capitalization**

In addition to the Annual Certification requirements in Appendix 1 to this Attachment Q, a Participant must demonstrate that it meets the minimum financial requirements appropriate for the PJM market(s) in which it transacts by satisfying either the Minimum Capitalization or the Provision of Collateral requirements listed below:

#### **1. Minimum Capitalization**

FTR Participants must demonstrate a tangible net worth in excess of \$1 million or tangible assets in excess of \$10 million. Other Participants must demonstrate a tangible net worth in excess of \$500,000 or tangible assets in excess of \$5 million.

- a. In either case, consideration of "tangible" assets and net worth shall exclude assets (net of any matching liabilities, assuming the result is a positive value) which PJMSettlement reasonably believes to be restricted, highly risky, or potentially unavailable to settle a claim in the event of default. Examples include, but are not

limited to, restricted assets and Affiliate assets, derivative assets, goodwill, and other intangible assets.

- b. Demonstration of “tangible” assets and net worth may be satisfied through presentation of an acceptable Corporate Guaranty, provided that both:
  - (i) the guarantor is an affiliate company that satisfies the tangible net worth or tangible assets requirements herein, and;
  - (ii) the Corporate Guaranty is either unlimited or at least \$500,000.

If the Corporate Guaranty presented by the Participant to satisfy these Capitalization requirements is limited in value, then the Participant’s resulting Unsecured Credit Allowance shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this Credit Policy, or:
- (2) the face value of the Corporate Guaranty, reduced by \$500,000 and further reduced by 10%. (For example, a \$10.5 million Corporate Guaranty would be reduced first by \$500,000 to \$10 million and then further reduced 10% more to \$9 million. The resulting \$9 million would be the Participant’s Unsecured Credit Allowance available through the Corporate Guaranty).

In the event that a Participant provides collateral in addition to a limited Corporate Guaranty to increase its available credit, the value of such collateral shall be reduced by 10%. This reduced value shall be deemed Financial Security and available to satisfy the requirements of this Credit Policy.

Demonstrations of capitalization must be presented in the form of audited financial statements for the Participant’s most recent fiscal year.

## **2. Provision of Collateral**

If a Participant does not demonstrate compliance with its applicable Minimum Capitalization Requirements above, it may still qualify to participate in PJM’s markets by posting additional collateral, subject to the terms and conditions set forth herein.

Any collateral provided by a Participant unable to satisfy the Minimum Capitalization Requirements above will be restricted in the following manner:

- i. Collateral provided by FTR Participants shall be reduced by \$500,000 and then further reduced by 10%. This reduced amount shall be considered the Financial Security provided by the Participant and available to satisfy requirements of this Credit Policy.
- ii. Collateral provided by other Participants that engage in Virtual Transactions or Export Transactions shall be reduced by \$200,000 and then further reduced by 10%. This reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.
- iii. Collateral provided by other Participants that do not engage in Virtual Transactions or Export Transactions shall be reduced by 10%, and this reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.

In the event a Participant that satisfies the Minimum Participation Requirements through provision of collateral also provides a Corporate Guaranty to increase its available credit, then the Participant's resulting Unsecured Credit Allowance conveyed through such Guaranty shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this credit policy, or,
- (2) the face value of the Guaranty, reduced by 10%.

## **II. CREDIT ALLOWANCE AND WORKING CREDIT LIMIT**

PJMSettlement's credit evaluation process will include calculating a Credit Score for each Participant. The credit score will be utilized to determine a Participant's Unsecured Credit Allowance.

Participants who do not qualify for an Unsecured Credit Allowance will be required to provide Financial Security based on their Peak Market Activity, as provided below.

A corresponding Working Credit Limit will be established based on the Unsecured Credit Allowance and/or the Financial Security provided.

Where Participant of PJM are considered Affiliates, Unsecured Credit Allowances and Working Credit Limits will be established for each individual Participant, subject to an aggregate maximum amount for all Affiliates as provided for in §II.F of this policy.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

## A. Credit Score

For participants with credit ratings, a Credit Score will be assigned based on their senior unsecured credit rating and credit watch status as shown in the table below. If an explicit senior unsecured rating is not available, PJMSettlement may impute an equivalent rating from other ratings that are available. For Participants without a credit rating, but who wish to be considered for unsecured Credit, a Credit Score will be generated from PJMSettlement's review and analysis of various factors that are predictors of financial strength and creditworthiness. Key factors in the scoring process include, financial ratios, and years in business. PJMSettlement will consistently apply the measures it uses in determining Credit Scores. The credit scoring methodology details are included in a supplementary document available on OASIS.

### Rated Entities Credit Scores

Rating	Score	Score Modifier	
		Credit Watch Negative	Credit Watch Positive
AAA	100	-1.0	0.0
AA+	99	-1.0	0.0
AA	99	-1.0	0.0
AA-	98	-1.0	0.0
A+	97	-1.0	0.0
A	96	-2.0	0.0
A-	93	-3.0	1.0
BBB+	88	-4.0	2.0
BBB	78	-4.0	2.0
BBB-	65	-4.0	2.0
BB+ and below	0	0.0	0.0

## B. Unsecured Credit Allowance

PJMSettlement will determine a Participant's Unsecured Credit Allowance based on its Credit Score and the parameters in the table below. The maximum Unsecured Credit Allowance is the lower of:

- 1) A percentage of the Participant's Tangible Net Worth, as stated in the table below, with the percentage based on the Participant's credit score; and
- 2) A dollar cap based on the credit score, as stated in the table below:

<b>Credit Score</b>	<b>Tangible Net Worth Factor</b>	<b>Maximum Unsecured Credit Allowance</b>  <b>(\$ Million)</b>
91-100	2.125 – 2.50%	\$50
81-90	1.708 – 2.083%	\$42
71-80	1.292 – 1.667%	\$33
61-70	0.875 – 1.25%	\$7
51-60	0.458 – 0.833%	\$0-\$2
50 and Under	0%	\$0

If a Corporate Guaranty is utilized to establish an Unsecured Credit Allowance for a Participant, the value of a Corporate Guaranty will be the lesser of:

- The limit imposed in the Corporate Guaranty;
- The Unsecured Credit Allowance calculated for the Guarantor; and
- A portion of the Unsecured Credit Allowance calculated for the Guarantor in the case of Affiliated Participants.

PJMSettlement has the right at any time to modify any Unsecured Credit Allowance and/or require additional Financial Security as may be deemed reasonably necessary to support current market activity. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

PJMSettlement will maintain a posting of each Participant's unsecured Credit Allowance, along with certain other credit related parameters, on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

### **C. Seller Credit**

Participants that have maintained a Net Sell Position for each of the prior 12 months are eligible for Seller Credit, which is an additional form of Unsecured Credit. A Participant's Seller Credit will be equal to sixty percent of the Participant's thirteenth smallest weekly Net Sell Position invoiced in the past 52 weeks.

Each Participant receiving Seller Credit must maintain both its Seller Credit and its Total Net Sell Position equal to or greater than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided.

For Participants receiving Seller Credit, PJMSettlement may forecast the Participant's Total Net Sell Position considering the Participant's current Total Net Sell Position, recent trends in the Participant's Total Net Sell Position, and other information available to PJMSettlement, such as, but not limited to, known generator outages, changes in load responsibility, and bilateral

transactions impacting the Participant. If PJMSettlement's forecast ever indicates that the Participant's Total Net Sell Position may in the future be less than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided, then PJMSettlement may require Financial Security as needed to cover the difference. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

Any Financial Security required by PJMSettlement pursuant to these provisions for Seller Credit will be returned once the requirement for such Financial Security has ended. Seller Credit may not be conveyed to another entity through use of a guaranty. Seller Credit shall be subject to the cap on available Unsecured Credit set forth in Section II.F.

#### **D. Peak Market Activity and Financial Security Requirement**

A PJM Participant or Applicant that has an insufficient Unsecured Credit Allowance to satisfy its Peak Market Activity will be required to provide Financial Security such that its Unsecured Credit Allowance and Financial Security together are equal to its Peak Market Activity in order to secure its transactional activity in the PJM Market.

Peak Market Activity for Participants will be determined semi-annually beginning in the first complete billing week in the months of April and October. Peak Market Activity shall be the greater of the initial Peak Market Activity, as explained below, or the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two, or three week period, ending within a respective semi-annual period. However, Peak Market Activity shall not exceed the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two or three week period in the prior 52 weeks.

Peak Market Activity shall exclude FTR Net Activity, Virtual Transactions Net Activity, and Export Transactions Net Activity.

The initial Peak Market Activity for Applicants will be determined by PJMSettlement based on a review of an estimate of their transactional activity for all PJM markets and services over the next 52 weeks, which the Applicant shall provide to PJMSettlement.

The initial Peak Market Activity for Participants, calculated at the beginning of each respective semi-annual period, shall be the three-week average of all non-zero invoice totals over the previous 52 weeks. This calculation shall be performed and applied within three business days following the day the invoice is issued for the first full billing week in the current semi-annual period.

Prepayments shall not affect Peak Market Activity unless otherwise agreed to in writing pursuant to this Credit Policy.

All Peak Market Activity calculations shall take into account reductions of invoice values effectuated by early payments which are applied to reduce a Participant's Peak Market Activity

as contemplated by other terms of the Credit Policy; provided that the initial Peak Market Activity shall not be less than the average value calculated using the weeks for which no early payment was made.

A Participant may reduce its Financial Security Requirement by agreeing in writing (in a form acceptable to PJMSettlement) to make additional payments, including prepayments, as and when necessary to ensure that such Participant's Total Net Obligation at no time exceeds such reduced Financial Security Requirement.

PJMSettlement may, at its discretion, adjust a Participant's Financial Security Requirement if PJMSettlement determines that the Peak Market Activity is not representative of such Participant's expected activity, as a consequence of known, measurable, and sustained changes. Such changes may include the loss (without replacement) of short-term load contracts, when such contracts had terms of three months or more and were acquired through state-sponsored retail load programs, but shall not include short-term buying and selling activities.

PJMSettlement may waive the Financial Security Requirement for a Participant that agrees in writing that it shall not, after the date of such agreement, incur obligations under any of the Agreements. Such entity's access to all electronic transaction systems administered by PJM shall be terminated.

PJMSettlement will maintain a posting of each Participant's Financial Security Requirement on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

#### **E. Working Credit Limit**

PJMSettlement will establish a Working Credit Limit for each Participant against which its **Total Net Obligation** will be monitored. The Working Credit Limit is defined as 75% of the Financial Security provided to PJMSettlement and/or 75% of the Unsecured Credit Allowance determined by PJMSettlement based on a credit evaluation, as reduced by any applicable credit requirement determinants defined in this policy. A Participant's Total Net Obligation should not exceed its Working Credit Limit.

Example: After a credit evaluation by PJMSettlement, a Participant is deemed able to support an Unsecured Credit Allowance of \$10.0 million. The Participant will be assigned a Working Credit Limit of \$8.5 million. PJMSettlement will monitor the Participant's Total Net Obligations against the Working Credit Limit.

A Participant with an Unsecured Credit Allowance may choose to provide Financial Security in order to increase its Working Credit Limit. A Participant with no Unsecured Credit Allowance may also choose to increase its Working Credit Limit by providing Financial Security in an amount greater than its Peak Market Activity.

If a Participant's Total Net Obligation approaches its Working Credit Limit, PJMSettlement may require the Participant to make an advance payment or increase its Financial Security in order to maintain its Total Net Obligation below its Working Credit Limit. Except as explicitly provided



below, advance payments shall not serve to reduce the Participant's Peak Market Activity for the purpose of calculating credit requirements.

**Example:** After 10 days, and with 5 days remaining before the bill is due to be paid, a Participant approaches its \$4.0 million Working Credit Limit. PJMSettlement may require a prepayment of \$2.0 million in order that the Total Net Obligation will not exceed the Working Credit Limit.

If a Participant exceeds its Working Credit Limit or is required to make advance payments more than ten times during a 52-week period, PJMSettlement may require Financial Security in an amount as may be deemed reasonably necessary to support its Total Net Obligation.

A Participant receiving unsecured credit may make early payments up to ten times in a rolling 52-week period in order to reduce its Peak Market Activity for credit requirement purposes. Imputed Peak Market Activity reductions for credit purposes will be applied to the billing period for which the payment was received. Payments used as the basis for such reductions must be received prior to issuance or posting of the invoice for the relevant billing period. The imputed Peak Market Activity reduction attributed to any payment may not exceed the amount of Unsecured Credit for which the Participant is eligible.

#### **F. Credit Limit Setting For Affiliates**

If two or more Participants are Affiliates and each is being granted an Unsecured Credit Allowance and a corresponding Working Credit Limit, PJMSettlement will consider the overall creditworthiness of the Affiliated Participants when determining the Unsecured Credit Allowances and Working Credit Limits in order not to grant more Unsecured Credit than the overall corporation could support.

**Example:** Participants A and B each have a \$10.0 million Corporate Guaranty from their common parent, a holding company with an Unsecured Credit Allowance calculation of \$12.0 million. PJMSettlement may limit the Unsecured Credit Allowance for each Participant to \$6.0 million, so the total Unsecured Credit Allowance does not exceed the corporate total of \$12.0 million.

PJMSettlement will work with Affiliated Participants to allocate the total Unsecured Credit Allowance among the Affiliates while assuring that no individual Participant, nor common guarantor, exceeds the Unsecured Credit Allowance appropriate for its credit strength. The aggregate Unsecured Credit for a Participant, including Unsecured Credit Allowance granted based on its own creditworthiness and any Unsecured Credit Allowance conveyed through a Guaranty shall not exceed \$50 million. The aggregate Unsecured Credit for a group of Affiliates shall not exceed \$50 million. A group of Affiliates subject to this cap shall request PJMSettlement to allocate the maximum Unsecured Credit and Working Credit Limit amongst the group, assuring that no individual Participant or common guarantor, shall exceed the Unsecured Credit level appropriate for its credit strength and activity.

#### **G. Working Credit Limit Violations**

##### **1) Notification**

A Participant is subject to notification when its Total Net Obligation to PJMSettlement approaches the Participant's established Working Credit Limit.

## 2) Suspension

A Participant that exceeds its Working Credit Limit is subject to suspension from participation in the PJM markets and from scheduling any future Transmission Service unless and until Participant's credit standing is brought within acceptable limits. A Participant will have two Business Days from notification to remedy the situation in a manner deemed acceptable by PJMSettlement. Additionally, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. Failure to comply with this policy will be considered an event of default under this credit policy.

## H. PJM Administrative Charges

Financial Security held by PJMSettlement shall also secure obligations to PJM for PJM administrative charges.

## I. Pre-existing Financial Security

PJMSettlement's credit requirements are applicable as of the effective date of the filing on May 5, 2010 by PJM and PJMSettlement of amendments to Attachment Q. Financial Security held by PJM prior to the effective date of such amendments shall be held by PJM for the benefit of PJMSettlement.

## III. VIRTUAL TRANSACTION SCREENING

### A. Credit and Financial Security

PJMSettlement does not require a Market Participant to establish separate or additional credit for submitting Virtual Transactions. If a Market Participant chooses to establish additional Financial Security and/or Unsecured Credit Allowance in order to increase its Credit Available for Virtual Transactions, the Market Participant's Working Credit Limit for Virtual Transactions shall be increased in accordance with the definition thereof. The Financial Security and/or Unsecured Credit Allowance available to increase a Market Participant's Credit Available for Virtual Transactions shall be the amount of Financial Security and/or Unsecured Credit Allowance available after subtracting any credit required for Minimum Participation Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy, as applicable.

If a Market Participant chooses to provide additional Financial Security in order to increase its **Credit Available for Virtual Transactions PJMSettlement** may establish a reasonable timeframe, not to exceed three months, for which such Financial Security must be maintained. PJMSettlement will not impose such restriction on a deposit unless a Market Participant is

notified prior to making the deposit. Such restriction, if applied, shall be applied to all future deposits by all Market Participants engaging in Virtual Transactions.

A Market Participant wishing to increase its Credit Available for Virtual Transactions by providing additional Financial Security may make the appropriate arrangements with PJMSettlement. PJMSettlement will make a good faith effort to make new Financial Security available as Credit Available for Virtual Transactions as soon as practicable after confirmation of receipt. In any event, however, Financial Security received and confirmed by noon on a business day will be applied (as provided under this policy) to Credit Available for Virtual Transactions no later than 10:00 am on the following business day. Receipt and acceptance of wired funds for cash deposit shall mean actual receipt by PJMSettlement's bank, deposit into PJMSettlement's customer deposit account, and confirmation by PJMSettlement that such wire has been received and deposited. Receipt and acceptance of letters of credit shall mean receipt of the original letter of credit or amendment thereto, and confirmation from PJMSettlement's credit and legal staffs that such letter of credit or amendment thereto conforms to PJMSettlement's requirements, which confirmation shall be made in a reasonable and practicable timeframe. To facilitate this process, bidders wiring funds for the purpose of increasing their Credit Available for Virtual Transactions are advised to specifically notify PJMSettlement that a wire is being sent for such purpose.

#### **B. Virtual Transaction Screening Process**

All Virtual Transactions submitted to PJM shall be subject to a credit screen prior to acceptance in the Day-ahead Energy Market auction. The credit screen process will automatically reject Virtual Transactions submitted by the PJM market participant if the participant's Credit Available for Virtual Transactions is exceeded by the **Virtual Credit Exposure** that is calculated based on the participant's submitted Virtual Transactions as described below.

A Participant's Virtual Credit Exposure will be calculated on a daily basis for all Virtual Transactions submitted by the market participant for the next market day using the following equation:

Virtual Credit Exposure = INC and DEC Exposure + Up-to Congestion Exposure

Where:

1) INC and DEC Exposure is calculated as:

(a) ((the total MWh bid or offered, whichever is greater, hourly at each node) x the Nodal Reference Price x 1 day) summed over all nodes and all hours; plus (b) ((the difference between the total bid MWh cleared and total offered MWh cleared hourly at each node) x Nodal Reference Price) summed over all nodes and all hours for the previous cleared Day-ahead Energy Market.

2) Up-to Congestion Exposure is calculated as:

(a) Total MWh bid hourly for each Up-to Congestion Transaction  $x$  (price bid – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours; plus (b) Total MWh cleared hourly for each Up-to Congestion Transaction  $x$  (cleared price – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours for the previous cleared Day-ahead Energy Market, provided that hours for which the calculation for an Up-to Congestion Transaction is negative, it shall be deemed to have a zero contribution to the sum.

If a Market Participant's Virtual Transactions are rejected as a result of the credit screen process, the Market Participant will be notified via an eMKT error message. A Market Participant whose Virtual Transactions are rejected may alter its Virtual Transactions so that its Virtual Credit Exposure does not exceed its Credit Available for Virtual Transactions, and may resubmit them. Virtual Transactions may be submitted in one or more groups during a day. If one or more groups of Virtual Transactions is submitted and accepted, and a subsequent group of submitted Virtual Transactions causes the total submitted Virtual Transactions to exceed the Virtual Credit Exposure, then only that subsequent set of Virtual Transactions will be rejected. Previously accepted Virtual Transactions will not be affected, though the Market Participant may choose to withdraw them voluntarily.

#### **IV. RELIABILITY PRICING MODEL AUCTION AND PRICE RESPONSIVE DEMAND CREDIT REQUIREMENTS**

Settlement during any Delivery Year of cleared positions resulting or expected to result from any Reliability Pricing Model Auction shall be included as appropriate in Peak Market Activity, and the provisions of this Attachment Q shall apply to any such activity and obligations arising therefrom. In addition, the provisions of this section shall apply to any entity seeking to participate in any RPM Auction, to address credit risks unique to such auctions. The provisions of this section also shall apply under certain circumstances to PRD Providers that seek to commit Price Responsive Demand pursuant to the provisions of the Reliability Assurance Agreement.

##### **A. Applicability**

A Market Seller seeking to submit a Sell Offer in any Reliability Pricing Model Auction based on any Capacity Resource for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before submitting such Sell Offer. A PRD Provider seeking to commit Price Responsive Demand for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before it may commit the Price Responsive Demand. Credit must be maintained until such risk of non-performance is substantially eliminated, but may be reduced commensurate with the reduction in such risk, as set forth in Section IV.C.

For purposes of this provision, a resource for which there is a materially increased risk of non-performance shall mean: (i) a Planned Generation Capacity Resource; (ii) a Planned Demand Resource or an Energy Efficiency Resource; (iii) a Qualifying Transmission Upgrade; (iv) an existing or Planned Generation Capacity Resource located outside the PJM Region that at the time it is submitted in a Sell Offer has not secured firm transmission service to the border of the

PJM Region sufficient to satisfy the deliverability requirements of the Reliability Assurance Agreement; or (v) Price Responsive Demand to the extent the responsible PRD Provider has not registered PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

## **B. Reliability Pricing Model Auction and Price Responsive Demand Credit Requirement**

Except as provided for Credit-Limited Offers below, for any resource specified in Section IV.A, other than Price Responsive Demand, the credit requirement shall be the RPM Auction Credit Rate, as provided in Section IV.D, times the megawatts to be offered for sale from such resource in a Reliability Pricing Model Auction. For Qualified Transmission Upgrades, the credit requirements shall be based on the Locational Deliverability Area in which such upgrade was to increase the Capacity Emergency Transfer Limit. The RPM Auction Credit Requirement for each Market Seller shall be the sum of the credit requirements for all such resources to be offered by such Market Seller in the auction or, as applicable, cleared by such Market Seller from the relevant auctions. For Price Responsive Demand specified in section IV.A, the credit requirement shall be based on the Nominal PRD Value (stated in Unforced Capacity terms) times the Price Responsive Demand Credit Rate as set forth in section IV.E.

Except for Credit-Limited Offers, the RPM Auction Credit Requirement for a Market Seller will be reduced for any Delivery Year to the extent less than all of such Market Seller's offers clear in the Base Residual Auction or any Incremental Auction for such Delivery Year. Such reduction shall be proportional to the quantity, in megawatts, that failed to clear in such Delivery Year.

A Sell Offer based on a Planned Generation Capacity Resource, Planned Demand Resource, or Energy Efficiency Resource may be submitted as a Credit-Limited Offer. A Market Seller electing this option shall specify a maximum amount of Unforced Capacity, in megawatts, and a maximum credit requirement, in dollars, applicable to the Sell Offer. A Credit-Limited Offer shall clear the RPM Auction in which it is submitted (to the extent it otherwise would clear based on the other offer parameters and the system's need for the offered capacity) only to the extent of the lesser of: (i) the quantity of Unforced Capacity that is the quotient of the division of the specified maximum credit requirement by the Auction Credit Rate resulting from section IV.D.b.; and (ii) the maximum amount of Unforced Capacity specified in the Sell Offer. For a Market Seller electing this alternative, the RPM Auction Credit Requirement applicable prior to the posting of results of the auction shall be the maximum credit requirement specified in its Credit-Limited Offer, and the RPM Auction Credit Requirement subsequent to posting of the results will be the Auction Credit Rate, as provided in Section IV.D.b, c. or d., as applicable, times the amount of Unforced Capacity from such Sell Offer that cleared in the auction. The availability and operational details of Credit-Limited Offers shall be as described in the PJM Manuals.

As set forth in Section IV.D, a Market Seller's Auction Credit Requirement shall be determined separately for each Delivery Year.

### C. Reduction in Credit Requirement

As specified in Section IV.D, the RPM Auction Credit Rate may be reduced under certain circumstances after the auction has closed.

The Price Responsive Demand credit requirement shall be reduced as and to the extent the PRD Provider registers PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

In addition, the RPM Auction Credit Requirement for a Participant for any given Delivery Year shall be reduced periodically, provided the Participant successfully meets progress milestones that reduce the risk of non-performance, as follows:

- a. For Planned Demand Resources and Energy Efficiency Resources, the RPM Auction Credit Requirement will be reduced in direct proportion to the megawatts of such Demand Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.
- b. For Existing Generation Capacity Resources located outside the PJM Region that have not secured sufficient firm transmission to the border of the PJM Region prior to the auction in which such resource is first offered, the RPM Credit Requirement shall be reduced in direct proportion to the megawatts of firm transmission service secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.
- c. For Planned Generation Capacity Resources, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of an Interconnection Service Agreement, and shall be reduced to zero on the date of commencement of Interconnection Service.
- d. For Planned Generation Capacity Resources located outside the PJM Region, the RPM Credit Requirement shall be reduced by 50% once the conditions in both b and c above are met, i.e., the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B when 1) beginning as of the effective date of the equivalent of an Interconnection Service Agreement becomes effective, and 2) ~~when~~ 50% or more megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement. The RPM Credit Requirement for a Planned Generation Capacity Resource located outside the PJM Region shall be reduced to zero when 1) the resource commences Interconnection Service and 2) 100% of the megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.
- e. For Qualifying Transmission Upgrades, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of the latest associated Interconnection Service Agreement (or, when a project will have no such agreement, an Upgrade Construction Service Agreement), and shall be reduced to zero on the date the

Qualifying Transmission Upgrade is placed in service. In addition, a Qualifying Transmission Upgrade will be allowed a reduction in its RPM Credit Requirement equal to the amount of collateral currently posted with PJM for the facility construction when the Qualifying Transmission Upgrade meets the following requirements: the Upgrade Construction Service Agreement has been fully executed, the full estimated cost to complete as most recently determined or updated by PJM has been fully paid or collateralized, and all regulatory and other required approvals (except those that must await construction completion) have been obtained. Such reduction in RPM Credit Requirement may not be transferred across different projects.

#### **D. RPM Auction Credit Rate**

As set forth in the PJM Manuals, a separate Auction Credit Rate shall be calculated for each Delivery ~~Y~~Year prior to each Reliability Pricing Model Auction for such Delivery Year, as follows:

~~For Delivery Years through the Delivery Year that ends on May 31, 2012, the Auction Credit Rate for any resource for a Delivery Year shall be (the greater of \$20/MW-day or 0.24 times the Capacity Resource Clearing Price in the Base Residual Auction for such Delivery Year for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year.~~

~~For Delivery Years beginning with the Delivery Year that commences on June 1, 2012:~~

a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Auction Credit Rate shall be:

~~(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year; and~~

~~(ii) For Capacity Performance Resources, the greater of ((A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year.~~

b. Subsequent to the posting of the results from a Base Residual Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

~~(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year; and~~

~~(ii) For Capacity Performance Resources, the (greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year,~~

in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

c. For any resource not previously committed for a Delivery Year that seeks to participate in an Incremental Auction, the Auction Credit Rate shall be:

(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) 0.24 times the Capacity Resource Clearing Price in the Base Residual Auction for such Delivery Year for the Locational Deliverability Area within which the resource is located or (C) \$20 per MW-day) times the number of days in such Delivery Year; and-

(ii) For Capacity Performance Resources, the (greater of (A) 0.5 times Net Cost of New Entry or (B) \$20/MW-day) times the number of days in such Delivery Year.

d. Subsequent to the posting of the results of an Incremental Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

(i) For Base Capacity Resources: (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year, but no greater than the Auction Credit Rate previously established for such resource's participation in such Incremental Auction pursuant to subsection (c) above) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

## **E. Price Responsive Demand Credit Rate**

a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (i) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (ii) \$20 per MW-day) times the number of days in such Delivery Year;



b. Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand registered prior to such auction shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the PRD load is located) times the number of days in such Delivery Year times a final price uncertainty factor of 1.05;

c. For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be the same as the rate for Price Responsive Demand that had cleared in the Base Residual Auction;

d. Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand, shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Final Zonal Capacity Price for the Locational Deliverability Area within which the Price Responsive Demand is located) times the number of days in such Delivery Year, but no greater than the Price Responsive Demand Credit Rate previously established under subsections (a), (b), or (c) of this section for such Delivery Year.

#### **F. RPM Seller Credit - Additional Form of Unsecured Credit for RPM**

In addition to the forms of credit specified elsewhere in this Attachment Q, RPM Seller Credit shall be available to Market Sellers, but solely for purposes of satisfying RPM Auction Credit Requirements. If a supplier has a history of being a net seller into PJM markets, on average, over the past 12 months, then PJMSettlement will count as available Unsecured Credit twice the average of that participant's total net monthly PJMSettlement bills over the past 12 months. This RPM Seller Credit shall be subject to the cap on available Unsecured Credit as established in Section II.F.

#### **G. Credit Responsibility for Traded Planned RPM Capacity Resources**

PJMSettlement may require that credit and financial responsibility for planned RPM Capacity Resources that are traded remain with the original party (which for these purposes, means the party bearing credit responsibility for the planned RPM Capacity Resource immediately prior to trade) unless the receiving party independently establishes consistent with the PJM credit policy, that it has sufficient credit with PJMSettlement and agrees by providing written notice to PJMSettlement that it will fully assume the credit responsibility associated with the traded planned RPM Capacity Resource.

### **V. FINANCIAL TRANSMISSION RIGHT AUCTIONS**

#### **A. FTR Credit Limit.**

PJMSettlement will establish an FTR Credit Limit for each Participant. Participants must maintain their FTR Credit Limit at a level equal to or greater than their FTR Credit Requirement. FTR Credit Limits will be established only by a Participant providing Financial Security.

**B. FTR Credit Requirement.**

For each Participant with FTR activity, PJMSettlement shall calculate an FTR Credit Requirement based on FTR cost less a discounted historical value. FTR Credit Requirements shall be further adjusted by ARR credits available and by an amount based on portfolio diversification, if applicable. The requirement will be based on individual monthly exposures which are then used to derive a total requirement.

The FTR Credit Requirement shall be calculated by first adding for each month the FTR Monthly Credit Requirement Contribution for each submitted, accepted, and cleared FTR and then subtracting the prorated value of any ARRs held by the Participant for that month. The resulting twelve monthly subtotals represent the expected value of net payments between PJMSettlement and the Participant for FTR activity each month during the Planning Period. Subject to later adjustment by an amount based on portfolio diversification, if applicable, the FTR Credit Requirement shall be the sum of the individual positive monthly subtotals, representing months in which net payments to PJMSettlement are expected.

**C. Rejection of FTR Bids.**

Bids submitted into an auction will be rejected if the Participant's FTR Credit Requirement including such submitted bids would exceed the Participant's FTR Credit Limit, or if the Participant fails to establish additional credit as required pursuant to provisions related to portfolio diversification.

**D. FTR Credit Collateral Returns.**

A Market Participant may request from PJMSettlement the return of any collateral no longer required for the FTR auctions. PJMSettlement is permitted to limit the frequency of such requested collateral returns, provided that collateral returns shall be made by PJMSettlement at least once per calendar quarter, if requested by a Market Participant.

**E. Credit Responsibility for Traded FTRs.**

PJMSettlement may require that credit responsibility associated with an FTR traded within PJM's eFTR system remain with the original party (which for these purposes, means the party bearing credit responsibility for the FTR immediately prior to trade) unless and until the receiving party independently establishes, consistent with the PJM credit policy, sufficient credit with PJMSettlement and agrees through confirmation of the FTR trade within the eFTR system that it will meet in full the credit requirements associated with the traded FTR.

**F. Portfolio Diversification.**

Subsequent to calculating a tentative cleared solution for an FTR auction (or auction round), PJM shall both:

1. Determine the FTR Portfolio Auction Value, including the tentative cleared solution. Any Participants with such FTR Portfolio Auction Values that are negative shall be deemed FTR Flow Undiversified.
2. Measure the geographic concentration of the FTR Flow Undiversified portfolios by testing such portfolios using a simulation model including, one at a time, each planned transmission outage or other network change which would substantially affect the network for the specific auction period. A list of such planned outages or changes anticipated to be modeled shall be posted prior to commencement of the auction (or auction round). Any FTR Flow Undiversified portfolio that experiences a net reduction in calculated congestion credits as a result of any one or more of such modeled outages or changes shall be deemed FTR Geographically Undiversified.

For portfolios that are FTR Flow Undiversified but not FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to twice the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For Participants with portfolios that are both FTR Flow Undiversified and FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to three times the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For portfolios that are FTR Flow Undiversified in months subsequent to the current planning year, these incremental amounts, calculated on a monthly basis, shall be reduced (but not below zero) by an amount up to 25% of the monthly value of ARR credits that are held by a Participant. Subsequent to the ARR allocation process preceding an annual FTR auction, such ARR credits shall be reduced to zero for months associated with that ARR allocation process. PJMSettlement may recalculate such ARR credits at any time, but at a minimum shall do so subsequent to each annual FTR auction. If a reduction in such ARR credits at any time increases the amount of credit required for the Participant beyond its credit available for FTR activity, the Participant must increase its credit to eliminate the shortfall.

If the FTR Credit Requirement for any Participant exceeds its credit available for FTRs as a result of these diversification requirements for the tentatively cleared portfolio of FTRs, PJMSettlement shall immediately issue a demand for additional credit, and such demand must be fulfilled before 4:00 p.m. on the business day following the demand. If any Participant does not timely satisfy such demand, PJMSettlement, in coordination with PJM, shall cause the removal that Participant's entire set of bids for that FTR auction (or auction round) and a new cleared solution shall be calculated for the entire auction (or auction round).

If necessary, PJM shall repeat the auction clearing calculation. PJM shall repeat these portfolio diversification calculations subsequent to any such secondary clearing calculation, and PJMSettlement shall require affected Participants to establish additional credit.

#### **G. FTR Administrative Charge Credit Requirement**

In addition to any other credit requirements, PJMSettlement may apply a credit requirement to cover the maximum administrative fees that may be charged to a Participant for its bids and offers.

#### **H. Long-Term FTR Credit Recalculation**

Long-term FTR Credit Requirement calculations shall be updated annually for known history, consistent with updating of historical values used for FTR Credit Requirement calculations in the annual auctions.

### **VI. EXPORT TRANSACTION SCREENING**

Export Transactions in the Real-time Energy Market shall be subject to Export Transaction Screening. Export Transaction Screening may be performed either for the duration of the entire Export Transaction, or separately for each time interval comprising an Export Transaction. PJM will deny or curtail all or a portion (based on the relevant time interval) of an Export Transaction if that Export Transaction, or portion thereof, would otherwise cause the Market Participant's Export Credit Exposure to exceed its Credit Available for Export Transactions. Export Transaction Screening shall be applied separately for each Operating Day and shall also be applied to each Export Transaction one or more times prior to the market clearing process for each relevant time interval. Export Transaction Screening shall not apply to transactions established directly by and between PJM and a neighboring Balancing Authority for the purpose of maintaining reliability.

A Market Participant's credit exposure for an individual Export Transaction shall be the MWh volume of the Export Transaction for each relevant time interval multiplied by each relevant Export Transaction Price Factor and summed over all relevant time intervals of the Export Transaction.

### **VII. FORMS OF FINANCIAL SECURITY**

Participants that provide Financial Security must provide the security in a PJMSettlement approved form and amount according to the guidelines below.

Financial Security which is no longer required to be maintained under provisions of the Agreements shall be returned at the request of a participant no later than two Business Days following determination by PJMSettlement within a commercially reasonable period of time that such collateral is not required.

Except when an event of default has occurred, a Participant may substitute an approved PJMSettlement form of Financial Security for another PJMSettlement approved form of Financial Security of equal value. The Participant must provide three (3) Business Days notice to PJMSettlement of its intent to substitute the Financial Security. PJMSettlement will release the replaced Financial Security with interest, if applicable, within (3) Business Days of receiving an approved form of substitute Financial Security.

## **A. Cash Deposit**

Cash provided by a Participant as Financial Security will be held in a depository account by PJMSettlement with interest earned at PJMSettlement's overnight bank rate, and accrued to the Participant. PJMSettlement also may establish an array of investment options among which a Participant may choose to invest its cash deposited as Financial Security. Such investment options shall be comprised of high quality debt instruments, as determined by PJMSettlement, and may include obligations issued by the federal government and/or federal government sponsored enterprises. These investment options will reside in accounts held in PJMSettlement's name in a banking or financial institution acceptable to PJMSettlement. Where practicable, PJMSettlement may establish a means for the Participant to communicate directly with the bank or financial institution to permit the Participant to direct certain activity in the PJMSettlement account in which its Financial Security is held. PJMSettlement will establish and publish procedural rules, identifying the investment options and respective discounts in collateral value that will be taken to reflect any liquidation, market and/or credit risk presented by such investments. PJMSettlement has the right to liquidate all or a portion of the account balances at its discretion to satisfy a Participant's Total Net Obligation to PJMSettlement in the event of default under this credit policy or one or more of the Agreements.

## **B. Letter Of Credit**

An unconditional, irrevocable standby letter of credit can be utilized to meet the Financial Security requirement. As stated below, the form, substance, and provider of the letter of credit must all be acceptable to PJMSettlement.

- The letter of credit will only be accepted from U.S.-based financial institutions or U.S. branches of foreign financial institutions ("financial institutions") that have a minimum corporate debt rating of "A" by Standard & Poor's or Fitch Ratings, or "A2" from Moody's Investors Service, or an equivalent short term rating from one of these agencies. PJMSettlement will consider the lowest applicable rating to be the rating of the financial institution. If the rating of a financial institution providing a letter of credit is lowered below A/A2 by any rating agency, then PJMSettlement may require the Participant to provide a letter of credit from another financial institution that is rated A/A2 or better, or to provide a cash deposit. If a letter of credit is provided from a U.S. branch of a foreign institution, the U.S. branch must itself comply with the terms of this credit policy, including having its own acceptable credit rating.
- The letter of credit shall state that it shall renew automatically for successive one-year periods, until terminated upon at least ninety (90) days prior written notice from the issuing financial institution. If PJM or PJMSettlement receives notice from the issuing financial institution that the current letter of credit is being cancelled, the Participant will be required to provide evidence, acceptable to PJMSettlement, that such letter of credit will be replaced with appropriate Financial Security, effective as of the cancellation date of the letter of credit, no later than thirty (30) days before the cancellation date of the letter of credit, and no later than ninety (90) days after the notice of cancellation. Failure

to do so will constitute a default under this credit policy and one of more of the Agreements.

- The letter of credit must clearly state the full names of the "Issuer", "Account Party" and "Beneficiary" (PJMSettlement), the dollar amount available for drawings, and shall specify that funds will be disbursed upon presentation of the drawing certificate in accordance with the instructions stated in the letter of credit. The letter of credit should specify any statement that is required to be on the drawing certificate, and any other terms and conditions that apply to such drawings.
- The PJMSettlement Credit Application contains an acceptable form of a letter of credit that should be utilized by a Participant choosing to meet its Financial Security requirement with a letter of credit. If the letter of credit varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a letter of credit and meeting the policy provisions are the responsibility of the Participant
- PJMSettlement may accept a letter of credit from a Financial Institution that does not meet the credit standards of this policy provided that the letter of credit has third-party support, in a form acceptable to PJMSettlement, from a financial institution that does meet the credit standards of this policy.

### **VIII. POLICY BREACH AND EVENTS OF DEFAULT**

A Participant will have two Business Days from notification of Breach (including late payment notice) or notification of a Collateral Call to remedy the Breach or satisfy the Collateral Call in a manner deemed acceptable by PJMSettlement. Failure to remedy the Breach or satisfy such Collateral Call within such two Business Days will be considered an event of default. If a Participant fails to meet the requirements of this policy but then remedies the Breach or satisfies a Collateral Call within the two Business Day cure period, then the Participant shall be deemed to have complied with the policy. Any such two Business Day cure period will expire at 4:00 p.m. eastern prevailing time on the final day.

Only one cure period shall apply to a single event giving rise to a breach or default. Application of Financial Security towards a non-payment Breach shall not be considered a satisfactory cure of the Breach if the Participant fails to meet all requirements of this policy after such application.

Failure to comply with this policy (except for the responsibility of a Participant to notify PJMSettlement of a Material change) shall be considered an event of default. Pursuant to § 15.1.3(a) of the Operating Agreement of PJM Interconnection, L.L.C. and § I.7.3 of the PJM Open Access Transmission Tariff, non-compliance with the PJMSettlement credit policy is an event of default under those respective Agreements. In event of default under this credit policy or one or more of the Agreements, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. PJMSettlement has the right to liquidate all or a portion of a Participant's Financial Security at

its discretion to satisfy Total Net Obligations to PJMSettlement in the event of default under this credit policy or one or more of the Agreements.

PJMSettlement may hold a defaulting Participant's Financial Security for as long as such party's positions exist and consistent with the PJM credit policy in this Attachment Q, in order to protect PJM's membership from default.

No payments shall be due to a Participant, nor shall any payments be made to a Participant, while the Participant is in default or has been declared in Breach of this policy or the Agreements, or while a Collateral Call is outstanding. PJMSettlement may apply towards an ongoing default any amounts that are held or later become available or due to the defaulting Participant through PJM's markets and systems.

In order to cover Obligations, PJMSettlement may hold a Participant's Financial Security through the end of the billing period which includes the 90th day following the last day a Participant had activity, open positions, or accruing obligations (other than reconciliations and true-ups), and until such Participant has satisfactorily paid any obligations invoiced through such period. Obligations incurred or accrued through such period shall survive any withdrawal from PJM. In event of non-payment, PJMSettlement may apply such Financial Security to such Participant's Obligations, even if Participant had previously announced and effected its withdrawal from PJM.

## **IX. DEFINITIONS:**

All capitalized terms in this Attachment Q that are not otherwise defined herein shall have the same meaning as they are defined in the Agreements.

### **Affiliate**

Affiliate is defined in the PJM Operating Agreement, §1.2.

### **Agreements**

Agreements are the Operating Agreement of PJM Interconnection, L.L.C., the PJM Open Access Transmission Tariff, the Reliability Assurance Agreement, the Reliability Assurance Agreement – West, and/or other agreements between PJM Interconnection, L.L.C. and its Members.

### **Applicant**

Applicant is an entity desiring to become a PJM Member, or to take Transmission Service that has submitted the PJMSettlement Credit Application, PJMSettlement Credit Agreement and other required submittals as set forth in this policy.

### **Breach**

Breach is the status of a Participant that does not currently meet the requirements of this policy or other provisions of the Agreements.

### **Business Day**

A Business Day is a day in which the Federal Reserve System is open for business and is not a scheduled PJM holiday.

**Canadian Guaranty**

Canadian Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in Canada, and meets all of the provisions of this credit policy.

**Capacity**

Capacity is the installed capacity requirement of the Reliability Assurance Agreement or similar such requirements as may be established.

**Collateral Call**

Collateral Call is a notice to a Participant that additional Financial Security, or possibly early payment, is required in order to remain in, or to regain, compliance with this policy.

**Corporate Guaranty**

Corporate Guaranty is a legal document used by one entity to guaranty the obligations of another entity.

**Credit Available for Export Transactions**

Credit Available for Export Transactions is a set-aside of credit to be used for Export Transactions that is allocated by each Market Participant from its Credit Available for Virtual Transactions, and which reduces the Market Participant's Credit Available for Virtual Transactions accordingly.

**Credit Available for Virtual Transactions**

A Market Participant's Credit Available for Virtual Transactions is the Market Participant's Working Credit Limit for Virtual Transactions calculated on its credit provided in compliance with its Peak Market Activity requirement plus available credit submitted above that amount, less any unpaid billed and unbilled amounts owed to PJMSettlement, plus any unpaid unbilled amounts owed by PJMSettlement to the Market Participant, less any applicable credit required for Minimum Participation Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy.

**Credit-Limited Offer**

Credit-Limited Offer shall mean a Sell Offer that is submitted by a Market Seller in an RPM Auction subject to a maximum credit requirement specified by such Market Seller.

**Credit Score**

Credit Score is a composite numerical score scaled from 0-100 as calculated by PJMSettlement that incorporates various predictors of creditworthiness.

**Export Credit Exposure**

Export Credit Exposure is determined for each Market Participant for a given Operating Day, and is the sum of credit exposures for the Market Participant's Export Transactions for that Operating Day and for the preceding Operating Day.

**Export Nodal Reference Price**



The Export Nodal Reference Price at each location is the 97th percentile real-time hourly integrated price experienced over the corresponding two-month period in the preceding calendar year, calculated separately for peak and off-peak time periods. The two-month time periods used in this calculation shall be January and February, March and April, May and June, July and August, September and October, and November and December.

### **Export Transaction**

An Export Transaction is a transaction by a Market Participant that results in the transfer of energy from within the PJM Control Area to outside the PJM Control Area. Coordinated External Transactions that result in the transfer of energy from the PJM Control Area to an adjacent Control Area are one form of Export Transaction.

### **Export Transactions Net Activity**

Export Transactions Net Activity shall mean the aggregate net total, resulting from Export Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Export Transactions Net Activity may be positive or negative.

### **Export Transaction Price Factor**

The Export Transaction Price Factor for a prospective time interval shall be the greater of (i) PJM's forecast price for the time interval, if available, or (ii) the Export Nodal Reference Price, but shall not exceed the Export Transaction's dispatch ceiling price cap, if any, for that time interval. The Export Transaction Price Factor for a past time interval shall be calculated in the same manner as for a prospective time interval, except that the Export Transaction Price Factor may use a tentative or final settlement price, as available. If an Export Nodal Reference Price is not available for a particular time interval, PJM may use an Export Transaction Price Factor for that time interval based on an appropriate alternate reference price.

### **Export Transaction Screening**

Export Transaction Screening is the process PJM uses to review the Export Credit Exposure of Export Transactions against the Credit Available for Export Transactions, and deny or curtail all or a portion of an Export Transaction, if the credit required for such transactions is greater than the credit available for the transactions.

### **Financial Security**

Financial Security is a cash deposit or letter of credit in an amount and form determined by and acceptable to PJMSettlement, provided by a Participant to PJMSettlement as security in order to participate in the PJM Markets or take Transmission Service.

### **Foreign Guaranty**

Foreign Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in a foreign country, and meets all of the provisions of this credit policy.

### **FTR Credit Limit**

FTR Credit Limit will be equal to the amount of credit established with PJMSettlement that a Participant has specifically designated to PJMSettlement to be set aside and used for FTR

activity. Any such credit so set aside shall not be considered available to satisfy any other credit requirement the Participant may have with PJMSettlement.

### **FTR Credit Requirement**

FTR Credit Requirement is the amount of credit that a Participant must provide in order to support the FTR positions that it holds and/or is bidding for. The FTR Credit Requirement shall not include months for which the invoicing has already been completed, provided that PJMSettlement shall have up to two Business Days following the date of the invoice completion to make such adjustments in its credit systems.

### **FTR Flow Undiversified**

FTR Flow Undiversified shall have the meaning established in section V.G of this Attachment Q.

### **FTR Geographically Undiversified**

FTR Geographically Undiversified shall have the meaning established in section V.G of this Attachment Q.

### **FTR Historical Value**

FTR Historical Value – For each FTR for each month, this is the historical weighted average value over three years for the FTR path using the following weightings: 50% - most recent year; 30% - second year; 20% - third year. FTR Historical Values shall be calculated separately for on-peak, off-peak, and 24-hour FTRs for each month of the year. FTR Historical Values shall be adjusted by plus or minus ten percent (10%) for cleared counterflow or normal flow FTRs, respectively, in order to mitigate exposure due to uncertainty and fluctuations in actual FTR value.

### **FTR Monthly Credit Requirement Contribution**

FTR Monthly Credit Requirement Contribution - For each FTR for each month, this is the total FTR cost for the month, prorated on a daily basis, less the FTR Historical Value for the month. For cleared FTRs, this contribution may be negative; prior to clearing, FTRs with negative contribution shall be deemed to have zero contribution.

### **FTR Net Activity**

FTR Net Activity shall mean the aggregate net value of the billing line items for auction revenue rights credits, FTR auction charges, FTR auction credits, and FTR congestion credits, and shall also include day-ahead and balancing/real-time congestion charges up to a maximum net value of the sum of the foregoing auction revenue rights credits, FTR auction charges, FTR auction credits and FTR congestion credits.

### **FTR Participant**

FTR Participant shall mean any Market Participant that is required to provide Financial Security in order to participate in PJM's FTR auctions.

### **FTR Portfolio Auction Value**

FTR Portfolio Auction Value shall mean for each Participant (or Participant account), the sum, calculated on a monthly basis, across all FTRs, of the FTR price times the FTR volume in MW.

### **Market Participant**

Market Participant shall have the meaning provided in the Operating Agreement.

### **Material**

For these purposes, material is defined in §I.B.3, Material Changes. For the purposes herein, the use of the term "material" is not necessarily synonymous with use of the term by governmental agencies and regulatory bodies.

### **Member**

Member shall have the meaning provided in the Operating Agreement.

### **Minimum Participation Requirements**

A set of minimum training, risk management, communication and capital or collateral requirements required for Participants in the PJM markets, as set forth herein and in the Form of Annual Certification set forth as Appendix 1 to this Attachment Q. Participants transacting in FTRs in certain circumstances will be required to demonstrate additional risk management procedures and controls as further set forth in the Annual Certification found in Appendix 1 to this Attachment Q.

### **Net Obligation**

Net Obligation is the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

### **Net Sell Position**

Net Sell Position is the amount of Net Obligation when Net Obligation is negative.

### **Nodal Reference Price**

The Nodal Reference Price at each location is the 97th percentile price differential between hourly day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. In order to capture seasonality effects and maintain a two-month reference period, reference months will be grouped by two, starting with January (e.g., Jan-Feb, Mar-Apr, ... , Jul-Aug, ... Nov-Dec). For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

### **Obligation**

Obligation is all amounts owed to PJMSettlement for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services or obligations pursuant to the Agreements. In addition, aggregate amounts that will be owed to PJMSettlement in the future for Capacity purchases within the PJM Capacity markets will be

added to this figure. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

**Operating Agreement of PJM Interconnection, L.L.C., (“Operating Agreement”)**

The Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., dated as of June 2, 1997, on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Participant**

A Participant is a Market Participant and/or Transmission Customer and/or Applicant requesting to be an active Market Participant and/or Transmission Customer.

**Peak Market Activity**

Peak Market Activity is a measure of exposure for which credit is required, involving peak exposures in rolling three-week periods over a year timeframe, with two semi-annual reset points, pursuant to provisions of section II.D of this Credit Policy.

**PJM Markets**

The PJM Markets are the PJM Interchange Energy Market and the PJM Capacity markets as established by the Operating Agreement. Also any other markets that exist or may be established in the future wherein Participants may incur Obligations to PJMSettlement.

**PJM Open Access Transmission Tariff (“O.A.T.T.”)**

The Open Access Transmission Tariff of PJM Interconnection, L.L.C., on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Reliability Assurance Agreement (“R.A.A.”)**

See the definition of the Reliability Assurance Agreement (“R.A.A.”) in the Operating Agreement.

**RPM Seller Credit**

RPM Seller Credit is an additional form of Unsecured Credit defined in section IV of this document.

**Seller Credit**

A Seller Credit is a form of Unsecured Credit extended to Participants that have a consistent long-term history of selling into PJM Markets, as defined in this document.

**Tangible Net Worth**

Tangible Net Worth is all assets (not including any intangible assets such as goodwill) less all liabilities. Any such calculation may be reduced by PJMSettlement upon review of the available financial information.

**Total Net Obligation**

Total Net Obligation is all unpaid billed Net Obligations plus any unbilled Net Obligation incurred to date, as determined by PJMSettlement on a daily basis, plus any other Obligations owed to PJMSettlement at the time.

**Total Net Sell Position**

Total Net Sell Position is all unpaid billed Net Sell Positions plus any unbilled Net Sell Positions accrued to date, as determined by PJMSettlement on a daily basis.

**Transmission Customer**

Transmission Customer is a Transmission Customer is an entity taking service under Part II or Part III of the O.A.T.T.

**Transmission Service**

Transmission Service is any or all of the transmission services provided by PJM pursuant to Part II or Part III of the O.A.T.T.

**Uncleared Bid Exposure**

Uncleared Bid Exposure is a measure of exposure from Increment Offers and Decrement Bids activity relative to a Participant's established credit as defined in this policy. It is used only as a pre-screen to determine whether a Participant's Increment Offers and Decrement Bids should be subject to Increment Offer and Decrement Bid Screening.

**Unsecured Credit**

Unsecured Credit is any credit granted by PJMSettlement to a Participant that is not secured by a form of Financial Security.

**Unsecured Credit Allowance**

Unsecured Credit Allowance is Unsecured Credit extended by PJMSettlement in an amount determined by PJMSettlement's evaluation of the creditworthiness of a Participant. This is also defined as the amount of credit that a Participant qualifies for based on the strength of its own financial condition without having to provide Financial Security. See also: "Working Credit Limit."

**Up-to Congestion Counterflow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Counterflow Transaction if the following value is negative: (a) when bidding, the lower of the bid price and the prior Up-to Congestion Historical Month's average real-time value for the transaction; or (b) for cleared Virtual Transactions, the cleared day-ahead price of the Virtual Transactions.

**Up-to Congestion Historical Month**

An Up-to Congestion Historical Month is a consistently-defined historical period nominally one month long that is as close to a calendar month as PJM determines is practical.

**Up-to Congestion Prevailing Flow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Prevailing Flow Transaction if it is not an Up-to Congestion Counterflow Transaction.

**Up-to Congestion Reference Price**

The Up-to Congestion Reference Price for an Up-to Congestion Transaction is the specified percentile price differential between source and sink (defined as sink price minus source price) for hourly real-time prices experienced over the prior Up-to Congestion Historical Month, averaged with the same percentile value calculated for the second prior Up-to Congestion Historical Month. Up-to Congestion Reference Prices shall be calculated using the following historical percentiles:

- For Up-to Congestion Prevailing Flow Transactions: 30<sup>th</sup> percentile
- For Up-to Congestion Counterflow Transactions when bid: 20<sup>th</sup> percentile
- For Up-to Congestion Counterflow Transactions when cleared: 5<sup>th</sup> percentile

**Virtual Credit Exposure**

Virtual Credit Exposure is the amount of potential credit exposure created by a market participant's bid submitted into the Day-ahead market, as defined in this policy.

**Virtual Transaction Screening**

Virtual Transaction Screening is the process of reviewing the Virtual Credit Exposure of submitted Virtual Transactions against the Credit Available for Virtual Transactions. If the credit required is greater than credit available, then the Virtual Transactions will not be accepted.

**Virtual Transactions Net Activity**

Virtual Transactions Net Activity shall mean the aggregate net total, resulting from Virtual Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Virtual Transactions Net Activity may be positive or negative.

**Working Credit Limit**

Working Credit Limit amount is 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement. The Working Credit Limit establishes the maximum amount of Total Net Obligation that a Market Participant may have outstanding at any time. The calculation of Working Credit Limit shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.

**Working Credit Limit for Virtual Transactions**

The Working Credit Limit for Virtual Transactions shall be calculated as 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement when the Market Participant is at or below its Peak Market Activity credit requirements as specified in section II.D of this Credit Policy. When the Market Participant provides additional Unsecured Credit Allowance and/or Financial Security in excess of its Peak Market Activity credit requirements, such additional Unsecured Credit Allowance and/or Financial Security shall not be discounted by 25% when calculating the Working Credit Limit for Virtual Transactions. The Working Credit Limit for Virtual Transactions is a component in the calculation of Credit Available for Virtual Transactions. The calculation of Working Credit Limit for Virtual Transactions shall take into account applicable reductions for

Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.

**Appendix 1 to Attachment Q**



**PJM MINIMUM PARTICIPATION CRITERIA  
OFFICER CERTIFICATION FORM**

Participant Name: _____ ("Participant")
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I, \_\_\_\_\_, a duly authorized officer of Participant, understanding that PJM Interconnection, L.L.C. and PJM Settlement, Inc. ("PJMSettlement") are relying on this certification as evidence that Participant meets the minimum requirements set forth in Attachment Q to the PJM Open Access Transmission Tariff ("PJM Tariff"), hereby certify that I have full authority to represent on behalf of Participant and further represent as follows, as evidenced by my initialing each representation in the space provided below:

1. All employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Amended and Restated Operating Agreement ("PJM Operating Agreement") on behalf of the Participant have received appropriate<sup>1</sup> training and are authorized to transact on behalf of Participant. \_\_\_\_\_
  
2. Participant has written risk management policies, procedures, and controls, approved by Participant's independent risk management function<sup>2</sup> and applicable to transactions in the PJM markets in which it participates and for which employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Operating Agreement have been trained, that provide an appropriate, comprehensive risk management framework that, at a minimum, clearly identifies and documents the range of risks to which Participant is exposed, including, but not limited to credit risks, liquidity risks and market risks. \_\_\_\_\_
  
3. An FTR Participant (as defined in Attachment Q to the PJM Tariff) must make either the following 3.a. or 3.b. additional representations, evidenced by the undersigned officer initialing either the one 3.a. representation or the six 3.b. representations in the spaces provided below:
  - 3.a. Participant transacts in PJM's FTR markets with the sole intent to hedge congestion risk in connection with either obligations Participant has to serve load or rights Participant has to generate electricity in the PJM Region ("physical

<sup>1</sup> As used in this representation, the term "appropriate" as used with respect to training means training that is (i) comparable to generally accepted practices in the energy trading industry, and (ii) commensurate and proportional in sophistication, scope and frequency to the volume of transactions and the nature and extent of the risk taken by the participant.

<sup>2</sup> As used in this representation, a Participant's "independent risk management function" can include appropriate corporate persons or bodies that are independent of the Participant's trading functions, such as a risk management committee, a risk officer, a Participant's board or board committee, or a board or committee of the Participant's parent company.

transactions”) and monitors all of the Participant’s FTR market activity to endeavor to ensure that its FTR positions, considering both the size and pathways of the positions, are either generally proportionate to or generally do not exceed the Participant’s physical transactions, and remain generally consistent with the Participant’s intention to hedge its physical transactions. \_\_\_\_\_

- 3.b. On no less than a weekly basis, Participant values its FTR positions and engages in a probabilistic assessment of the hypothetical risk of such positions using analytically based methodologies, predicated on the use of industry accepted valuation methodologies. \_\_\_\_\_

Such valuation and risk assessment functions are performed either by persons within Participant’s organization independent from those trading in PJM’s FTR markets or by an outside firm qualified and with expertise in this area of risk management. \_\_\_\_\_

Having valued its FTR positions and quantified their hypothetical risks, Participant applies its written policies, procedures and controls to limit its risks using industry recognized practices, such as value-at-risk limitations, concentration limits, or other controls designed to prevent Participant from purposefully or unintentionally taking on risk that is not commensurate or proportional to Participant’s financial capability to manage such risk. \_\_\_\_\_

Exceptions to Participant’s written risk policies, procedures and controls applicable to Participant’s FTR positions are documented and explain a reasoned basis for the granting of any exception. \_\_\_\_\_

Participant has provided to PJMSettlement, in accordance with Section I A. of Attachment Q to the PJM Tariff, a copy of its current governing risk management policies, procedures and controls applicable to its FTR trading activities. \_\_\_\_\_

If the risk management policies, procedures and controls applicable to Participant’s FTR trading activities submitted to PJMSettlement were submitted prior to the current certification, Participant certifies that no substantive changes have been made to such policies, procedures and controls applicable to its FTR trading activities since such submission. \_\_\_\_\_

4. Participant has appropriate personnel resources, operating procedures and technical abilities to promptly and effectively respond to all PJM communications and directions. \_\_\_\_\_
5. Participant has demonstrated compliance with the Minimum Capitalization criteria set forth in Attachment Q of the PJM Open Access Transmission Tariff that are applicable to the PJM market(s) in which Participant transacts, and is not aware of any change having occurred or being imminent that would invalidate such compliance. \_\_\_\_\_

6. All Participants must certify and initial in at least one of the four sections below:
- a. I certify that Participant qualifies as an “appropriate person” as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act or an “eligible contract participant” as that term is defined under Section 1a(18), or successor provision, of the Commodity Exchange Act. I certify that Participant will cease transacting in PJM’s Markets and notify PJMSettlement immediately if Participant no longer qualifies as an “appropriate person” or “eligible contract participant.” \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “appropriate person:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$5 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “eligible contract participant:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$10 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

- b. I certify that Participant has provided an unlimited Corporate Guaranty in a form acceptable to PJM as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant per Participant for which the issuer has issued an unlimited Corporate Guaranty. I certify that Participant will cease transacting PJM’s Markets and notify PJMSettlement immediately if issuer of the unlimited Corporate Guaranty for Participant no longer has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. \_\_\_\_\_

I certify that the issuer of the unlimited Corporate Guaranty to Participant continues to have at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. I acknowledge that PJM and PJMSettlement are relying upon my certifications to maintain compliance with federal regulatory requirements.\_\_\_\_\_

c. I certify that Participant fulfills the eligibility requirements of the Commodity Futures Trading Commission exemption order (78 F.R. 19880 – April 2, 2013) by being in the business of at least one of the following in the PJM Region as indicated below (initial those applicable):

1. Generating electric energy, including Participants that resell physical energy acquired from an entity generating electric energy:\_\_\_\_\_
2. Transmitting electric energy:\_\_\_\_\_
3. Distributing electric energy delivered under Point-to-Point or Network Integration Transmission Service, including scheduled import, export and wheel through transactions:\_\_\_\_\_
4. Other electric energy services that are necessary to support the reliable operation of the transmission system:\_\_\_\_\_

Description only if c(4) is initialed:

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Further, I certify that Participant will cease transacting in PJM's Markets and notify PJMSettlement immediately if Participant no longer performs at least one of the functions noted above in the PJM Region. I acknowledge that PJM and PJMSettlement are relying on my certification to maintain compliance with federal energy regulatory requirements.\_\_\_\_\_

- d. I certify that Participant has provided a letter of credit of \$5 million or more to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Participant acknowledges cannot be utilized to meet its credit requirements to PJMSettlement. I acknowledge that PJM and PJMSettlement are relying on the provision of this letter of credit and my certification to maintain compliance with federal regulatory requirements.\_\_\_\_\_
7. I acknowledge that I have read and understood the provisions of Attachment Q of the PJM Tariff applicable to Participant's business in the PJM markets, including those provisions describing PJM's minimum participation requirements and the enforcement actions available to PJMSettlement of a Participant not satisfying those requirements. I acknowledge that the information provided herein is true and accurate to the best of my belief and knowledge after due investigation. In addition, by signing this Certification, I

acknowledge the potential consequences of making incomplete or false statements in this Certification. \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

## 2. DEFINITIONS

Definitions specific to this Attachment are set forth below. In addition, any capitalized terms used in this Attachment not defined herein shall have the meaning given to such terms elsewhere in this Tariff or in the Operating Agreement or RAA. References to section numbers in this Attachment DD refer to sections of this attachment, unless otherwise specified.

### 2.1A Annual Demand Resource

“Annual Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### 2.1A Annual Energy Efficiency Resource

“Annual Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### 2.1B Annual Resource

“Annual Resource” shall mean a Generation Capacity Resource, an Annual Energy Efficiency Resource or an Annual Demand Resource.

### 2.1C Annual Resource Price Adder

“Annual Resource Price Adder” shall mean, for Delivery Years starting June 1, 2014 and ending May 31, 2017, an addition to the marginal value of Unforced Capacity and the Extended Summer Resource Price Adder as necessary to reflect the price of Annual Resources required to meet the applicable Minimum Annual Resource Requirement.

### 2.1D Annual Revenue Rate

“Annual Revenue Rate” shall mean the rate employed to assess a compliance penalty charge on a Curtailment Service Provider under section 11.

## 2.2 Avoidable Cost Rate

“Avoidable Cost Rate” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### 2.2A Base Capacity Demand Resource

“Base Capacity Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## 2.2B Base Capacity Demand Resource Constraint

“Base Capacity Demand Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the Base Capacity Demand Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year in question and calculates the LOLE at each DR and EE level. The Base Capacity Demand Resource Constraint is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE, compared to the reference value. The Base Capacity Demand Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## 2.2C Base Capacity Demand Resource Price Decrement

“Base Capacity Demand Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for Base Capacity Resources and Capacity Performance Resources, representing the cost to procure additional Base Capacity Resources or Capacity Performance Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.

## 2.2D Base Capacity Energy Efficiency Resource

“Base Capacity Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### 2.2E Base Capacity Resource

“Base Capacity Resource” shall mean a Capacity Resource as described in section 5.5A(b).

#### 2.2F Base Capacity Resource Constraint

“Base Capacity Resource Reliability Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the above Base Capacity Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses the weekly load distribution from the Installed Reserve Margin study for the Delivery Year in question (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a weekly load distribution (based on the Installed Reserve Margin study and the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question. Additionally, for the PJM Region and relevant LDA calculation, the weekly capacity distributions are adjusted to reflect winter ratings.

For both the PJM Region and LDA analyses, PJM models the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed generation). PJM then models the commitment of varying amounts of Base Capacity Resources (displacing otherwise committed generation) as unavailable during the peak week of winter and available the rest of the Delivery Year in question and calculates the LOLE at each Base Capacity Resource level. The Base Capacity Resource Constraint is the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Base Capacity Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].



“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

#### 2.2G Base Capacity Resource Price Decrement

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

### **2.3 Base Load Generation Resource**

“Base Load Generation Resource” shall mean a Generation Capacity Resource that operates at least 90 percent of the hours that it is available to operate, as determined by the Office of the Interconnection in accordance with the PJM Manuals.

### **2.4 Base Offer Segment**

“Base Offer Segment” shall mean a component of a Sell Offer based on an existing Generation Capacity Resource, equal to the Unforced Capacity of such resource, as determined in accordance with the PJM Manuals. If the Sell Offers of multiple Market Sellers are based on a single Existing Generation Capacity Resource, the Base Offer Segments of such Market Sellers shall be determined pro rata based on their entitlements to Unforced Capacity from such resource.

### **2.5 Base Residual Auction**

“Base Residual Auction” shall mean the auction conducted three years prior to the start of the Delivery Year to secure commitments from Capacity Resources as necessary to satisfy any portion of the Unforced Capacity Obligation of the PJM Region not satisfied through Self-Supply.

### **2.6 Buy Bid**

“Buy Bid” shall mean a bid to buy Capacity Resources in any Incremental Auction.

#### **2.6A Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall mean a geographic area of Zones or sub-Zones that are electrically-contiguous and experience for the relevant Delivery Year, based on Resource Clearing Prices of for Delivery Years through May 31, 2018, Annual Resources and for the

2018/2019 Delivery Year and subsequent Delivery Years, Capacity Performance Resources, the same locational price separation in the Base Residual Auction, the same locational price separation in the First Incremental Auction, the same locational price separation in the Second Incremental Auction, or the same locational price separation in the Third Incremental Auction.

## **2.7 Capacity Credit**

“Capacity Credit” shall have the meaning specified in Schedule 11 of the Operating Agreement, including Capacity Credits obtained prior to the termination of such Schedule applicable to periods after the termination of such Schedule.

## **2.8 Capacity Emergency Transfer Limit**

“Capacity Emergency Transfer Limit” or “CETL” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.9 Capacity Emergency Transfer Objective**

“Capacity Emergency Transfer Objective” or “CETO” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.9A Capacity Export Transmission Customer**

“Capacity Export Transmission Customer” shall mean a customer taking point to point transmission service under Part II of this Tariff to export capacity from a generation resource located in the PJM Region that has qualified for an exception to the RPM must-offer requirement as described in section 6.6(g).

## **2.9B Capacity Import Limit**

“Capacity Import Limit” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.10 Capacity Market Buyer**

“Capacity Market Buyer” shall mean a Member that submits bids to buy Capacity Resources in any Incremental Auction.

## **2.11 Capacity Market Seller**

“Capacity Market Seller” shall mean a Member that owns, or has the contractual authority to control the output or load reduction capability of, a Capacity Resource, that has not transferred such authority to another entity, and that offers such resource in the Base Residual Auction or an Incremental Auction.

## **2.11A Capacity Performance Resource**

“Capacity Performance Resource” shall mean a Capacity Resource as described in section 5.5A(a).

### **2.11B Capacity Performance Transition Incremental Auction**

“Capacity Performance Transition Incremental Auction” shall have the meaning specified in section 5.14D.

### **2.12 Capacity Resource**

“Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.13 Capacity Resource Clearing Price**

“Capacity Resource Clearing Price” shall mean the price calculated for a Capacity Resource that offered and cleared in a Base Residual Auction or Incremental Auction, in accordance with Section 5.

### **2.13A Capacity Storage Resource**

“Capacity Storage Resource” shall mean any hydroelectric power plant, flywheel, battery storage, or other such facility solely used for short term storage and injection of energy at a later time to participate in the PJM energy and/or Ancillary Services markets and which participates in the Reliability Pricing Model.

### **2.14 Capacity Transfer Right**

“Capacity Transfer Right” shall mean a right, allocated to LSEs serving load in a Locational Deliverability Area, to receive payments, based on the transmission import capability into such Locational Deliverability Area, that offset, in whole or in part, the charges attributable to the Locational Price Adder, if any, included in the Zonal Capacity Price calculated for a Locational Delivery Area.

### **2.14A Conditional Incremental Auction**

“Conditional Incremental Auction” shall mean an Incremental Auction conducted for a Delivery Year if and when necessary to secure commitments of additional capacity to address reliability criteria violations arising from the delay in a Backbone Transmission upgrade that was modeled in the Base Residual Auction for such Delivery Year.

### **2.15 CONE Area**

“CONE Area” shall mean the areas listed in section 5.10(a)(iv)(A) and any LDAs established as CONE Areas pursuant to section 5.10(a)(iv)(B).

## **2.16 Cost of New Entry**

“Cost of New Entry” or “CONE” shall mean the nominal levelized cost of a Reference Resource, as determined in accordance with section 5.

### **2.16A Credit-Limited Offer**

“Credit-Limited Offer” shall have the meaning provided in Attachment Q to this Tariff.

## **2.17 Daily Deficiency Rate**

“Daily Deficiency Rate” shall mean the rate employed to assess certain deficiency charges under sections 7, 8, 9, or 13.

## **2.18 Daily Unforced Capacity Obligation**

“Daily Unforced Capacity Obligation” shall mean the capacity obligation of a Load Serving Entity during the Delivery Year, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

## **2.19 Delivery Year**

Delivery Year shall mean the Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Section 5.

## **2.20 Demand Resource**

“Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.21 Demand Resource Factor or DR Factor**

“Demand Resource Factor” or “DR Factor” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.22 [Reserved for Future Use]**

## **2.23 EFORD**

“EFORD” shall have the meaning specified in the PJM Reliability Assurance Agreement.

### **2.23A Emergency Action**

“Emergency Action” shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action including, but not limited to, a Voltage

Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

**2.24 Energy Efficiency Resource**

“Energy Efficiency Resource” shall have the meaning specified in the PJM Reliability Assurance Agreement.

**2.24A Extended Summer Demand Resource**

“Extended Summer Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

**2.24B Extended Summer Resource Price Adder**

“Extended Summer Resource Price Adder” shall mean, for Delivery Years through May 31, 2018, an addition to the marginal value of Unforced Capacity as necessary to reflect the price of Annual Resources and Extended Summer Demand Resources required to meet the applicable Minimum Extended Summer Resource Requirement.

**2.24C Sub-Annual Resource Reliability Target**

“Sub-Annual Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of the combination of Extended Summer Demand Resources and Limited Demand Resources in Unforced Capacity determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity, that shall be used to calculate the Minimum Annual Resource Requirement for Delivery Years through May 31, 2017 and the Sub-Annual Resource Constraint for the 2017/2018 Delivery Years beginning June 1, 2017. As more fully set forth in the PJM Manuals, PJM calculates the Sub-Annual Resource Reliability Target, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Demand Resources. The calculation for the unconstrained portion of the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Capacity Emergency Transfer Objective study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of DR (displacing otherwise committed generation) as interruptible from May 1 through October 31 and unavailable from November 1 through April 30 and calculates the LOLE at each DR level. The Extended Summer DR Reliability Target is the DR amount, stated as a percentage of the unrestricted peak load, that produces no more than a ten percent increase in the LOLE,

compared to the reference value. The Sub-Annual Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## **2.25 Sub-Annual Resource Constraint**

“Sub-Annual Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region or for each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources and Extended Summer Demand Resources for ~~such~~the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Sub-Annual Resource Reliability Target for the PJM Region or for such LDA, respectively, minus the Short-Term Resource Procurement Target for the PJM Region or for such LDA, respectively.

## **2.26 Final RTO Unforced Capacity Obligation**

“Final RTO Unforced Capacity Obligation” shall mean the capacity obligation for the PJM Region, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

### **2.26A [Reserved]**

## **2.27 First Incremental Auction**

“First Incremental Auction” shall mean an Incremental Auction conducted 20 months prior to the start of the Delivery Year to which it relates.

## **2.28 Forecast Pool Requirement**

“Forecast Pool Requirement” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.29 [Reserved]**

### **2.30 [Reserved]**

## **2.31 Generation Capacity Resource**

“Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.32 Generator Forced Outage**

“Generator Forced Outage” shall have the meaning specified in the Operating Agreement.

### 2.33 Generator Maintenance Outage

“Generator Maintenance Outage” shall have the meaning specified in the Operating Agreement.

### 2.33A Generator Planned Outage

“Generator Planned Outage” shall have the meaning specified in the Operating Agreement.

~~2.32 [Reserved]~~

~~2.33 [Reserved]~~

### **2.34 Incremental Auction**

“Incremental Auction” shall mean any of several auctions conducted for a Delivery Year after the Base Residual Auction for such Delivery Year and before the first day of such Delivery Year, including the First Incremental Auction, Second Incremental Auction, Third Incremental Auction or Conditional Incremental Auction. Incremental Auctions (other than the Conditional Incremental Auction), shall be held for the purposes of:

(i) allowing Market Sellers that committed Capacity Resources in the Base Residual Auction for a Delivery Year, which subsequently are determined to be unavailable to deliver the committed Unforced Capacity in such Delivery Year (due to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences) to submit Buy Bids for replacement Capacity Resources; and

(ii) allowing the Office of the Interconnection to reduce or increase the amount of committed capacity secured in prior auctions for such Delivery Year if, as a result of changed circumstances or expectations since the prior auction(s), there is, respectively, a significant excess or significant deficit of committed capacity for such Delivery Year, for the PJM Region or for an LDA.

### **2.35 Incremental Capacity Transfer Right**

“Incremental Capacity Transfer Right” shall mean a Capacity Transfer Right allocated to a Generation Interconnection Customer or Transmission Interconnection Customer obligated to fund a transmission facility or upgrade, to the extent such upgrade or facility increases the transmission import capability into a Locational Deliverability Area, or a Capacity Transfer Right allocated to a Responsible Customer in accordance with Schedule 12A of the Tariff.

### **2.36 Intermittent Resource**

“Intermittent Resource” shall mean a Generation Capacity Resource with output that can vary as a function of its energy source, such as wind, solar, run of river hydroelectric power and other renewable resources. [Reserved]

### **2.36A Limited Demand Resource**

“Limited Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.36B Limited Demand Resource Reliability Target**

“Limited Demand Resource Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 Delivery Years ~~beginning June 1, 2017~~ for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g., the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016-/2017 and subsequent 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool



Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

### **2.36C Limited Resource Constraint**

“Limited Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region or each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for ~~such the~~ 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

### **2.36D Limited Resource Price Decrement**

“Limited Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year ~~commencing June 1, 2017 and subsequent Delivery Years~~, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

### **2.37 Load Serving Entity (LSE)**

“Load Serving Entity” or “LSE” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.38 Locational Deliverability Area (LDA)**

“Locational Deliverability Area” or “LDA” shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area’s reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Schedule 10.1 of the Reliability Assurance Agreement.

### **2.39 Locational Deliverability Area Reliability Requirement**

“Locational Deliverability Area Reliability Requirement” shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

### **2.40 Locational Price Adder**

“Locational Price Adder” shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

## **2.41 Locational Reliability Charge**

“Locational Reliability Charge” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.41A Locational UCAP**

“Locational UCAP” shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

### **2.41B Locational UCAP Seller**

“Locational UCAP Seller” shall mean a Member that sells Locational UCAP.

### **2.41C Market Seller Offer Cap**

“Market Seller Offer Cap” shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with section 6 of Attachment DD and section II.E of Attachment M - Appendix.

### **2.41D Minimum Annual Resource Requirement**

“Minimum Annual Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

### **2.41E Minimum Extended Summer Resource Requirement**

“Minimum Extended Summer Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO

Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

#### **2.42 Net Cost of New Entry**

“Net Cost of New Entry” shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset, as defined in Section 5.

#### **2.43 Nominated Demand Resource Value**

“Nominated Demand Resource Value” shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

#### **2.43A Nominated Energy Efficiency Value**

“Nominated Energy Efficiency Value” shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

#### **2.44 [Reserved]**

#### **2.45 Opportunity Cost**

“Opportunity Cost” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

#### **2.46 Peak-Hour Dispatch**

“Peak-Hour Dispatch” shall mean, for purposes of calculating the Energy and Ancillary Services Revenue Offset under section 5 of this Attachment, an assumption, as more fully set forth in the PJM Manuals, that the Reference Resource is committed in the Day-Ahead Energy Market in four distinct blocks of four hours of continuous output for each block from the peak-hour period beginning with the hour ending 0800 EPT through to the hour ending 2300 EPT for any day when the average day-ahead LMP for the area for which the Net Cost of New Entry is being determined is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle) for at least two hours during each four-hour block, where such blocks shall be assumed to be committed independently; provided that, if there are not at least two economic hours in any given four-hour block, then the Reference Resource shall be assumed not to be committed for such block; and to the extent not committed in any such block in the Day-

Ahead Energy Market under the above conditions based on Day-Ahead LMPs, is dispatched in the Real-Time Energy Market for such block if the Real-Time LMP is greater than or equal to the cost to generate under the same conditions as described above for the Day-Ahead Energy Market.

#### **2.47 Peak Season**

“Peak Season” shall mean the weeks containing the 24th through 36th Wednesdays of the calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

#### **2.48 Percentage Internal Resources Required**

“Percentage Internal Resources Required” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.48A Performance Assessment Hour**

“Performance Assessment Hour” shall mean each whole or partial clock-hour for which an Emergency Action has been declared by the Office of the Interconnection, provided, however, that Performance Assessment Hours for a Base Capacity Resource shall not include any hours outside the calendar months of June through September.

#### **2.49 Planned Demand Resource**

“Planned Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50 Planned External Generation Capacity Resource**

“Planned External Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50A Planned Generation Capacity Resource**

“Planned Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.51 Planning Period**

“Planning Period” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.52 PJM Region**

“PJM Region” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.53 PJM Region Installed Reserve Margin**

“PJM Region Installed Reserve Margin” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.54 PJM Region Peak Load Forecast**

“PJM Region Peak Load Forecast” shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in section 5.

### **2.55 PJM Region Reliability Requirement**

“PJM Region Reliability Requirement” shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

### **2.56 Projected PJM Market Revenues**

“Projected PJM Market Revenues” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.57 Qualifying Transmission Upgrade**

“Qualifying Transmission Upgrade” shall mean a proposed enhancement or addition to the Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

### **2.58 Reference Resource**

“Reference Resource” shall mean a combustion turbine generating station, configured with two General Electric Frame 7FA turbines with inlet air cooling to 50 degrees, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 10.096 Mmbtu/MWh.

### **2.59 Reliability Assurance Agreement**

“Reliability Assurance Agreement” shall mean that certain “Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region,” on file with FERC as PJM Interconnection, L.L.C. Rate Schedule FERC No.44.

## **2.60 Reliability Pricing Model Auction**

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

### **2.60A Repowered / Repowering**

“Repowering” or “Repowered” shall refer to a partial or total replacement of existing steam production equipment with new technology or a partial or total replacement of steam production process and power generation equipment, or an addition of steam production and/or power generation equipment, or a change in the primary fuel being used at the plant. A resource can be considered Repowered whether or not such aforementioned replacement, addition, or fuel change provides an increase in installed capacity, and whether or not the pre-existing plant capability is formally deactivated or retired.

## **2.61 Resource Substitution Charge**

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

### **2.61A Scheduled Incremental Auctions**

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

## **2.62 Second Incremental Auction**

“Second Incremental Auction” shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

## **2.63 Sell Offer**

“Sell Offer” shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

## **2.64 [Reserved for Future Use]**

## **2.65 Self-Supply**

“Self-Supply” shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this Attachment or the Reliability Assurance Agreement through submission in a Base Residual

Auction or an Incremental Auction of a Sell Offer indicating such Market Seller's intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity's Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed "Self-Supply," unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

### **2.65A Short-Term Resource Procurement Target**

"Short-Term Resource Procurement Target" shall mean, for Delivery Years through May 31, 2018, as to the PJM Region, for purposes of the Base Residual Auction, 2.5% of the PJM Region Reliability Requirement determined for such Base Residual Auction, for purposes of the First Incremental Auction, 2% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, for purposes of the Second Incremental Auction, 1.5% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, as to any Zone, an allocation of the PJM Region Short-Term Resource Procurement Target based on the Preliminary Zonal Forecast Peak Load, reduced by the amount of load served under the FRR Alternative. For any LDA, the LDA Short-Term Resource Procurement Target shall be the sum of the Short-Term Resource Procurement Targets of all Zones in the LDA.

### **2.65B Short-Term Resource Procurement Target Applicable Share**

"Short-Term Resource Procurement Target Applicable Share" shall mean, for Delivery Years through May 31, 2018: (i) for the PJM Region, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction and, as to the Third Incremental Auction for the PJM Region, 0.6 times such target; and (ii) for an LDA, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction for such LDA and, as to the Third Incremental Auction, 0.6 times such target.

#### **2.65B.01 Small Commercial Customer**

"Small Commercial Customer," as used in Schedule 6 of the RAA and Attachment DD-1 of the Tariff, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a "small commercial customer" under the terms of the applicable RERRA's program, provided that the customer has an annual peak demand no greater than 100kW.

### **2.65C Sub-Annual Resource Price Decrement**

"Sub-Annual Resource Price Decrement" shall mean, for the 2017/2018 Delivery Year commencing June 1, 2017 and subsequent Delivery Years, a difference between the clearing price for Extended Summer Demand Resources and the clearing price for Annual Resources, representing the cost to procure additional Annual Resources out of merit order when the Sub-

Annual Resource Constraint is binding.

### **2.66 Third Incremental Auction**

“Third Incremental Auction” shall mean an Incremental Auction conducted three months before the Delivery Year to which it relates.

### **2.67 [Reserved for Future Use]**

### **2.68 Unconstrained LDA Group**

“Unconstrained LDA Group” shall mean a combined group of LDAs that form an electrically contiguous area and for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD. Any LDA for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD shall be combined with all other such LDAs that form an electrically contiguous area.

### **2.69 Unforced Capacity**

“Unforced Capacity” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.69A Updated VRR Curve**

“Updated VRR Curve” shall mean the Variable Resource Requirement Curve as defined in section 5.10(a) of this Attachment for use in the Base Residual Auction of the relevant Delivery Year, updated to reflect ~~the Short-term Resource Procurement Target applicable to the relevant Incremental Auction and~~ any change in the Reliability Requirement from the Base Residual Auction to such Incremental Auction, and for Delivery Years through May 31, 2018, the Short-term Resource Procurement Target applicable to the relevant Incremental Auction.

### **2.69B Updated VRR Curve Increment**

“Updated VRR Curve Increment” shall mean the portion of the Updated VRR Curve to the right of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this Attachment DD.*

### **2.69C Updated VRR Curve Decrement**

“Updated VRR Curve Decrement” shall mean the portion of the Updated VRR Curve to the left of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this attachment DD.*



## **2.70 Variable Resource Requirement Curve**

“Variable Resource Requirement Curve” shall mean a series of maximum prices that can be cleared in a Base Residual Auction for Unforced Capacity, corresponding to a series of varying resource requirements based on varying installed reserve margins, as determined by the Office of the Interconnection for the PJM Region and for certain Locational Deliverability Areas in accordance with the methodology provided in Section 5.

## **2.71 Zonal Capacity Price**

“Zonal Capacity Price” shall mean the clearing price required in each Zone to meet the demand for Unforced Capacity and satisfy Locational Deliverability Requirements for the LDA or LDAs associated with such Zone. If the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA.

### 3. RESPONSIBILITIES OF THE OFFICE OF THE INTERCONNECTION

#### 3.1 Support for Self-Supply and Bilateral Transactions

The Office of the Interconnection shall:

(a) support electronic tools to facilitate communication by Market Sellers and Market Buyers of information to the Office of the Interconnection concerning Self-Supply arrangements;

(b) support an electronic bulletin board providing a forum for prospective buyers and sellers to transact Capacity Resources outside the Reliability Pricing Model Auctions, including Locational UCAP transactions (including mechanisms to allow prospective Sellers with partial-year resources to explore voluntary opportunities to combine their resources such that they can be offered together for a full Delivery Year) and support electronic tools to report bilateral capacity transactions between Market Participants to the Office of the Interconnection, in accordance with procedures set forth in the PJM Manuals; and

(c) define one or more capacity trading hubs and determine and publicize values for such hubs based on the capacity prices determined for one or more Locational Deliverability Areas, in accordance with the PJM Manuals.

#### 3.2 Administration of the Base Residual Auction and Incremental Auctions

The Office of the Interconnection shall conduct and administer the Base Residual Auction and Incremental Auctions in accordance with this Attachment, the Operating Agreement, and the Reliability Assurance Agreement. Administration of the Base Residual Auction and Incremental Auctions shall include, but not be limited to, the following:

a) Determining the qualification of entities to become Capacity Market Sellers and Capacity Market Buyers;

b) Determining PJM Region Peak Load Forecasts and Locational Deliverability Area Reliability Requirements;

c) Determining the Minimum Annual Resource Requirements and the Minimum Extended Summer Resource Requirements for the PJM Region and applicable LDAs for Delivery Years starting June 1, 2014 and ending May 31, 2017;

d) Determining Limited Resource Constraints and Sub-Annual Resource Constraints for the 2017/2018 Delivery Years starting June 1, 2017;

e) Determining Base Capacity Demand Resource Constraints and Base Capacity Resource Constraints for the 2018/2019 and 2019/2020 Delivery Years;

| **ef)** Determining the need, if any, for a Conditional Incremental Auction and providing appropriate prior notice of any such auction

| **fg)** Calculating the EFORD for each Generation Capacity Resource in the PJM Region to be used in the Third Incremental Auction;

| **gh)** Receiving Buy Bids and Sell Offers, determining Locational Deliverability Requirements and Variable Resource Requirement Curves, and determining the clearing price that reflects all such inputs;

| **hi)** Conducting settlements for auction transactions, including but not limited to rendering bills to, receiving payments from, and disbursing payments to, participants in Base Residual Auctions and Incremental Auctions.

| **ij)** Maintaining such records of Sell Offers and Buy Bids, clearing price determinations, and other aspects of auction transactions, as may be appropriate to the administration of Base Residual Auctions and Incremental Auctions; and

| **jk)** Posting of selected non-confidential data used in Reliability Pricing Model Auctions to calculate clearing prices and other auction results, as appropriate to inform market participants of auction conditions.

### **3.3 Records and Reports**

The Office of the Interconnection shall prepare and maintain such records as are required for the administration of the Base Residual Auction and Incremental Auctions. For each auction conducted, the Office of the Interconnection shall, consistent with section 18.17 of the Operating Agreement, publish the following: (i) Zonal Capacity Prices for each LDA; (ii) Capacity Resource Clearing Prices for each LDA; (iii) Locational Price Adders; (iv) the total megawatts of Unforced Capacity that cleared; and (v) such other auction data as may be appropriate to the efficient and competitive conduct of the Base Residual Auction and Incremental Auctions. Such information shall be available on the PJM internet site through the end of the Delivery Year to which such auctions apply.

### **3.4 Counterparty**

(a) PJMSettlement shall be the Counterparty to the transactions arising from the cleared Base Residual Auctions and Incremental Auctions; provided, however, PJMSettlement shall not be a contracting party to (i) any bilateral transactions between Market Participants, or (ii) with respect to Self-Supply for which designation of Self-Supply has been reported to the Office of the Interconnection.

(b) Charges. PJMSettlement shall be the Counterparty with respect to the obligations to pay, and the payment of, charges pursuant to this Attachment DD.

## **4. GENERAL PROVISIONS**

### **4.1 Capacity Market Sellers**

Only Capacity Market Sellers shall be eligible to submit Sell Offers into the Base Residual Auction and Incremental Auctions. Capacity Market Sellers shall comply with the terms and conditions of all Sell Offers, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.2 Capacity Market Buyers**

Only Capacity Market Buyers shall be eligible to submit Buy Bids into an Incremental Auction. Capacity Market Buyers shall comply with the terms and conditions of all Buy Bids, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.3 Agents**

A Capacity Market Seller may participate in a Base Residual Auction or Incremental Auction through an Agent, provided that the Capacity Market Seller informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer may participate in an Incremental Auction through an Agent, provided that the Capacity Market Buyer informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer or Capacity Market Seller participating in such an auction through an Agent shall be bound by all of the acts or representations of such Agent with respect to transactions in such auction. Any written instrument establishing the authority of such Agent shall provide that any such Agent shall comply with the requirements of this Attachment and the Operating Agreement.

### **4.4 General Obligations of Capacity Market Buyers and Capacity Market Sellers**

Each Capacity Market Buyer and Capacity Market Seller shall comply with all laws and regulations applicable to the operation of the Base Residual and Incremental Auctions and the use of these auctions shall comply with all applicable provisions of this Attachment, Attachment M, Attachment M - Appendix, the Operating Agreement, and the Reliability Assurance Agreement, and all procedures and requirements for the conduct of the Base Residual and Incremental Auctions and the PJM Region established by the Office of the Interconnection in accordance with the foregoing.

### **4.5 Confidentiality**

The following information submitted to the Office of the Interconnection in connection with any Base Residual Auction, Incremental Auction, ~~or Reliability Backstop Auction,~~ or Capacity Performance Transition Incremental Auction shall be deemed confidential information for purposes of Section 18.17 of the Operating Agreement, Attachment M and Attachment M -

Appendix: (i) the terms and conditions of the Sell Offers and Buy Bids; and (ii) the terms and conditions of any bilateral transactions for Capacity Resources.

#### **4.6 Bilateral Capacity Transactions**

(a) Unit-Specific Internal Capacity Bilateral Transaction Transferring All Rights and Obligations (“Section 4.6(a) Bilateral”).

(i) Market Participants may enter into unit-specific internal bilateral capacity contracts for the purchase and sale of title and rights to a specified amount of installed capacity from a specific generating unit or units. Such bilateral capacity contracts shall be for the transfer of rights to capacity to and from a Market Participant and shall be reported to the Office of the Interconnection in accordance with this Attachment DD and the Office of the Interconnection’s rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Section 4.6(a) Bilateral transactions, the rights to, and obligations regarding, the capacity that is the subject of the transaction shall pass to the buyer under the contract at the location of the unit and further transactions and rights and obligations associated with such capacity shall be the responsibility of the buyer under the contract. Such obligations include any charges, including penalty charges, relating to the capacity under this Attachment DD. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(a) Bilateral constitute a transaction with the Office of the Interconnection or PJMSettlement or a transaction in any auction under this Attachment DD.

(iii) All payments and related charges associated with a Section 4.6(a) Bilateral shall be arranged between the parties to the transaction and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(a) Bilateral reported to the Office of the Interconnection under this Attachment DD.

(iv) With respect to capacity that is the subject of a Section 4.6(a) Bilateral that has cleared an auction under this Attachment DD prior to a transfer, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction.

(v) A buyer under a Section 4.6(a) Bilateral contract shall pay any penalties or charges associated with the capacity transferred under the contract. To the extent the capacity that is the subject of a Section 4.6(a) Bilateral contract has cleared an auction under this Attachment DD prior to a transfer, then the seller under the contract also shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer’s obligation to pay any penalties or charges associated with the capacity and for which payment is not made to PJMSettlement by the buyer as determined by the Office of the Interconnection. All claims regarding a default of a buyer to a seller under a Section 4.6(a) Bilateral contract shall be resolved solely between the buyer and the seller.

(vi) To the extent the capacity that is the subject of the Section 4.6(a) Bilateral transaction already has cleared an auction under this Attachment DD, such bilateral capacity transactions shall be subject to the prior consent of the Office of the Interconnection and its determination that sufficient credit is in place for the buyer with respect to the credit exposure associated with such obligations.

(b) Bilateral Capacity Transaction Transferring Title to Capacity But Not Transferring Performance Obligations (“Section 4.6(b) Bilateral”).

(i) Market Participants may enter into bilateral capacity transactions for the purchase and sale of a specified megawatt quantity of capacity that has cleared an auction pursuant to this Attachment DD. The parties to a Section 4.6(b) Bilateral transaction shall identify (1) each unit from which the transferred megawatts are being sold, and (2) the auction in which the transferred megawatts cleared. Such bilateral capacity transactions shall transfer title and all rights with respect to capacity and shall be reported to the Office of the Interconnection on an annual basis prior to each Delivery Year in accordance with this Attachment DD and pursuant to the Office of the Interconnection’s rules related to its eRPM tools. Reported transactions with respect to a unit will be accepted by the Office of the Interconnection only to the extent that the total of all bilateral sales from the reported unit (including Section 4.6(a) Bilaterals, Section 4.6(b) Bilaterals, and Locational UCAP bilaterals) do not exceed the unit’s cleared unforced capacity.

(ii) For purposes of clarity, with respect to all Section 4.6(b) Bilateral transactions, the rights to the capacity shall pass to the buyer at the location of the unit(s) specified in the reported transaction. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(b) Bilateral constitute a transaction with PJMSettlement or the Office of the Interconnection or a transaction in any auction under this Attachment DD.

(iii) With respect to a Section 4.6(b) Bilateral, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction; provided, however, with respect to all Section 4.6(b) Bilateral transactions, such transactions do not effect a novation of the seller’s obligations to make RPM capacity available to PJM pursuant to the terms and conditions originally agreed to by the seller; provided further, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller under a Section 4.6(b) Bilateral to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity.

(iv) All payments and related charges associated with a Section 4.6(b) Bilateral shall be arranged between the parties to the contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(b) Bilateral capacity contract reported to the Office of the Interconnection under this Attachment DD.

(v) All claims regarding a default of a buyer to a seller under a Section 4.6(b) Bilateral shall be resolved solely between the buyer and the seller.

(c) Locational UCAP Bilateral Transactions Between Capacity Sellers.

(i) Market Participants may enter into Locational UCAP bilateral transactions as defined in, and pursuant to the rules set forth in, section 5.3A of this Attachment DD, which shall be reported to the Office of the Interconnection in accordance with this Attachment DD and the LLC's rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Locational UCAP bilateral transactions, the rights to the Locational UCAP that are the subject of the Locational UCAP bilateral transaction shall pass to the buyer under the Locational UCAP bilateral contract subject to the provisions of section 5.3A. In no event, shall the purchase and sale of Locational UCAP pursuant to a Locational UCAP bilateral transaction constitute a transaction with the Office of the Interconnection or PJMSettlement, or a transaction in any auction under this Attachment DD.

(iii) A Locational UCAP Seller shall have the obligation to make the capacity available to PJM in the same manner as capacity that has cleared an auction under this Attachment DD and the Locational UCAP Seller shall have all obligations for charges and penalties associated with the capacity that is the subject of the Locational UCAP bilateral contract; provided, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity. All claims regarding a default of a buyer to a seller under a Locational UCAP bilateral contract shall be resolved solely between the buyer and the seller.

(iv) All payments and related charges for the Locational UCAP associated with a Locational UCAP bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The LLC, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Locational UCAP bilateral contract reported to the Office of the Interconnection under this Attachment DD.

(d) The bilateral transactions provided for in this section 4.6 shall be for the physical transfer of capacity to or from a Market Participant and shall be reported to and coordinated with the Office of the Interconnection in accordance with this Attachment DD and pursuant to the Office of the Interconnection's rules relating to its eRPM tools. Bilateral transactions that do not contemplate the physical transfer of capacity to and from a Market Participant are not subject to this Attachment DD and shall not be reported to and coordinated with the Office of the Interconnection.

### 5.3A Locational UCAP Bilateral Transactions

A Member that has committed capacity through an RPM Auction for a Delivery Year may purchase Locational UCAP as replacement capacity from a Member with available uncommitted capacity for such Delivery Year in accordance with the terms of this section and the PJM Manuals. Locational UCAP may not be sold or purchased prior to the date that the final EFORD is established for such Delivery Year, and if designated to PJM by the Locational UCAP Seller as sold prior to the Third Incremental Auction for a Delivery Year must be confirmed by the buyer prior to such Third Incremental Auction as purchased for replacement capacity, or such transaction shall be rejected. In accordance with procedures specified in the PJM Manuals, the parties to a Locational UCAP transaction must notify PJM of such transaction, which notification must specify: i) the buyer, ii) the Locational UCAP Seller, iii) the start and end dates of the transaction (which may not be retroactive), iv) the Locational UCAP amount (no less than 0.1 megawatts), v) the demand or generation resource with available uncommitted capacity that is the basis for the sale, and vi) the Locational Delivery Area in which the resource is located. The Locational UCAP Seller shall be responsible for any charges imposed under sections 7, 8, 9, 10, 10A, 11, or 13, as applicable, for such Delivery Year, with respect to the increment of capacity sold as Locational UCAP; any other settlement of charges under the Locational UCAP transaction shall be between the parties. A purchaser of Locational UCAP may not offer such capacity into an RPM Auction.



## 5.4 Reliability Pricing Model Auctions

The Office of the Interconnection shall conduct the following Reliability Pricing Model Auctions:

a) Base Residual Auction.

PJM shall conduct for each Delivery Year a Base Residual Auction to secure commitments of Capacity Resources as needed to satisfy the portion of the RTO Unforced Capacity Obligation not satisfied through Self-Supply of Capacity Resources for such Delivery Year. All Self-Supply Capacity Resources must be offered in the Base Residual Auction. As set forth in section 6.6, all other Capacity Resources, and certain other existing generation resources, must be offered in the Base Residual Auction. The Base Residual Auction shall be conducted in the month of May that is three years prior to the start of such Delivery Year. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Load Serving Entities through the Locational Reliability Charge during such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and the payments, by Load Serving Entities; provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

b) Scheduled Incremental Auctions.

PJM shall conduct for each Delivery Year a First, a Second, and a Third Incremental Auction for the purposes set forth in section 2.34. The First Incremental Auction shall be conducted in the month of September that is twenty months prior to the start of the Delivery Year; the Second Incremental Auction shall be conducted in the month of July that is ten months prior to the start of the Delivery Year; and the Third Incremental Auction shall be conducted in the month of February that is three months prior to the start of the Delivery Year.

c) Adjustment through Scheduled Incremental Auctions of Capacity Previously Committed.

The Office of the Interconnection shall recalculate the PJM Region Reliability Requirement and each LDA Reliability Requirement prior to each Scheduled Incremental Auction, based on an updated peak load forecast, updated Installed Reserve Margin and an updated Capacity Emergency Transfer Objective; shall update such reliability requirements for the Third Incremental Auction to reflect any change from such recalculation; and shall update such reliability requirements for the First Incremental Auction or Second Incremental Auction only if the change is greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement. Based on such update, the Office of the Interconnection shall, under certain conditions, seek through the Scheduled Incremental Auction to secure additional commitments of capacity or release sellers from prior capacity commitments. Specifically, the Office of the Interconnection shall:

1) seek additional capacity commitments to serve the PJM Region or an LDA if the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) is less than, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such additional capacity commitments only if such shortfall is in an amount greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement;

2) seek additional capacity commitments to serve the PJM Region or an LDA if:

i) the updated PJM Region Reliability Requirement less, for Delivery Years through May 31, 2018, the PJM Region Short-Term Resource Procurement Target utilized in the most recent auction conducted for the Delivery Year, or if the LDA Reliability Requirement less, for Delivery Years through May 31, 2018, the LDA Short Term Resource Procurement Target applicable to such auction, exceeds the total capacity committed in all prior auctions in such region or area, respectively, for such Delivery Year by an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM conducts a Conditional Incremental Auction for such Delivery Year and does not obtain all additional commitments of Capacity Resources sought in such Conditional Incremental Auction, in which case, PJM shall seek in the Incremental Auction the commitments that were sought in the Conditional Incremental Auction but not obtained.

3) seek agreements to release prior capacity commitments to the PJM Region or to an LDA if:

i) the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) exceeds, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such agreements only if such excess is in an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM obtains additional commitments of Capacity Resources in a Conditional Incremental Auction, in which case PJM shall seek release of an equal number of megawatts (comparing the total purchase amount for all LDAs and the PJM Region related to the delay in Backbone Transmission with the total sell amount for all LDAs and the PJM Region related to the delay in Backbone Transmission) of prior committed capacity that would not have been committed had the delayed Backbone Transmission upgrade that prompted the Conditional Incremental Auction not been assumed, at the time of the Base Residual Auction, to be in service for the relevant Delivery Year; and if PJM obtains additional commitments of capacity in an incremental auction pursuant to subsection c.2.ii above, PJM shall seek in such Incremental Auction to release an equal amount of capacity (in total for all LDAs and the PJM Region related to the delay in Backbone Transmission) previously committed that would not have been committed absent the Backbone Transmission upgrade.

4) The cost of payments to Market Sellers for additional Capacity Resources cleared in such auctions, and the credits from payments from Market Sellers for the release of previously committed Capacity Resources, shall be apportioned to Load Serving Entities in the PJM Region or LDA, as applicable, through adjustments to the Locational Reliability Charge for such Delivery Year.

5) PJMSettlement shall be the Counterparty to the sales (including releases) of Capacity Resources that clear in such auctions and to the obligations to pay, and the payments, by Load Serving Entities, provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

d) Commitment of Replacement Capacity through Scheduled Incremental Auctions.

Each Scheduled Incremental Auction for each Delivery Year shall allow Capacity Market Sellers that committed Capacity Resources in any prior Reliability Pricing Model Auction for such Delivery Year to submit Buy Bids for replacement Capacity Resources. Capacity Market Sellers that submit Buy Bids into an Incremental Auction must specify the type of Unforced Capacity desired, i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource. The need to purchase replacement Capacity Resources may arise for any reason, including but not limited to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Capacity Market Buyers that purchase replacement Capacity Resources in such auction. PJMSettlement shall be the Counterparty to the sales and purchases that clear in such auction, provided, however, PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

## e) Conditional Incremental Auction.

PJM shall conduct for any Delivery Year a Conditional Incremental Auction if the in service date of a Backbone Transmission Upgrade that was modeled in the Base Residual Auction is announced as delayed by the Office of the Interconnection beyond July 1 of the Delivery Year for which it was modeled and if such delay causes a reliability criteria violation. If conducted, the Conditional Incremental Auction shall be for the purpose of securing commitments of additional capacity for the PJM Region or for any LDA to address the identified reliability criteria violation. If PJM determines to conduct a Conditional Incremental Auction, PJM shall post on its website the date and parameters for such auction (including whether such auction is for the PJM Region or for an LDA, and the type of Capacity Resources required) at least one month prior to the start of such auction. The cost of payments to Market Sellers for Capacity Resources cleared in such auction shall be collected by PJMSettlement from Load Serving Entities in the PJM Region or LDA, as applicable, through an adjustment to the Locational Reliability Charge for such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and payments, by Load Serving Entities, provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

## 5.5 Eligibility for Participation in RPM Auctions

A Capacity Market Seller may submit a Sell Offer for a Capacity Resource in a Base Residual Auction, ~~or~~ Incremental Auction, or Capacity Performance Transition Incremental Auction only if such seller owns or has the contractual authority to control the output or load reduction capability of such resource and has not transferred such authority to another entity prior to submitting such Sell Offer. Capacity Resources must satisfy the capability and deliverability requirements of Schedules 9 and 10 of the PJM Reliability Assurance Agreement, ~~and, as applicable,~~ the requirements for Demand Resources or Energy Efficiency Resources in Attachment DD-1 and Schedule 6 of the Reliability Assurance Agreement, as applicable, and, for the 2018/2019 Delivery Year and subsequent Delivery Years, the criteria in section 5.5A.

## 5.5A Capacity Resource Types

### a) Capacity Performance Resources

Capacity Performance Resources are Capacity Resources which, to the extent such resources cleared in a Reliability Pricing Model Auction or are otherwise committed as a Capacity Resource, are obligated to deliver energy during the relevant Delivery Year as scheduled and/or dispatched by the Office of Interconnection during the Performance Assessment Hours. As further detailed in Section 10A of this Attachment, Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this Attachment. Subject to 5.5A(a)(i)-(ii), the following types of Capacity Resources are eligible to submit a Sell Offer as a Capacity Performance Resource: internal or external Generation Capacity Resources; Annual Demand Resources; Capacity Storage Resources; Annual Energy Efficiency Resources; and Qualifying Transmission Upgrades.

### i). Capacity Performance Resource Sell Offer Representations

In submitting a Sell Offer for a Capacity Performance Resource in an RPM Auction for a Delivery Year, a Capacity Market Seller is representing that it:

- A. has made, or is capable of demonstrating that it will make, the necessary investment to ensure the Capacity Resource has the capability for the entire such Delivery Year to provide energy at any time when called upon by the Office of the Interconnection;
- B. shall be capable of complying with the performance obligations specified in this Attachment DD and in Schedule 1 of the Operating Agreement by the relevant Delivery Year;
- C. meets the criteria for obtaining an exception to the Capacity Import Limit as contained in section 1.7A of the Reliability Assurance Agreement, to the extent the underlying Capacity Resource is an external Generation Capacity Resource; and

D. contemplates the physical delivery of the Capacity Performance Resource underlying such Sell Offer by no later than the commencement of the applicable Delivery Year. A Sell Offer shall not meet the standard of physical delivery, for purposes of this section, if at the time it is submitted in an RPM Auction, the Capacity Market Seller intends to satisfy its obligation for the applicable Delivery Year by subsequently securing a replacement Capacity Performance Resource through either an Incremental Auction or bilateral transaction(s). Capacity Market Sellers acknowledge and agree that the Office of the Interconnection will rely on this representation to meet the physical capacity resource adequacy objectives upon which RPM is based. A Capacity Market Seller that is unable to make such representation shall not submit a Sell Offer for that resource into an RPM Auction. Capacity Market Sellers are cautioned that representations made hereunder that are knowingly false or otherwise inconsistent with the requirements of this section may constitute a violation of, and may subject the Capacity Market Seller to penalties under, the PJM Market Rules and the FERC Market Rules.

**ii). Process for Support and Review of Capacity Performance Resource Offers**

A. The Capacity Market Seller shall provide to the Office of the Interconnection and the Market Monitoring Unit, upon their request, all supporting data and information requested by either the Office of the Interconnection or the Market Monitoring Unit to evaluate whether the underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes.

B. The Office of the Interconnection and the Market Monitoring Unit shall review any requested supporting data and information, and the Office of the Interconnection, considering advice and recommendation from the Market Monitoring Unit, shall reject a request for a resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate to the satisfaction of the Office of the Interconnection that the resource meets the necessary requirements. The Office of Interconnection shall provide its determination to reject eligibility of the resource as a Capacity Performance Resource, and notify the Market Monitoring Unit,

by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

**b) Base Capacity Resources**

For the 2018/2019 and 2019/2020 Delivery Years, following types of Capacity Resources eligible to submit a Sell Offer as a Base Capacity Resource: Generation Capacity Resources, Capacity Storage Resources, Annual Demand Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources. Each resource that clears a RPM Auction as a Base Capacity Resource must provide energy output to PJM if called during Performance Assessment Hours occurring in the calendar months of June through September, including any necessary recall of such capacity and energy from service to areas outside the PJM Region. As further detailed in Section 10A of this Attachment, Base Capacity Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this section.



## 5.6 Sell Offers

Sell Offers shall be submitted or withdrawn via the internet site designated by the Office of the Interconnection, ~~in accordance with~~under the procedures and time schedule set forth in the PJM Manuals.

### 5.6.1 Specifications

A Sell Offer shall state quantities in increments of 0.1 megawatts and shall specify, as appropriate:

a) Identification of the Generation Capacity Resource, ~~Annual Demand Resource, Extended Summer Demand Resource, Limited Demand Resource~~Capacity Storage Resource or Energy Efficiency Resource on which such Sell Offer is based;

b) Minimum and maximum megawatt quantity of installed capacity that the Capacity Market Seller is willing to offer (notwithstanding such specification, the product offered shall be Unforced Capacity), or designate as Self-Supply, from a Generation Capacity Resource;

i) Price, in dollars and cents per megawatt-day, that will be accepted by the Capacity Market Seller for the megawatt quantity of Unforced Capacity offered from such Generation Capacity Resource.

ii) The Sell Offer may take the form of offer segments with varying price-quantity pairs for varying output levels from the underlying resource, but may not take the form of an offer curve with nonzero slope.

c) EFORd of each Generation Capacity Resource offered.

i) If a Capacity Market Seller is offering such resource in a Base Residual Auction, First Incremental Auction, Second Incremental Auction, or Conditional Incremental Auction occurring before the Third Incremental Auction, the Capacity Market Seller shall specify the EFORd to apply to the offer.

ii) If a Capacity Market Seller is committing the resource as Self-Supply, the Capacity Market Seller shall specify the EFORd to apply to the commitment.

iii) The EFORd applied to the Third Incremental Auction will be the final EFORd established by the Office of the Interconnection six (6) months prior to the Delivery Year, based on the actual EFORd in the PJM Region during the 12-month period ending September 30 that last precedes such Delivery Year.

d) The Nominated Demand Resource Value for each Demand Resource offered and the Nominated Energy Efficiency Value for each Energy Efficiency Resource offered. The Office of the Interconnection shall, in both cases, convert such value to an Unforced Capacity basis by multiplying such value by the DR Factor (for Delivery Years through May 31, 2018) times the Forecast Pool Requirement. Demand Resources shall specify the LDA in which the

Demand Resource is located, including the location of such resource within any Zone that includes more than one LDA as identified on Schedule 10.1 of the RAA.

e) For Delivery Years through May 31, 2018, Aa Demand Resource with the potential to qualify as two or more of a Limited Demand Resource, Extended Summer Demand Resource or Annual Demand Resource may submit separate but coupled Sell Offers for each Demand Resource type for which it qualifies at different prices and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. For such coupled Demand Resource offers, the offer price of an Annual Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Extended Summer Demand Resource offer and the offer price of a Extended Summer Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Limited Demand Resource offer.

f) For a Qualifying Transmission Upgrade, the Sell Offer shall identify such upgrade, and the Office of the Interconnection shall determine and certify the increase in CETL provided by such upgrade. The Capacity Market Seller may offer the upgrade with an associated increase in CETL to an LDA in accordance with such certification, including an offer price that will be accepted by the Capacity Market Seller, stated in dollars and cents per megawatt-day as a price difference between a Capacity Resource located outside such an LDA and a Capacity Resource located inside such LDA; and the increase in CETL into such LDA to be provided by such Qualifying Transmission Upgrade, as certified by the Office of the Interconnection.

g) For the 2018/2019 and 2019/2020 Delivery Years, each Capacity Market Seller owning or controlling a resource that qualifies as both a Base Capacity Resource and a Capacity Performance Resource may submit separate but coupled Sell Offers for such resource as a Base Capacity Resource and as a Capacity Performance Resource, at different prices, and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. Submission of a coupled Base Capacity Resource Sell Offer shall be mandatory for any Capacity Performance Resource Sell Offer that exceeds a Sell Offer Price equal to the applicable Net Cost of New Entry. For such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer.

(h) For the 2018/2019 Delivery Year and subsequent Delivery Years, a Capacity Market Seller that owns or controls one or more Capacity Storage Resources, Intermittent Resources, Demand Resources, or Energy Efficiency Resources located within the same Locational Deliverability Area may submit a Sell Offer which represents the aggregated Unforced Capacity value of such resources. For the 2018/2019 and 2019/2020 Delivery Years, any such offer may be submitted as Capacity Performance Resource, Base Capacity Resource, or as a coupled offer for Capacity Performance Resource and Base Capacity Resource, provided that, for any such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer. For the 2020/2021 Delivery Year and subsequent Delivery Years, any such offer must be submitted as a Capacity Performance Resource.

## 5.6.2 Compliance with PJM Credit Policy

Capacity Market Sellers shall comply with the provisions of the PJM Credit Policy as set forth in Attachment Q to this Tariff, including the provisions specific to the Reliability Pricing Model, prior to submission of Sell Offers in any Reliability Pricing Model Auction. A Capacity Market Seller desiring to submit a Credit-Limited Offer shall specify in its Sell Offer the maximum auction credit requirement, in dollars, and the maximum amount of Unforced Capacity, in megawatts, applicable to its Sell Offer.

### **5.6.3 [reserved]**

### **5.6.4 Qualifying Transmission Upgrades**

A Qualifying Transmission Upgrade may not be the subject of any Sell Offer in a Base Residual Auction unless it has been approved by the Office of the Interconnection, including certification of the increase in Import Capability to be provided by such Qualifying Transmission Upgrade, no later than 45 days prior to such Base Residual Auction. No such approval shall be granted unless, at a minimum, a Facilities Study Agreement has been executed with respect to such upgrade, and such upgrade conforms to all applicable standards of the Regional Transmission Expansion Plan process.

### **5.6.5 Market-based Sell Offers**

Subject to section 6, a Market Seller authorized by FERC to sell electric generating capacity at market-based prices, or that is not required to have such authorization, may submit Sell Offers that specify market-based prices in any Base Residual Auction or Incremental Auction.

### **5.6.6 Availability of Capacity Resources for Sale**

(a) The Office of the Interconnection shall determine the quantity of megawatts of available installed capacity that each Capacity Market Seller must offer in any RPM Auction pursuant to Section 6.6 of Attachment DD, through verification of the availability of megawatts of installed capacity from: (i) all Generation Capacity Resources owned by or under contract to the Capacity Market Seller, including all Generation Capacity Resources obtained through bilateral contract; (ii) the results of prior Reliability Pricing Model Auctions, if any, for such Delivery Year (including consideration of any restriction imposed as a consequence of a prior failure to offer); and (iii) such other information as may be available to the Office of the Interconnection. The Office of the Interconnection shall reject Sell Offers or portions of Sell Offers for Capacity Resources in excess of the quantity of installed capacity from such Capacity Market Seller's Capacity Resource that it determines to be available for sale.

(b) The Office of the Interconnection shall determine the quantity of installed capacity available for sale in a Base Residual Auction or Incremental Auction as of the beginning of the period during which Buy Bids and Sell Offers are accepted for such auction, as applicable, in accordance with the time schedule set forth in the PJM Manuals. Removal of a resource from Capacity Resource status shall not be reflected in the determination of available installed capacity unless the associated unit-specific bilateral transaction is approved, the designation of such resource (or portion thereof) as a network resource for the external load is demonstrated to the Office of the Interconnection, or equivalent evidence of a firm external sale

is provided prior to the deadline established therefor. The determination of available installed capacity shall also take into account, as they apply in proportion to the share of each resource owned or controlled by a Capacity Market Seller, any approved capacity modifications, and existing capacity commitments established in a prior RPM Auction, an FRR Capacity Plan, Locational UCAP transactions and/or replacement capacity transactions under this Attachment DD. To enable the Office of the Interconnection to make this determination, no bilateral transactions for Capacity Resources applicable to the period covered by an auction will be processed from the beginning of the period for submission of Sell Offers and Buy Bids, as appropriate, for that auction until completion of the clearing determination for such auction. Processing of such bilateral transactions will reconvene once clearing for that auction is completed. A Generation Capacity Resource located in the PJM Region shall not be removed from Capacity Resource status to the extent the resource is committed to service of PJM loads as a result of an RPM Auction, FRR Capacity Plan, Locational UCAP transaction and/or by designation as a replacement resource under this Attachment DD.

(c) In order for a bilateral transaction for the purchase and sale of a Capacity Resource to be processed by the Office of the Interconnection, both parties to the transaction must notify the Office of the Interconnection of the transfer of the Capacity Resource from the seller to the buyer in accordance with procedures established by the Office of the Interconnection and set forth in the PJM Manuals. If a material change with respect to any of the prerequisites for the application of Section 5.6.6 to the Generation Capacity Resource occurs, the Capacity Resource Owner shall immediately notify the Market Monitoring Unit and the Office of the Interconnection.

## 5.10 Auction Clearing Requirements

The Office of the Interconnection shall clear each Base Residual Auction and Incremental Auction for a Delivery Year in accordance with the following:

a) Variable Resource Requirement Curve

The Office of the Interconnection shall determine Variable Resource Requirement Curves for the PJM Region and for such Locational Deliverability Areas as determined appropriate in accordance with subsection (a)(iii) for such Delivery Year to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability Principles and Standards. It is recognized that the variable resource requirement reflected in the Variable Resource Requirement Curve can result in an optimized auction clearing in which the level of Capacity Resources committed for a Delivery Year exceeds the PJM Region Reliability Requirement (for Delivery Years through May 31, 2018, less the Short-Term Resource Procurement Target) or Locational Deliverability Area Reliability Requirement (for Delivery Year through May 31, 2018, less the Short-Term Resource Procurement Target for the Zones associated with such LDA) for such Delivery Year. For any auction, the Updated Forecast Peak Load, and Short-Term Resource Procurement Target applicable to such auction, shall be used, and Price Responsive Demand from any applicable approved PRD Plan, including any associated PRD Reservation Prices, shall be reflected in the derivation of the Variable Resource Requirement Curves, in accordance with the methodology specified in the PJM Manuals.

i) Methodology to Establish the Variable Resource Requirement Curve

Prior to the Base Residual Auction, in accordance with the schedule in the PJM Manuals, the Office of the Interconnection shall establish the Variable Resource Requirement Curve for the PJM Region as follows:

- Each Variable Resource Requirement Curve shall be plotted on a graph on which Unforced Capacity is on the x-axis and price is on the y-axis;
- For the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), (iii) a straight line connecting points (2) and (3), and (iv) a vertical line from point (3) to the x-axis, where:
  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin (“IRM”)% minus 3%) divided by (100% plus IRM%)], and for Delivery Years

through May 31, 2018, minus the Short-Term Resource Procurement Target;

- For point (2), price equals: (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset) divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 1%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target; and
- For point (3), price equals [0.2 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 5%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), and (iii) a straight line connecting points (2) and (3), where:
  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin (“IRM”)% minus 0.2%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target;
  - For point (2), price equals: [0.75 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 2.9%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target; and
  - For point (3), price equals zero and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 8.8%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target.

ii) For any Delivery Year, the Office of the Interconnection shall establish a separate Variable Resource Requirement Curve for each LDA for which:

- A. the Capacity Emergency Transfer Limit is less than 1.15 times the Capacity Emergency Transfer Objective, as determined by the Office of the Interconnection in accordance with NERC and Applicable Regional Entity guidelines; or
- B. such LDA had a Locational Price Adder in any one or more of the three immediately preceding Base Residual Auctions; or
- C. such LDA is determined in a preliminary analysis by the Office of the Interconnection to be likely to have a Locational Price Adder, based on historic offer price levels; provided however that for the Base Residual Auction conducted for the Delivery Year commencing on June 1, 2012, the Eastern Mid-Atlantic Region (“EMAR”), Southwest Mid-Atlantic Region (“SWMAR”), and Mid-Atlantic Region (“MAR”) LDAs shall employ separate Variable Resource Requirement Curves regardless of the outcome of the above three tests; and provided further that the Office of the Interconnection may establish a separate Variable Resource Requirement Curve for an LDA not otherwise qualifying under the above three tests if it finds that such is required to achieve an acceptable level of reliability consistent with the Reliability Principles and Standards, in which case the Office of the Interconnection shall post such finding, such LDA, and such Variable Resource Requirement Curve on its internet site no later than the March 31 last preceding the Base Residual Auction for such Delivery Year. The same process as set forth in subsection (a)(i) shall be used to establish the Variable Resource Requirement Curve for any such LDA, except that the Locational Deliverability Area Reliability Requirement for such LDA shall be substituted for the PJM Region Reliability Requirement and, for Delivery Years through May 31, 2018, the LDA Short-Term Resource Procurement Target shall be substituted for the PJM Region Short-Term Resource Procurement Target. For purposes of calculating the Capacity Emergency Transfer Limit under this section, all generation resources located in the PJM Region that are, or that qualify to become, Capacity Resources, shall be modeled at their full capacity rating, regardless of the amount of capacity cleared from such resource for the immediately preceding Delivery Year.

For each such LDA, for the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection shall (a) determine the Net Cost of New Entry for each Zone in such LDA, with such Net Cost of New Entry equal to the applicable Cost of New Entry value for such Zone minus the Net Energy and Ancillary Services Revenue Offset value for such Zone, and (b) compute the average of the Net Cost of New Entry values of all such Zones to determine the Net Cost of New Entry for such LDA; provided however, that the Net Cost of New Entry for an LDA may



be greater than, but shall be no less than, the Net Cost of New Entry determined for any other LDA in which the first LDA resides (immediately or successively) including the Net Cost of New Entry for the RTO. The Net Cost of New Entry for use in an LDA in any Incremental Auction for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years shall be the Net Cost of New Entry used for such LDA in the Base Residual Auction for such Delivery Year.

iii) Procedure for ongoing review of Variable Resource Requirement Curve shape.

Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall perform a review of the shape of the Variable Resource Requirement Curve, as established by the requirements of the foregoing subsection. Such analysis shall be based on simulation of market conditions to quantify the ability of the market to invest in new Capacity Resources and to meet the applicable reliability requirements on a probabilistic basis. Based on the results of such review, PJM shall prepare a recommendation to either modify or retain the existing Variable Resource Requirement Curve shape. The Office of the Interconnection shall post the recommendation and shall review the recommendation through the stakeholder process to solicit stakeholder input. If a modification of the Variable Resource Requirement Curve shape is recommended, the following process shall be followed:

- A) If the Office of the Interconnection determines that the Variable Resource Requirement Curve shape should be modified, Staff of the Office of the Interconnection shall propose a new Variable Resource Requirement Curve shape on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- B) The PJM Members shall review the proposed modification to the Variable Resource Requirement Curve shape.
- C) The PJM Members shall either vote to (i) endorse the proposed modification, (ii) propose alternate modifications or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- D) The PJM Board of Managers shall consider a proposed modification to the Variable Resource Requirement Curve shape, and the Office of the Interconnection shall file any approved modified Variable Resource Requirement Curve shape with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.



## iv) Cost of New Entry

- A) For the Incremental Auctions for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Cost of New Entry for the PJM Region and for each LDA shall be the respective value used in the Base Residual Auction for such Delivery Year and LDA. For the Delivery Year commencing on June 1, 2018, and continuing thereafter unless and until changed pursuant to subsection (B) below, the Cost of New Entry for the PJM Region shall be the average of the Cost of New Entry for each CONE Area listed in this section as adjusted pursuant to subsection (a)(iv)(B).

<b>Geographic Location Within the PJM Region Encompassing These Zones</b>	<b>Cost of New Entry in \$/MW-Year</b>
PS, JCP&L, AE, PECO, DPL, RECO (“CONE Area 1”)	132,200
BGE, PEPCO (“CONE Area 2”)	130,300
AEP, Dayton, ComEd, APS, DQL, ATSI, DEOK, EKPC, Dominion (“CONE Area 3”)	128,900
PPL, MetEd, Penelec (“CONE Area 4”)	130,300

- B) Beginning with the 2019/2020 Delivery Year, the CONE for each CONE Area shall be adjusted to reflect changes in generating plant construction costs based on changes in the Applicable United States Bureau of Labor Statistics (“BLS”) Composite Index, in accordance with the following:

(1) The Applicable BLS Composite Index for any Delivery Year and CONE Area shall be the most recently published twelve-month change, at the time CONE values are required to be posted for the Base Residual Auction for such Delivery Year, in a composite of the BLS Quarterly Census of Employment and Wages for Utility System Construction (weighted 20%), the BLS Producer Price Index for Construction Materials and Components (weighted 50%), and the BLS Producer Price Index Turbines and Turbine Generator Sets (weighted 30%), as each such index is further specified for each CONE Area in the PJM Manuals.

(2) The CONE in a CONE Area shall be adjusted prior to the Base Residual Auction for each Delivery Year by applying the Applicable BLS Composite Index for such CONE Area to the Benchmark CONE for such CONE Area.

(3) The Benchmark CONE for a CONE Area shall be the CONE used for such CONE Area in the Base Residual Auction for the prior Delivery Year (provided, however that the Gross CONE values stated in subsection (a)(iv)(A) above shall be the Benchmark

CONE values for the 2018/2019 Delivery Year to which the Applicable BLS Composite Index shall be applied to determine the CONE for subsequent Delivery Years).

(4) Notwithstanding the foregoing, CONE values for any CONE Area for any Delivery Year shall be subject to amendment pursuant to appropriate filings with FERC under the Federal Power Act, including, without limitation, any filings resulting from the process described in section 5.10(a)(vi)(C) or any filing to establish new or revised CONE Areas.

v) Net Energy and Ancillary Services Revenue Offset

- A) The Office of the Interconnection shall determine the Net Energy and Ancillary Services Revenue Offset each year for the PJM Region as (A) the annual average of the revenues that would have been received by the Reference Resource from the PJM energy markets during a period of three consecutive calendar years preceding the time of the determination, based on (1) the heat rate and other characteristics of such Reference Resource; (2) fuel prices reported during such period at an appropriate pricing point for the PJM Region with a fuel transmission adder appropriate for such region, as set forth in the PJM Manuals, assumed variable operation and maintenance expenses for such resource of \$6.47 per MWh, and actual PJM hourly average Locational Marginal Prices recorded in the PJM Region during such period; and (3) an assumption that the Reference Resource would be dispatched for both the Day-Ahead and Real-Time Energy Markets on a Peak-Hour Dispatch basis; plus (B) ancillary service revenues of \$2,199 per MW-year.
- B) For the Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the Office of the Interconnection will employ for purposes of the Variable Resource Requirement Curves for such Delivery Years the same calculations of the sub-regional Net Energy and Ancillary Services Revenue Offsets that were used in the Base Residual Auctions for such Delivery year and sub-region. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection also shall determine a Net Energy and Ancillary Service Revenue Offset each year for each Zone, using the same procedures and methods as set forth in the previous subsection; provided, however, that: (1) the average hourly LMPs for such Zone shall be used in place of the PJM Region average hourly LMPs; (2) if such Zone was not integrated into the PJM Region for the entire applicable period, then the offset shall be calculated using only those whole calendar years during which the Zone was integrated; and (3) a posted fuel pricing point in such Zone, if available, and (if such pricing point is not available in such Zone) a fuel transmission adder appropriate

to such Zone from an appropriate PJM Region pricing point shall be used for each such Zone.

Curve vi) Process for Establishing Parameters of Variable Resource Requirement

- A) The parameters of the Variable Resource Requirement Curve will be established prior to the conduct of the Base Residual Auction for a Delivery Year and will be used for such Base Residual Auction.
- B) The Office of the Interconnection shall determine the PJM Region Reliability Requirement and the Locational Deliverability Area Reliability Requirement for each Locational Deliverability Area for which a Variable Resource Requirement Curve has been established for such Base Residual Auction on or before February 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values will be applied, in accordance with the Reliability Assurance Agreement.
- C) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the calculation of the Cost of New Entry for each CONE Area.
  - 1) If the Office of the Interconnection determines that the Cost of New Entry values should be modified, the Staff of the Office of the Interconnection shall propose new Cost of New Entry values on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 2) The PJM Members shall review the proposed values.
  - 3) The PJM Members shall either vote to (i) endorse the proposed values, (ii) propose alternate values or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 4) The PJM Board of Managers shall consider Cost of New Entry values, and the Office of the Interconnection shall file any approved modified Cost of New Entry values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

- D) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the methodology set forth in this Attachment for determining the Net Energy and Ancillary Services Revenue Offset for the PJM Region and for each Zone.
- 1) If the Office of the Interconnection determines that the Net Energy and Ancillary Services Revenue Offset methodology should be modified, Staff of the Office of the Interconnection shall propose a new Net Energy and Ancillary Services Revenue Offset methodology on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.
  - 2) The PJM Members shall review the proposed methodology.
  - 3) The PJM Members shall either vote to (i) endorse the proposed methodology, (ii) propose an alternate methodology or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.
  - 4) The PJM Board of Managers shall consider the Net Revenue Offset methodology, and the Office of the Interconnection shall file any approved modified Net Energy and Ancillary Services Revenue Offset values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

b) Locational Requirements

The Office of Interconnection shall establish locational requirements prior to the Base Residual Auction to quantify the amount of Unforced Capacity that must be committed in each Locational Deliverability Area, in accordance with the PJM Reliability Assurance Agreement.

c) Resource Requirements and Constraints

Prior to the Base Residual Auction and each Incremental Auction for the Delivery Years starting on June 1, 2014 and ending May 31, 2017, the Office of the Interconnection shall establish the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and

Incremental Auctions for ~~each the 2017/2018~~ Delivery Year ~~beginning with the Delivery Year that commences June 1, 2017~~, the Office of the Interconnection shall establish the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and Incremental Auctions for 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year.

d) Preliminary PJM Region Peak Load Forecast for the Delivery Year

The Office of the Interconnection shall establish the Preliminary PJM Region Load Forecast for the Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the Base Residual Auction for such Delivery Year.

e) Updated PJM Region Peak Load Forecasts for Incremental Auctions

The Office of the Interconnection shall establish the updated PJM Region Peak Load Forecast for a Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the First, Second, and Third Incremental Auction for such Delivery Year.

## 5.11 Posting of Information Relevant to the RPM Auctions

a) In accordance with the schedule provided in the PJM Manuals, PJM will post the following information for a Delivery Year prior to conducting the Base Residual Auction for such Delivery Year:

i) The Preliminary PJM Region Peak Load Forecast (for the PJM Region, and allocated to each Zone);

ii) The PJM Region Installed Reserve Margin, the Pool-wide average EFORd, the Forecast Pool Requirement, *and all applicable Capacity Import Limits*;

iii) For the Delivery Years through May 31, 2018, the Demand Resource Factor;

iv) The PJM Region Reliability Requirement, and the Variable Resource Requirement Curve for the PJM Region, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices;

v) The Locational Deliverability Area Reliability Requirement and the Variable Resource Requirement Curve for each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices, and the CETO and CETL values for all Locational Deliverability Areas;

vi) For the Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year; and for the 2017/2018 Delivery Year that commences June 1, 2017 and subsequent Delivery Years, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year;

vii) Any Transmission Upgrades that are expected to be in service for such Delivery Year, provided that a Transmission Upgrade that is Backbone Transmission satisfies the project development milestones set forth in section 5.11A;

viii) The bidding window time schedule for each auction to be conducted for such Delivery Year; and

ix) The Net Energy and Ancillary Services Revenue Offset values for the PJM Region for use in the Variable Resource Requirement Curves for the PJM Region and each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction.

b) In addition to the information required to be posted by subsection (a), PJM will post for a Delivery Year, at least sixty (60) days prior to conducting the Base Residual Auction for such Delivery Year, the aggregate megawatt quantity of, for the PJM Region, all Self-Supply Exemption requests under section 5.14(h), all Competitive Entry Exemption requests under section 5.14(h), and such exemptions granted in each such category, and to the extent PJM has made any such determination, notice that PJM has determined that one or more state-sponsored or state-mandated procurement processes is Competitive and Non-Discriminatory pursuant to section 5.14(h).

c) The information listed in (a) will be posted and applicable for the First, Second, Third, and Conditional Incremental Auctions for such Delivery Year, except to the extent updated or adjusted as required by other provisions of this Tariff.

d) In accordance with the schedule provided in the PJM Manuals, PJM will post the Final PJM Region Peak Load Forecast and the allocation to each zone of the obligation resulting from such final forecast, following the completion of the final Incremental Auction (including any Conditional Incremental Auction) conducted for such Delivery Year;

e) In accordance with the schedule provided in the PJM Manuals, PJM will advise owners of Generation Capacity Resources of the updated EFORd values for such Generation Capacity Resources prior to the conduct of the Third Incremental Auction for such Delivery Year.

f) After conducting the Reliability Pricing Model Auctions, PJM will post the results of each auction as soon thereafter as possible, including any adjustments to PJM Region or LDA Reliability Requirements to reflect Price Responsive Demand with a PRD Reservation Price equal to or less than the applicable Base Residual Auction clearing price. The posted results shall include graphical supply curves that are (a) provided for the entire PJM Region, (b) provided for any Locational Deliverability Area for which there are four (4) or more suppliers, and (c) developed using a formulaic approach to smooth the curves using a statistical technique that fits a smooth curve to the underlying supply curve data while ensuring that the point of intersection between supply and demand curves is at the market clearing price. At such time, PJM also shall post the aggregate megawatt quantity requested and granted in the Self-Supply and Competitive Entry Exemption categories in the EMAAC, MAAC and Rest of RTO LDAs/regions; the aggregate megawatt quantity cleared in the RPM Auction for Self-Supply and Competitive Entry Exemption categories; and the aggregate megawatt quantity of Self-Supply and Competitive Entry Exemptions requested and granted for any LDA other than those specified in the preceding clause if the LDA has more than four new generation projects in the generation interconnection queue that could have offered into the applicable RPM Auction and the LDA had a separate VRR Curve posted for the applicable RPM Auction.

If PJM discovers an error in the initial posting of auction results for a particular Reliability Pricing Model Auction, it shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the fifth business day following the initial publication of the results of the auction. After this initial notification, if PJM determines it is necessary to post modified results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the seventh business day following the initial publication of the results of the auction. Thereafter, PJM must post on its Web site any corrected auction results by no later than 5:00 p.m. of the tenth business day following the initial publication of the results of the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.



## 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 and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; ~~and for the 2017/2018 Delivery Year commencing June 1, 2017 and subsequent Delivery Years,~~ the Limited Resource Constraints and the Sub-Annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;-
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement.

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.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, ~~the~~ the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, ~~for~~ for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;

- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement
- For Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; ~~and for the 2017/2018 Delivery Year commencing June 1, 2017 and subsequent Delivery Years~~, the Limited Resource Constraints and the Sub-annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;
- 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) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction 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.

(ii) When 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 Incremental Auctions for such Delivery Year that does not clear such auction, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD. 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.

(iii) When 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 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, plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD; 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.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) 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 in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years 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), (ii), or (iii) 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) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such auctions, 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 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 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) Conditional Incremental Auction

For each 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a 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.



## 5.14 Clearing Prices and Charges

### a) Capacity Resource Clearing Prices

For each Base Residual Auction and Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. The Capacity Resource Clearing Price for each LDA will be the marginal value of system capacity for the PJM Region, without considering locational constraints, adjusted as necessary by any applicable Locational Price Adders, Annual Resource Price Adders, Extended Summer Resource Price Adders, Limited Resource Price Decrements, ~~and~~ Sub-Annual Resource Price Decrements, Base Capacity Demand Resource Price Decrements, and Base Capacity Resource Price Decrements, all as determined by the Office of the Interconnection based on the optimization algorithm. If a Capacity Resource is located in more than one Locational Deliverability Area, it shall be paid the highest Locational Price Adder in any applicable LDA in which the Sell Offer for such Capacity Resource cleared. The Annual Resource Price Adder is applicable for Annual Resources only. The Extended Summer Resource Price Adder is applicable for Annual Resources and Extended Summer Demand Resources.

### b) Resource Make-Whole Payments

If a Sell Offer specifies a minimum block, and only a portion of such block is needed to clear the market in a Base Residual or Incremental Auction, the MW portion of such Sell Offer needed to clear the market shall clear, and such Sell Offer shall set the marginal value of system capacity. In addition, the Capacity Market Seller shall receive a Resource Make-Whole Payment equal to the Capacity Resource Clearing Price in such auction times the difference between the Sell Offer's minimum block MW quantity and the Sell Offer's cleared MW quantity. The cost for any such Resource Make-Whole Payments required in a Base Residual Auction or Incremental Auction for adjustment of prior capacity commitments shall be collected pro rata from all LSEs in the LDA in which such payments were made, based on their Daily Unforced Capacity Obligations. The cost for any such Resource Make-Whole Payments required in an Incremental Auction for capacity replacement shall be collected from all Capacity Market Buyers in the LDA in which such payments were made, on a pro-rata basis based on the MWs purchased in such auction.

### c) New Entry Price Adjustment

A Capacity Market Seller that submits a Sell Offer based on a Planned Generation Capacity Resource that clears in the BRA for a Delivery Year may, at its election, submit Sell Offers with a New Entry Price Adjustment in the BRAs for the two immediately succeeding Delivery Years if:

1. Such Capacity Market Seller provides notice of such election at the time it submits its Sell Offer for such resource in the BRA for the first Delivery Year for which such resource is eligible to be considered a Planned Generation Capacity Resource. When the Capacity Market Seller provides notice of such election, it must specify whether its Sell Offer is contingent upon qualifying for the New Entry Price Adjustment. The Office of the



Interconnection shall not clear such contingent Sell Offer if it does not qualify for the New Entry Price Adjustment.

2. All or any part of a Sell Offer from the Planned Generation Capacity Resource submitted in accordance with section 5.14(c)(1) is the marginal Sell Offer that sets the Capacity Resource Clearing Price for the LDA.

3. Acceptance of all or any part of a Sell Offer that meets the conditions in section 5.14(c)(1)-(2) in the BRA increases the total Unforced Capacity committed in the BRA (including any minimum block quantity) for the LDA in which such Resource will be located from a megawatt quantity below the LDA Reliability Requirement, minus the Short Term Resource Procurement Target, to a megawatt quantity at or above a megawatt quantity at the price-quantity point on the VRR Curve at which the price is 0.40 times the applicable Net CONE divided by (one minus the pool-wide average EFORd).

4. Such Capacity Market Seller submits Sell Offers in the BRA for the two immediately succeeding Delivery Years for the entire Unforced Capacity of such Generation Capacity Resource committed in the first BRA under section 5.14(c)(1)-(2) equal to the lesser of: A) the price in such seller's Sell Offer for the BRA in which such resource qualified as a Planned Generation Capacity Resource that satisfies the conditions in section 5.14(c)(1)-(3); or B) 0.90 times the Net CONE applicable in the first BRA in which such Planned Generation Capacity Resource meeting the conditions in section 5.14(c)(1)-(3) cleared, on an Unforced Capacity basis, for such LDA.

5. If the Sell Offer is submitted consistent with section 5.14(c)(1)-(4) the foregoing conditions, then:

- (i) in the first Delivery Year, the Resource sets the Capacity Resource Clearing Price for the LDA and all cleared resources in the LDA receive the Capacity Resource Clearing Price set by the Sell Offer as the marginal offer, in accordance with sections 5.12(a) and 5.14(a).
- (ii) in either of the subsequent two BRAs, if any part of the Sell Offer from the Resource clears, it shall receive the Capacity Resource Clearing Price for such LDA for its cleared capacity and for any additional minimum block quantity pursuant to section 5.14(b); or
- (iii) if the Resource does not clear, it shall be deemed resubmitted at the highest price per MW-day at which the megawatt quantity of Unforced Capacity of such Resource that cleared the first-year BRA will clear the subsequent-year BRA pursuant to the optimization algorithm described in section 5.12(a) of this Attachment, and
- (iv) the resource with its Sell Offer submitted shall clear and shall be committed to the PJM Region in the amount cleared, plus any additional minimum-block quantity from its Sell Offer for such Delivery Year, but such additional amount shall be no greater than the portion of a minimum-

block quantity, if any, from its first-year Sell Offer satisfying section 5.14(c)(1)-(3) that is entitled to compensation pursuant to section 5.14(b) of this Attachment; and

- (v) the Capacity Resource Clearing Price, and the resources cleared, shall be re-determined to reflect the resubmitted Sell Offer. In such case, the Resource for which the Sell Offer is submitted pursuant to section 5.14(c)(1)-(4) shall be paid for the entire committed quantity at the Sell Offer price that it initially submitted in such subsequent BRA. The difference between such Sell Offer price and the Capacity Resource Clearing Price (as well as any difference between the cleared quantity and the committed quantity), will be treated as a Resource Make-Whole Payment in accordance with Section 5.14(b). Other capacity resources that clear the BRA in such LDA receive the Capacity Resource Clearing Price as determined in Section 5.14(a).

6. The failure to submit a Sell Offer consistent with Section 5.14(c)(i)-(iii) in the BRA for Delivery Year 3 shall not retroactively revoke the New Entry Price Adjustment for Delivery Year 2. However, the failure to submit a Sell Offer consistent with section 5.14(c)(4) in the BRA for Delivery Year 2 shall make the resource ineligible for the New Entry Pricing Adjustment for Delivery Years 2 and 3.

7. For each Delivery Year that the foregoing conditions are satisfied, the Office of the Interconnection shall maintain and employ in the auction clearing for such LDA a separate VRR Curve, notwithstanding the outcome of the test referenced in Section 5.10(a)(ii) of this Attachment.

8. On or before August 1, 2012, PJM shall file with FERC under FPA section 205, as determined necessary by PJM following a stakeholder process, tariff changes to establish a long-term auction process as a not unduly discriminatory means to provide adequate long-term revenue assurances to support new entry, as a supplement to or replacement of this New Entry Price Adjustment.

d) Qualifying Transmission Upgrade Payments

A Capacity Market Seller that submitted a Sell Offer based on a Qualifying Transmission Upgrade that clears in the Base Residual Auction shall receive a payment equal to the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA into which the Qualifying Transmission Upgrade is to increase Capacity Emergency Transfer Limit, less the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA from which the upgrade was to provide such increased CETL, multiplied by the megawatt quantity of increased CETL cleared from such Sell Offer. Such payments shall be reflected in the Locational Price Adder determined as part of the Final Zonal Capacity Price for the Zone associated with such LDAs, and shall be funded through a reduction in the Capacity Transfer Rights allocated to Load-Serving Entities under section 5.15, as set forth in that section. PJM Settlement shall be the Counterparty to any cleared capacity transaction resulting from a Sell Offer based on a Qualifying Transmission Upgrade.

e) Locational Reliability Charge

In accordance with the Reliability Assurance Agreement, each LSE shall incur a Locational Reliability Charge (subject to certain offsets and other adjustments as described in sections 5.13, 5.14A, 5.14B, [5.14C](#), [5.14D](#), and 5.15) equal to such LSE's Daily Unforced Capacity Obligation in a Zone during such Delivery Year multiplied by the applicable Final Zonal Capacity Price in such Zone. PJMSettlement shall be the Counterparty to the LSEs' obligations to pay, and payments of, Locational Reliability Charges.

f) The Office of the Interconnection shall determine Zonal Capacity Prices in accordance with the following, based on the optimization algorithm:

i) The Office of the Interconnection shall calculate and post the Preliminary Zonal Capacity Prices for each Delivery Year following the Base Residual Auction for such Delivery Year. The Preliminary Zonal Capacity Price for each Zone shall be the sum of: 1) the marginal value of system capacity for the PJM Region, without considering locational constraints; 2) the Locational Price Adder, if any, for the LDA in which such Zone is located; provided however, that if the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA; 3) an adjustment, if required, to account for adders paid to Annual Resources and Extended Summer Demand Resources in the LDA for which the zone is located; 4) an adjustment, if required, to account for Resource Make-Whole Payments; and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits, all as determined in accordance with the optimization algorithm.

ii) The Office of the Interconnection shall calculate and post the Adjusted Zonal Capacity Price following each Incremental Auction. The Adjusted Zonal Capacity Price for each Zone shall equal the sum of: (1) the average marginal value of system capacity weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (2) the average Locational Price Adder weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (3) an adjustment, if required, to account for adders paid to Annual Resources and Extended Summer Demand Resources for all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (4) an adjustment, if required, to account for Resource Make-Whole Payments for all actions previously conducted (excluding any Resource Make-Whole Payments to be charged to the buyers of replacement capacity); and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits. The Adjusted Zonal Capacity Price may decrease if Unforced Capacity is decommitted or the Resource Clearing Price decreases in an Incremental Auction.

iii) The Office of the Interconnection shall calculate and post the Final Zonal Capacity Price for each Delivery Year after the final auction is held for such Delivery Year, as set forth above. The Final Zonal Capacity Price for each Zone shall equal the Adjusted Zonal Capacity Price, as further adjusted to reflect any decreases in the Nominated Demand Resource

Value of any existing Demand Resource cleared in the Base Residual Auction and Second Incremental Auction.

g) Resource Substitution Charge

Each Capacity Market Buyer in an Incremental Auction securing replacement capacity shall pay a Resource Substitution Charge equal to the Capacity Resource Clearing Price resulting from such auction multiplied by the megawatt quantity of Unforced Capacity purchased by such Market Buyer in such auction.

h) Minimum Offer Price Rule for Certain Generation Capacity Resources

(1) *General Rule.* Any Sell Offer submitted in any RPM Auction for any Delivery Year based on a MOPR Screened Generation Resource shall have an offer price no lower than the MOPR Floor Offer Price for the period specified in this subsection (h), unless the Capacity Market Seller has obtained a Self-Supply Exemption, a Competitive Entry Exemption, or a *Unit-Specific Exception* with respect to such MOPR Screened Generation Resource in such auction prior to the submission of such offer, in accordance with the provisions of this subsection. Nothing in subsection (c) of this section 5.14 shall be read to excuse compliance of any Sell Offer with the requirements of this subsection (h).

(2) *Applicability.* A MOPR Screened Generation Resource shall be any Generation Capacity Resource, and any uprate to a Generation Capacity Resource that is being, or has been, modified to increase the number of megawatts of available installed capacity thereof by 20 MW or more, based on a combustion turbine, combined cycle, or integrated gasification combined cycle generating plant (including Repowering of an existing plant whenever the repowered plant utilizes combustion turbine, combined cycle, or integrated gasification combined cycle *technology*) with an installed capacity rating, combined for all units comprising such resource at a single point of interconnection to the Transmission System, of no less than 20 MW; provided, however, that a MOPR Screened Generation Resource shall not include: (i) the Installed Capacity equivalent (measured as of the time of clearing) of any of a resource's Unforced Capacity that has cleared any RPM Auction conducted prior to February 1, 2013 or an uprate of such resource to the extent that the developer or owner of the uprate timely submitted a request for, and PJM issued, an offer floor pursuant to the unit-specific exception process of this subsection (h) before the start of the commencement of the Base Residual Auction for the 2016/2017 Delivery Year and the capacity associated with the uprate clears that auction; (ii) any unit primarily fueled with landfill gas; (iii) any cogeneration unit that is certified or self-certified as a Qualifying Facility (as defined in Part 292 of FERC's regulations), where the Capacity Market Seller is the owner of the Qualifying Facility or has contracted for the Unforced Capacity of such facility and the Unforced Capacity of the unit is no larger than approximately all of the Unforced Capacity Obligation of the host load, and all Unforced Capacity of the unit is used to meet the Unforced Capacity Obligation of the host load. A MOPR Screened Generation Resource shall include all Generation Capacity Resources located in the PJM Region that meet the foregoing criteria, and all Generation Capacity Resources located outside the PJM Region (where such Sell Offer is based solely on such resource) that entered commercial service on or after January 1, 2013, that meet the foregoing criteria and that require sufficient transmission

investment for delivery to the PJM Region to indicate a long-term commitment to providing capacity to the PJM Region.

(3) *MOPR Floor Offer Price.* The MOPR Floor Offer Price shall be 100% of the Net Asset Class Cost of New Entry for the relevant generator type and location, as determined hereunder. The gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be, for purposes of the *2018/2019 Delivery Year and subsequent Delivery Years*, the values indicated in the table below for each CONE Area for a combustion turbine generator (“CT”), a combined cycle generator (“CC”), and an integrated gasification combined cycle generator (“IGCC”), respectively, and shall be adjusted for subsequent Delivery Years in accordance with subsection (h)(3)(i) below. *For purposes of Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the MOPR Floor Offer Price shall be the same as that used in the Base Residual Auction for such Delivery Year.* The estimated energy and ancillary service revenues for each type of plant shall be determined as described in subsection (h)(3)(ii) below.

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4
CT \$/MW-yr	132,200	130,300	128,900	130,300
CC \$/MW-yr	185,700	176,000	172,600	179,400
IGCC \$/MW-yr	582,042	558,486	547,240	537,306

i) Commencing with the Delivery Year that begins on June 1, 2019, the gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be adjusted to reflect changes in generating plant construction costs in the same manner as set forth for the cost of new entry in section 5.10(a)(iv)(B), provided, however, *that the Applicable BLS Composite Index used for CC plants shall be calculated from the three indices referenced in that section but weighted 25% for the wages index, 60% for the construction materials index, and 15% for the turbines index, and provided further that nothing herein shall preclude the Office of the Interconnection from filing to change the Net Asset Class Cost of New Entry for any Delivery Year pursuant to appropriate filings with FERC under the Federal Power Act.*

ii) For purposes of this provision, the net energy and ancillary services revenue estimate for a combustion turbine generator shall be that determined by section 5.10(a)(v)(A) of this Attachment DD, provided that the energy revenue estimate for each CONE Area shall be based on the Zone within such CONE Area that has the highest energy revenue estimate calculated under the methodology in that subsection. The net energy and ancillary services revenue estimate for a combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator in the previous sentence, except that the heat rate assumed for the combined cycle resource shall be 6.722 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$3.23 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3198 per MW-year. The net energy and ancillary services revenue estimate for an integrated gasification combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator above,

except that the heat rate assumed for the combined cycle resource shall be 8.7 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$7.77 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3,198 per MW-year.

(4) Duration. The MOPR Floor Offer Price shall apply to any Sell Offer based on a MOPR Screened Generation Resource (to the extent an exemption has not been obtained for such resource under this subsection) until *(and including)* the *first Delivery Year* for which a Sell Offer based on the non-exempt portion of such resource has cleared an RPM Auction.

(5) Effect of Exemption or Exception. To the extent a Sell Offer in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, either a Competitive Entry Exemption or a Self-Supply Exemption, such offer (to the extent of such exemption) may include an offer price below the MOPR Floor Offer Price (including, without limitation, an offer price of zero or other indication of intent to clear regardless of price). *To the extent a Sell Offer in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, a Unit-Specific Exception, such offer (to the extent of such exception) may include an offer price below the MOPR Floor Offer Price but no lower than the minimum offer price determined in such exception process.* The Installed Capacity equivalent of any MOPR Screened Generation Resource's Unforced Capacity that has both obtained such an exemption *or exception* and cleared the RPM Auction for which it obtained such exemption *or exception* shall not be subject to a MOPR Floor Offer Price in any subsequent RPM Auction, except as provided in subsection (h)(10) hereof.

(6) Self-Supply Exemption. A Capacity Market Seller that is a Self-Supply LSE may qualify its MOPR Screened Generation Resource in any RPM Auction for any Delivery Year for a Self-Supply Exemption if the MOPR Screened Generation Resource satisfies the criteria specified below:

i) Cost and revenue criteria. The costs and revenues associated with a MOPR Screened Generation Resource for which a Self-Supply LSE seeks a Self-Supply Exemption may permissibly reflect: (A) payments, concessions, rebates, subsidies, or incentives designed to incent or promote, or participation in a program, contract, or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (B) payments, concessions, rebates, subsidies or incentives from a county or other local government authority designed to incent, or participation in a program, contract or other arrangement established by a county or other local governmental authority utilizing eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; (C) revenues received by the Self-Supply LSE attributable to the inclusion of costs of the MOPR Screened Generation Resource in such LSE's regulated retail rates where such LSE is a *Vertically Integrated Utility* and the MOPR Screened Generation Resource is planned

consistent with such LSE's most recent integrated resource plan found reasonable by the RERRA to meet the needs of its customers; and (D) payments to the Self-Supply LSE (such as retail rate recovery) traditionally associated with revenues and costs of Public Power Entities (or joint action of multiple Public Power Entities); revenues to a Public Power Entity from its contracts having a term of one year or more with its members or customers (including wholesale power contracts between an electric cooperative and its members); or cost or revenue advantages related to a longstanding business model employed by the Self-Supply LSE, such as its financial condition, tax status, access to capital, or other similar conditions affecting the Self-Supply LSE's costs and revenues. A Self-Supply Exemption shall not be permitted to the extent that the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, has any formal or informal agreements or arrangements to seek, recover, accept or receive: (E) any material payments, concessions, rebates, or subsidies, connected to the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource, not described by (A) through (D) of this section; or (F) other support through contracts having a term of one year or more obtained in any procurement process sponsored or mandated by any state legislature or agency connected with the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource. Any cost and revenue advantages described by (A) through (D) of this subsection that are material to the cost of the MOPR Screened Generation Resource and that are irregular or anomalous, that do not reflect arms-length transactions, or that are not in the ordinary course of the Self-Supply LSE's business, shall disqualify application of the Self-Supply Exemption unless the Self-Supply LSE demonstrates in the exemption process provided hereunder that such costs and revenues are consistent with the overall objectives of the Self-Supply Exemption.

ii) **Owned and Contracted Capacity.** To qualify for the Self-Supply Exemption, the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, must demonstrate that the MOPR Screened Generation Resource is included in such LSE's Owned and Contracted Capacity and that its Owned and Contracted Capacity meets the criteria outlined below after the addition of such MOPR Screened Generation Resource.

iii) **Maximum Net Short Position.** If the excess, if any, of the Self-Supply LSE's Estimated Capacity Obligation above its Owned and Contracted Capacity ("Net Short") is less than the amount of Unforced Capacity specified in or calculated under the table below for all relevant areas based on the specified type of LSE, then this exemption criterion is satisfied. For this purpose, the Net Short position shall be calculated for any Self-Supply LSE requesting this exemption for the PJM Region and for each LDA specified in the table below in which the MOPR Screened Generation Resource is located (including through nesting of LDAs) to the extent the Self-Supply LSE has an Estimated Capacity Obligation in such LDA. If the Self-Supply LSE does not have an Estimated Capacity Obligation in an evaluated LDA, then the Self-Supply LSE is deemed to satisfy the test for that LDA.

Type of Self-Supply LSE	Maximum Net Short Position (UCAP MW, measured at RTO, MAAC, SWMAAC and EMAAC unless otherwise specified)
Single Customer Entity	150 MW

Public Power Entity	1000 MW
Multi-state Public Power Entity*	1000 MW in SWMAAC, EMAAC, or MAAC LDAs and 1800 MW RTO
Vertically Integrated Utility	20% of LSE's Reliability Requirement

\*A Multi-state Public Power Entity shall not have more than 90% of its total load in any one state.

iv) **Maximum Net Long Position.** If the excess, if any, of the Self-Supply LSE's Owned and Contracted Capacity for the PJM Region above its Estimated Capacity Obligation for the PJM Region ("Net Long"), is less than the amount of Unforced Capacity specified in or calculated under the table below, then this exemption criterion is satisfied:

Self-Supply LSE Total Estimated Capacity Obligation in the PJM Region (UCAP MW)	Maximum Net Long Position (UCAP MW)
Less than 500	75 MW
Greater than or equal to 500 and less than 5,000	15% of LSE's Estimated Capacity Obligation
Greater than or equal to 5,000 and less than 15,000	750 MW
Greater than or equal to 15,000 and less than 25,000	1,000 MW
Greater than or equal to 25,000	4% of LSE's Estimated Capacity Obligation capped at 1300 MWs

If the MOPR Screened Generation Resource causes the Self-Supply LSE's Net Long Position to exceed the applicable threshold stated above, the MOPR Floor Offer Price shall apply, for the Delivery Year in which such threshold is exceeded, only to the quantity of Unforced Capacity of such resource that exceeds such threshold. In such event, such Unforced Capacity of such resource shall be subject to the MOPR Floor Offer Price for the period specified in subsection (h)(4) hereof; provided however, that any such Unforced Capacity that did not qualify for such exemption for such Delivery Year may qualify for such exemption in any RPM Auction for a future Delivery Year to the extent the Self-Supply LSE's future load growth accommodates the resource under the Net Long Position criteria.

v) *Beginning with the Delivery Year that commences June 1, 2020, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the Maximum Net Short and Net Long positions, as required by the foregoing subsection. Such review may include, without limitation, analyses under various appropriate scenarios of the minimum net short quantities at which the benefit to an LSE of a clearing price reduction for its capacity purchases from the RPM Auction outweighs the cost to the LSE of a new generating unit that is offered at an uneconomic price, and may, to the extent appropriate, reasonably balance the need to protect the market with the need to accommodate the normal business operations of Self-Supply LSEs. Based on the results of such review, PJM shall propose either to modify or retain the existing Maximum Net Short and Net Long positions. The Office of the Interconnection shall post publicly and solicit stakeholder comment regarding the proposal. If, as a result of this process, changes to the Maximum Net Short and/or Net Long*



*positions are proposed, the Office of the Interconnection shall file such modified Maximum Net Short and/or Net Long positions with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.*

vi) Officer Certification. The Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller's decision to submit a Sell Offer into the RPM Auction for the MOPR Screened Generation Resource and seek an exemption from the MOPR Floor Offer Price for such resource, and to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection in support of its exemption request is true and correct and the MOPR Screened Generation Resource will be Owned and Contracted Capacity for the purpose of self-supply for the benefit of the Self-Supply LSE; (B) the Self-Supply LSE has disclosed all material facts relevant to the exemption request; and (C) the Capacity Market Seller satisfies the criteria for the exemption.

vii) For purposes of the Self-Supply Exemption:

(A) "Self-Supply LSE" means the following types of Load Serving Entity, which operate under long-standing business models: Municipal/Cooperative Entity, Single Customer Entity, or Vertically Integrated Utility.

(B) "Municipal/Cooperative Entity" means cooperative and municipal utilities, including public power supply entities comprised of either or both of the same, and joint action agencies.

(C) "Vertically Integrated Utility" means a utility that owns generation, includes such generation in its regulated rates, and earns a regulated return on its investment in such generation.

(D) "Single Customer Entity" means an LSE that serves at retail only customers that are under common control with such LSE, where such control means holding 51% or more of the voting securities or voting interests of the LSE and all its retail customers.

(E) All capacity calculations shall be on an Unforced Capacity basis.

(F) Estimated Capacity Obligations and Owned and Contracted Capacity shall be measured on a three-year average basis for the three years starting with the first day of the Delivery Year associated with the RPM Auction for which the exemption is being sought ("MOPR Exemption Measurement Period"). Such measurements shall be verified by PJM using the latest available data that PJM uses to determine capacity obligations.

(G) The Self-Supply LSE's Estimated Capacity Obligation shall be the average, for the three Delivery Years of the MOPR Exemption Measurement Period, of

the Self-Supply LSE's estimated share of the most recent available Zonal Peak Load Forecast for each such Delivery Year for each Zone in which the Self-Supply LSE will serve load during such Delivery Year, times the Forecast Pool Requirement established for the first such Delivery Year, shall be stated on an Unforced Capacity basis. The Self-Supply LSE's share of such load shall be determined by the ratio of: (1) the peak load contributions, from the most recent summer peak for which data is available at the time of the exemption request, of the customers or areas within each Zone for which such LSE will have load-serving responsibility during the first Delivery Year of the MOPR Exemption Measurement Period to (2) the weather-normalized summer peak load of such Zone for the same summer peak period addressed in the previous clause. *Notwithstanding the foregoing, solely in the case of any Self-Supply LSE that demonstrates to the Office of the Interconnection that its annual peak load occurs in the winter, such LSE's Estimated Capacity Obligation determined solely for the purposes of this subsection 5.14(h) shall be based on its winter peak.* Once submitted, an exemption request shall not be subject to change due to later revisions to the PJM load forecasts for such Delivery Years. The Self-Supply LSE's Estimated Capacity Obligation shall be limited to the LSE's firm obligations to serve specific identifiable customers or groups of customers including native load obligations and specific load obligations in effective contracts for which the term of the contract includes at least a portion of the Delivery Year associated with the RPM Auction for which the exemption is requested (and shall not include load that is speculative or load obligations that are not native load or customer specific); as well as retail loads of entities that directly (as through charges on a retail electric bill) or indirectly, contribute to the cost recovery of the MOPR Screened Generation Resource; provided, however, nothing herein shall require a Self-Supply LSE that is a joint owner of a MOPR Screened Generation Resource to aggregate its expected loads with the loads of any other joint owner for purposes of such Self-Supply LSE's exemption request.

(H) "Owned and Contracted Capacity" includes all of the Self-Supply LSE's qualified Capacity Resources, whether internal or external to PJM. For purposes of the Self-Supply Exemption, Owned and Contracted Capacity includes Generation Capacity Resources without regard to whether such resource has failed or could fail the Competitive and Non-Discriminatory procurement standard of the Competitive Entry Exemption. To qualify for a Self-Supply Entry exemption, the MOPR Screened Generation must be used by the Self-Supply LSE, meaning such Self-Supply LSE is the beneficial off-taker of such generation such that the owned or contracted for MOPR Screened Generation is for the Self-Supply LSE's use to supply its customer(s).

(I) If multiple entities will have an ownership or contractual share in, or are otherwise sponsoring, the MOPR Screened Generation Resource, the positions of each such entity will be measured and considered for a Self-Supply Exemption with respect to the individual Self-Supply LSE's ownership or contractual share of such resource.

(7) Competitive Entry Exemption. A Capacity Market Seller may qualify a MOPR Screened Generation Resource for a Competitive Entry Exemption in any RPM Auction for any Delivery Year if the Capacity Market Seller demonstrates that the MOPR Screened Generation Resource satisfies all of the following criteria:

i) No costs of the MOPR Screened Generation Resource are recovered from customers either directly or indirectly through a non-bypassable charge, *except in the event that Sections 5.14(h)(7)(ii) and (iii), to the extent either or both are applicable to such resource, are satisfied.*

ii) No costs of the MOPR Screened Generation Resource are supported through any contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes that are not Competitive and Non-Discriminatory. The Office of the Interconnection and the Market Monitoring Unit may deem a procurement process to be “Competitive and Non-Discriminatory” only if: (A) both new and existing resources may satisfy the requirements of the procurement; (B) the requirements of the procurement are fully objective and transparent; (C) the procurement terms do not restrict the type of capacity resources that may participate in and satisfy the requirements of the procurement; (D) the procurement terms do not include selection criteria that could give preference to new resources; and (E) the procurement terms do not use indirect means to discriminate against existing capacity, such as geographic constraints inconsistent with LDA import capabilities, unit technology or unit fuel requirements or unit heat-rate requirements, identity or nature of seller requirements, or requirements for new construction.

iii) The Capacity Market Seller does not have any formal or informal agreements or arrangements to seek, recover, accept or receive any (A) material payments, concessions, rebates, or subsidies directly or indirectly from any governmental entity connected with the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource, or (B) other material support through contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes, connected to the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource. These restrictions shall not include (C) payments (including payments in lieu of taxes), concessions, rebates, subsidies, or incentives designed to incent, or participation in a program, contract or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (D) payments, concessions, rebates, subsidies or incentives designed to incent, or participation in a program, contract or other arrangements from a county or other local governmental authority using eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; or (E) federal government production tax credits, investment tax credits, and similar tax advantages or incentives that are available to generators without regard to the geographic location of the generation.

iv) The Capacity Market Seller shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller’s decision to submit a Sell Offer into the RPM Auction for the MOPR Screened Generation Resource and seek an exemption from the MOPR Floor Offer Price for such resource, and, to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection to support its exemption is true and correct and the resource is being constructed or contracted for purposes of competitive entry by the Capacity

Market Seller; (B) the Capacity Market Seller has disclosed all material facts relevant to the request for the exemption; and (C) the exemption request satisfies the criteria for the exemption.

(8) Unit-Specific Exception. *A Capacity Market Seller intending to submit a Sell Offer in any RPM Auction below the MOPR Floor Offer Price for any Delivery Year based on a MOPR Screened Generation Resource may, at its election, submit a request for a Unit-Specific Exception in addition to, or in lieu of, a request for a Self-Supply Exemption or a Competitive Entry Exemption, for such MOPR Screened Generation Resource. A Sell Offer meeting the Unit-Specific Exception criteria in this subsection shall be permitted and shall not be re-set to the MOPR Floor Offer Price if the Capacity Market Seller obtains a determination from the Office of the Interconnection or the Commission, prior to the RPM Auction in which it seeks to submit the Sell Offer, that such Sell Offer is permissible because it is consistent with the competitive, cost-based, fixed, net cost of new entry were the resource to rely solely on revenues from PJM-administered markets. The following requirements shall apply to requests for such determinations:*

i) *The Capacity Market Seller shall submit a written request with all of the required documentation as described below and in the PJM Manuals. For such purpose, per subsection (h)(9)(i) below, the Office of the Interconnection shall post a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price expected to be established hereunder. If the MOPR Floor Offer Price subsequently established for the relevant Delivery Year is less than the Sell Offer, the Sell Offer shall be permitted and no exception shall be required.*

ii) *As more fully set forth in the PJM Manuals, the Capacity Market Seller must include in its request for an exception under this subsection documentation to support the fixed development, construction, operation, and maintenance costs of the MOPR Screened Generation Resource, as well as estimates of offsetting net revenues. Estimates of costs or revenues shall be supported at a level of detail comparable to the cost and revenue estimates used to support the Net Asset Class Cost of New Entry established under this section 5.14(h). As more fully set forth in the PJM Manuals, supporting documentation for project costs may include, as applicable and available, a complete project description; environmental permits; vendor quotes for plant or equipment; evidence of actual costs of recent comparable projects; bases for electric and gas interconnection costs and any cost contingencies; bases and support for property taxes, insurance, operations and maintenance (“O&M”) contractor costs, and other fixed O&M and administrative or general costs; financing documents for construction–period and permanent financing or evidence of recent debt costs of the seller for comparable investments; and the bases and support for the claimed capitalization ratio, rate of return, cost-recovery period, inflation rate, or other parameters used in financial modeling. Such documentation also shall identify and support any sunk costs that the Capacity Market Seller has reflected as a reduction to its Sell Offer. The request shall include a certification, signed by an officer of the Capacity Market Seller, that the claimed costs accurately reflect, in all material respects, the seller’s reasonably expected costs of new entry and that the request satisfies all standards for a Unit-Specific Exception hereunder. The request also shall identify all revenue sources relied upon in the Sell Offer to offset the claimed fixed costs, including, without limitation, long-term power supply contracts, tolling agreements, or tariffs on file with state regulatory agencies, and shall demonstrate that such offsetting revenues are consistent,*

*over a reasonable time period identified by the Capacity Market Seller, with the standard prescribed above. In making such demonstration, the Capacity Market Seller may rely upon forecasts of competitive electricity prices in the PJM Region based on well defined models that include fully documented estimates of future fuel prices, variable operation and maintenance expenses, energy demand, emissions allowance prices, and expected environmental or energy policies that affect the seller's forecast of electricity prices in such region, employing input data from sources readily available to the public. Documentation for net revenues also may include, as available and applicable, plant performance and capability information, including heat rate, start-up times and costs, forced outage rates, planned outage schedules, maintenance cycle, fuel costs and other variable operations and maintenance expenses, and ancillary service capabilities.*

*iii) A Sell Offer evaluated under the Unit-Specific Exception shall be permitted if the information provided reasonably demonstrates that the Sell Offer's competitive, cost-based, fixed, net cost of new entry is below the MOPR Floor Offer Price, based on competitive cost advantages relative to the costs implied by the MOPR Floor Offer Price, including, without limitation, competitive cost advantages resulting from the Capacity Market Seller's business model, financial condition, tax status, access to capital or other similar conditions affecting the applicant's costs, or based on net revenues that are reasonably demonstrated hereunder to be higher than those implied by the MOPR Floor Offer Price. Capacity Market Sellers shall be asked to demonstrate that claimed cost advantages or sources of net revenue that are irregular or anomalous, that do not reflect arm's-length transactions, or that are not in the ordinary course of the Capacity Market Seller's business are consistent with the standards of this subsection. Failure to adequately support such costs or revenues so as to enable the Office of the Interconnection to make the determination required in this section will result in denial of a Unit-Specific Exception hereunder by the Office of the Interconnection.*

(9) Exemption/Exception Process.

*i) The Office of the Interconnection shall post, by no later than one hundred fifty (150) days prior to the commencement of the offer period for an RPM Auction, a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price.*

*ii) The Capacity Market Seller must submit its request for a Unit-Specific Exception, Competitive Entry Exemption or a Self-Supply Exemption in writing simultaneously to the Market Monitoring Unit and the Office of Interconnection by no later than one hundred thirty five (135) days prior to the commencement of the offer period for the RPM Auction in which such seller seeks to submit its Sell Offer. The Capacity Market Seller shall include in its request a description of its MOPR Screened Generation Resource, the exemption or exception that the Capacity Market Seller is requesting, and all documentation necessary to demonstrate that the exemption or exception criteria are satisfied, including without limitation the applicable certification(s) specified in this subsection (h). In addition to the documentation identified herein and in the PJM Manuals, the Capacity Market Seller shall provide any additional supporting information reasonably requested by the Office of the Interconnection or the Market Monitoring Unit to evaluate the Sell Offer. Requests for additional documentation will not extend the deadline by which the Office of the Interconnection or the Market Monitoring Unit must provide their determinations of the exemption request. The Capacity Market Seller*

shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes in the request.

iii) As further described in Section II.D. of Attachment M-Appendix to this Tariff, the Market Monitoring Unit shall review the request and supporting documentation and shall provide its determination by no later than forty-five (45) days after receipt of the exemption *or exception* request. The Office of the Interconnection shall also review all exemption *and exception* requests to determine whether the request is acceptable in accordance with the standards and criteria under this section 5.14(h) and shall provide its determination in writing to the Capacity Market Seller, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days after receipt of the exemption *or exception* request. The Office of the Interconnection shall reject a requested exemption *or exception* if the Capacity Market Seller's request does not comply with the PJM Market Rules, as interpreted and applied by the Office of the Interconnection. Such rejection shall specify those points of non-compliance upon which the Office of the Interconnection based its rejection of the exemption *or exception* request. If the Office of the Interconnection does not provide its determination *on an exemption or exception request* by no later than sixty-five (65) days after receipt of the exemption *or exception* request, the request shall be deemed granted. *Following the Office of the Interconnection's determination on a Unit-Specific Exception request, the Capacity Market Seller shall notify the Market Monitoring Unit and the Office of the Interconnection, in writing, of the minimum level of Sell Offer, consistent with such determination, to which it agrees to commit by no later than five (5) days after receipt of the Office of the Interconnection's determination of its Unit-Specific Exception request.* A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

(10) *Procedures and Remedies in Cases of Suspected Fraud or Material Misrepresentation or Omissions in Connection with Exemption Requests.*

In the event the Office of the Interconnection reasonably believes that a request for a Competitive Entry Exemption or a Self-Supply Exemption that has been granted contains fraudulent or material misrepresentations or fraudulent or material omissions such that the Capacity Market Seller would not have been eligible for the exemption for that resource had the request not contained such misrepresentations or omissions, then:

i) if the Office of the Interconnection provides written notice of revocation to the Capacity Market Seller no later than thirty (30) days prior to the commencement of the offer period for the RPM Auction for which the seller submitted a fraudulent exemption request, the Office of the Interconnection shall revoke the exemption for that auction. In such event, the Office of the Interconnection shall make any filings with FERC that the Office of the Interconnection deems necessary, and

ii) if the Office of the Interconnection does not provide written notice of revocation no later than 30 days before the start of the relevant RPM Auction, then the Office of the Interconnection may not revoke the exemption absent FERC approval. In any such filing to FERC, the requested remedies shall include (A) in the event that such resource has not cleared

in the RPM Auction for which the exemption has been granted and the filing is made no later than 5 days prior to the commencement of the offer period for the RPM Auction, revocation of the exemption or, (B) in the event that the resource has cleared the RPM Auction for which the exemption has been granted and the filing is made no later than two (2) years after the close of the offer period for the relevant RPM Auction, suspension of any payments, during the pendency of the FERC proceeding, to the Capacity Market Seller for the resource that cleared in any RPM Auction relying on such exemption; and suspension of the Capacity Market Seller's exemption for that resource for future RPM Auctions.

iii) Prior to any automatic revocation or submission to FERC, the Office of the Interconnection and/or the Market Monitoring Unit shall notify the affected Capacity Market Seller and, to the extent practicable, provide the Capacity Market Seller an opportunity to explain the alleged misrepresentation or omission. Any filing to FERC under this provision shall seek fast track treatment and neither the name nor any identifying characteristics of the Capacity Market Seller or the resource shall be publicly revealed, but otherwise the filing shall be public. The Capacity Market Seller may apply for a new exemption for that resource for subsequent auctions, including auctions held during the pendency of the FERC proceeding. In the event that the Capacity Market Seller is cleared by FERC from such allegations of misrepresentations or omissions then the exemption shall be restored to the extent and in the manner permitted by FERC. The remedies required by this subsection (h)(10) to be requested in any filing to FERC shall not be exclusive of any other remedies or penalties that may be pursued against the Capacity Market Seller.

i) Capacity Export Charges and Credits

(1) Charge

Each Capacity Export Transmission Customer shall incur for each day of each Delivery Year a Capacity Export Charge equal to the Reserved Capacity of Long-Term Firm Transmission Service used for such export ("Export Reserved Capacity") multiplied by (the Final Zonal Capacity Price for such Delivery Year for the Zone encompassing the interface with the Control Area to which such capacity is exported minus the Final Zonal Capacity Price for such Delivery Year for the Zone in which the resources designated for export are located, but not less than zero). If more than one Zone forms the interface with such Control Area, then the amount of Reserved Capacity described above shall be apportioned among such Zones for purposes of the above calculation in proportion to the flows from such resource through each such Zone directly to such interface under CETO/CETL analysis conditions, as determined by the Office of the Interconnection using procedures set forth in the PJM Manuals. The amount of the Reserved Capacity that is associated with a fully controllable facility that crosses such interface shall be completely apportioned to the Zone within which such facility terminates.

(2) Credit

To recognize the value of firm Transmission Service held by any such Capacity Export Transmission Customer, such customer assessed a charge under section 5.14(i)(1) also shall receive a credit, comparable to the Capacity Transfer Rights provided to Load-Serving Entities under section 5.15. Such credit shall be equal to the locational capacity price difference

specified in section 5.14(i)(1) times the Export Customer's Allocated Share determined as follows:

Export Customer's Allocated Share equals

(Export Path Import \* Export Reserved Capacity) /

(Export Reserved Capacity + Daily Unforced Capacity Obligations of all LSEs in such Zone).

Where:

“Export Path Import” means the megawatts of Unforced Capacity imported into the export interface Zone from the Zone in which the resource designated for export is located.

If more than one Zone forms the interface with such Control Area, then the amount of Export Reserved Capacity shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

### (3) Distribution of Revenues

Any revenues collected from the Capacity Export Charge with respect to any capacity export for a Delivery Year, less the credit provided in subsection (i)(2) for such Delivery Year, shall be distributed to the Load Serving Entities in the export-interface Zone that were assessed a

Locational Reliability Charge for such Delivery Year, pro rata based on the Daily Unforced Capacity Obligations of such Load-serving Entities in such Zone during such Delivery Year. If more than one Zone forms the interface with such Control Area, then the revenues shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

### **5.14A Demand Response Transition Provision for RPM Delivery Years 2012/2013, 2013/2014, and 2014/2015**

A. This transition provision applies only with respect to Demand Resources cleared in the Base Residual Auction for any or all of the 2012/2013, 2013/2014, or 2014/2015 Delivery Years (hereafter, “Transition Delivery Years” and each a “Transition Delivery Year”) by a Curtailment Service Provider as an aggregator of end-use customers registered for the Emergency Load Response Program as Full Program Option or Capacity Only Option. A Curtailment Service Provider meeting the description of the preceding sentence is hereafter in this Section 5.14A referred to as a “Qualified DR Provider.”

B. In the event that a Qualified DR Provider concludes that its cleared Demand Resource for a Transition Delivery Year is not viable under the revised Reporting and Compliance provisions of the Emergency Load Response Program which became effective on November 7, 2011, pursuant to the Commission's order issued on November 4, 2011, in Docket No. ER11-3322-000 (137 FERC ¶ 61,108), the Qualified DR Provider must so inform PJM in writing by no later than 30 days prior to the next Incremental Auction for the Transition Delivery Year for which the



identified Demand Resource was cleared. A Qualified DR Provider that does not timely provide the notice described in this paragraph shall be excluded from application of the remainder of this *section 5.14A*. A Demand Resource cleared for a Transition Delivery Year is not viable for purposes of this *section 5.14A* to the extent that it relies upon load reduction by any end-use customer for which the applicable Qualified DR Provider anticipated, when it offered the Demand Resource, measuring load reduction at loads in excess of such customer's peak load contribution during Emergency Load Response dispatch events or tests.

1. In the event a Qualified DR Provider that participates in an Incremental Auction after providing notice pursuant to paragraph B. above purchases Capacity Resources to replace its previously cleared Demand Resource at a price that exceeds the price at which the provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year, the Qualified DR Provider shall receive a DR Capacity Transition Credit in an amount determined by the following:

$$\text{DRTC} = (\text{IAP} - \text{BRP}) * \text{DRMW}$$

Where:

DRTC is the amount of the DR Capacity Transition Credit for the Qualified DR Provider, expressed in dollars;

IAP = the Capacity Resource Clearing Price paid by the Qualified DR Provider for replacement Capacity Resources in the Incremental Auction for the relevant Transition Delivery Year;

BRP = the Capacity Resource Clearing Price at which the Qualified DR Provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year; and

DRMW = the capacity in MW of the Qualified DR Provider's previously cleared Demand Resource.

2. All DR Capacity Transition Credits will be paid weekly to the recipient Qualified DR Providers by PJMSettlement during the relevant Transition Delivery Year.
3. The cost of payments of DR Capacity Transition Credits to Qualified DR Providers shall be included in the Locational Reliability Charge collected by PJMSettlement during the relevant Transition Delivery Year from Load-Serving Entities in the LDA(s) for which the Qualified DR Provider's subject Demand Resource was cleared.

C. A Qualified DR Provider may seek compensation related to its previously cleared Demand Resource for a particular Transition Delivery Year, in lieu of any DR Capacity Transition Credits for which it otherwise might be eligible under paragraph B.1. above, under the following conditions:

1. The Qualified DR Provider must provide timely notice to PJM in accordance with paragraph B of this *section 5.14A*, and
2. The Qualified DR Provider must demonstrate to PJM's reasonable satisfaction, not later than 60 days prior to the start of the applicable Transition Delivery Year, that
  - a. the Qualified DR Provider entered into contractual arrangements on or before April 7, 2011, with one or more end-use customers registered for the Emergency Load Response Program as Full Program Option or Capacity Only Option in association with the Demand Resource identified in the provider's notice pursuant to paragraph B above,
  - b. under which the Qualified DR Provider is unavoidably obligated to pay to such end-use customers during the relevant Transition Delivery Year
  - c. an aggregate amount that exceeds:
    - (i) any difference of (A) the amount the Qualified DR Provider is entitled to receive in payment for the previously cleared Demand Resource it designated as not viable in its notice pursuant to paragraph B of this provision, minus (B) the amount the provider is obligated to pay for capacity resources it purchased in the Incremental Auctions to replace the Demand Resource the provider designated as not viable, plus
    - (ii) any monetary gains the Qualified DR Provider realizes from purchases of Capacity Resources in Incremental Auctions for the same Transition Delivery Year to replace any Demand Resources that the Qualified DR Provider cleared in the applicable Base Residual Auction other than the resource designated as not viable in the provider's notice pursuant to paragraph (B) of this provision,
    - (iii) where "monetary gains" for the purpose of clause (ii) shall be any positive difference of (A) the aggregate amount the Qualified DR Provider is entitled to receive in payment for any such other Demand Resource it cleared in the Base Residual Auction, minus (B) the aggregate amount the provider is obligated to pay for capacity resources it purchased in the applicable Incremental Auctions to replace any such other Demand Resource the provider cleared in the Base Residual Auction.

D. A Qualified DR Provider which demonstrates satisfaction of the conditions of paragraph C of this *section 5.14A* shall be entitled to an Alternative DR Transition Credit equal to the amount described in paragraph C.2.c. above. Any Alternative DR Transition Credit provided in accordance with this paragraph shall be paid and collected by PJMSettlement in the same manner as described in paragraphs B.2. and B.3. of this *section 5.14A*, provided, however, that each Qualified DR Provider receiving an Alternative DR Transition Credit shall submit to PJM within 15 days following the end of each month of the relevant Transition Delivery Year a report providing the calculation described in paragraph C.2.c. above, using actual amounts paid and

received through the end of the month just ended. The DR Provider's Alternative DR Transition Credit shall be adjusted as necessary (including, if required, in the month following the final month of the Transition Delivery Year) to ensure that the total credit paid to the Qualified DR Provider for the Transition Delivery Year will equal, but shall not exceed, the amount described in paragraph C.2.c. above, calculated using the actual amounts paid and received by the Qualified DR Provider.

#### **5.14B Generating Unit Capability Verification Test Requirements Transition Provision for RPM Delivery Years 2014/2015, 2015/2016, and 2016/2017**

A. This *transition provision* applies only with respect to Generation Capacity Resources with existing capacity commitments for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years that experience reductions in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals. A Generation Capacity Resource meeting the description of the preceding sentence, and the Capacity Market Seller of such a resource, are hereafter in this section 5.14B referred to as an "Affected Resource" and an "Affected Resource Owner," respectively.

B. For each of its Affected Resources, an Affected Resource Owner is required to provide documentation to the Office of the Interconnection sufficient to show a reduction in installed capacity value as a direct result of the revised capability test procedures. Upon acceptance by the Office of the Interconnection, the Affected Resource's installed capacity value will be updated in the eRPM system to reflect the reduction, and the Affected Resource's Capacity Interconnection Rights value will be updated to reflect the reduction, effective June 1, 2014. The reduction's impact on the Affected Resource's existing capacity commitments for the 2014/2015 Delivery Year will be determined in Unforced Capacity terms, using the final EFORD value established by the Office of the Interconnection for the 2014/2015 Delivery Year as applied to the Third Incremental Auction for the 2014/2015 Delivery Year, to convert installed capacity to Unforced Capacity. The reduction's impact on the Affected Resource's existing capacity commitments for each of the 2015/2016 and 2016/2017 Delivery Years will be determined in Unforced Capacity terms, using the EFORD value from each Sell Offer in each applicable RPM Auction, applied on a pro-rata basis, to convert installed capacity to Unforced Capacity. The Unforced Capacity impact for each Delivery Year represents the Affected Resource's capacity commitment shortfall, resulting wholly and directly from the revised capability test procedures, for which the Affected Resource Owner is subject to a Capacity Resource Deficiency Charge for the Delivery Year, as described in section 8 of this Attachment DD, unless the Affected Resource Owner (i) provides replacement Unforced Capacity, as described in section 8.1 of this Attachment DD, prior to the start of the Delivery Year to resolve the Affected Resource's total capacity commitment shortfall; or (ii) requests relief from Capacity Resource Deficiency Charges that result wholly and directly from the revised capability test procedures by electing the transition mechanism described in this section 5.14B ("Transition Mechanism").

C. Under the Transition Mechanism, an Affected Resource Owner may elect to have the Unforced Capacity commitments for all of its Affected Resources reduced for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years to eliminate the capacity commitment shortfalls, across all of its Affected Resources, that result wholly and directly from the revised capability test

procedures, and for which the Affected Resource Owner otherwise would be subject to Capacity Resource Deficiency Charges for the Delivery Year. In electing this option, the Affected Resource Owner relinquishes RPM Auction Credits associated with the reductions in Unforced Capacity commitments for all of its Affected Resources for the Delivery Year, and Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are adjusted accordingly. Affected Resource Owners wishing to elect the Transition Mechanism for the 2015/2016 Delivery Year must notify the Office of the Interconnection by May 30, 2014. Affected Resource Owners wishing to elect the Transition Mechanism for the 2016/2017 Delivery Year must notify the Office of the Interconnection by July 25, 2014.

D. The Office of the Interconnection will offset the total reduction (across all Affected Resources and Affected Resource Owners) in Unforced Capacity commitments associated with the Transition Mechanism for the 2015/2016 and 2016/2017 Delivery Years by applying corresponding adjustments to the quantity of Buy Bid or Sell Offer activity in the upcoming Incremental Auctions for each of those Delivery Years, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD.

E. By electing the Transition Mechanism, an Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years, and a Locational UCAP Seller that sells Locational UCAP based on an Affected Resource owned by the Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015 Delivery Year, to the extent that the Affected Resource Owner demonstrates, to the satisfaction of the Office of the Interconnection, that an inability to deliver the amount of Unforced Capacity previously committed for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years is due to a reduction in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals; provided, however, that the Affected Resource Owner must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief.

#### **5.14C Demand Response Operational Resource Flexibility Transition Provision for RPM Delivery Years 2015/2016 and 2016/2017**

A. This transition provision applies only to Demand Resources for which a Curtailment Service Provider has existing RPM commitments for the 2015/2016 or 2016/2017 Delivery Years (alternatively referred to in this section 5.14C as “Applicable Delivery Years” and each an “Applicable Delivery Year”) that (i) cannot satisfy the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; (ii) are not excepted from the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; and (iii) cleared in the Base Residual Auction or First Incremental Auction for the 2015/2016 Delivery Year, or cleared in the Base Residual Auction for the 2016/2017 Delivery Year. A Demand Resource meeting these criteria and the Curtailment Service Provider of such a resource are hereafter in this section 5.14C referred to as an “Affected Demand Resource” and an “Affected Curtailment Service Provider,” respectively.

B. For this section 5.14C to apply to an Affected Demand Resource, the Affected Curtailment Service Provider must notify the Office of the Interconnection in writing, with regard to the Affected Demand Resource, of the number of cleared megawatts of Unforced Capacity for the Applicable Delivery Year, by type of Demand Resource (i.e., Limited DR, Annual DR, Extended Summer DR) and by Zone or sub-Zone, by the applicable deadline as follows:

1. For the 2015/2016 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2015/2016 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2015/2016 Delivery Year.

2. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Second Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second or Third Incremental Auctions for the 2016/2017 Delivery Year.

3. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision must not have sold or offered to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second Incremental Auction for the 2016/2017 Delivery Year, and may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2016/2017 Delivery Year.

C. For the Third Incremental Auction for the 2015/2016 Delivery Year and the First, Second, and Third Incremental Auctions for the 2016/2017 Delivery Year, the Office of the Interconnection shall publish aggregate information on the undeliverable megawatts declared under this transition provision (hereafter, “non-viable megawatts”), by type of Demand Resource and by Zone or sub-Zone, concurrently with its posting of planning parameters for the applicable Scheduled Incremental Auction. Non-viable megawatts for a Scheduled Incremental Auction for an Applicable Delivery Year represent those megawatts meeting the criteria of subsection A above and declared in accordance with subsection B above. Prior to each Third Incremental Auction for an Applicable Delivery Year, the Office of the Interconnection shall apply adjustments equal to the declared non-viable megawatt quantity to the quantity of Buy Bid or Sell Offer activity in the upcoming Scheduled Incremental Auctions for the Applicable Delivery Year, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD. Prior to the Second Incremental Auction for the 2016/2017 Delivery Year, the Office of the Interconnection shall adjust the recalculated PJM Region Reliability Requirement and recalculated LDA Reliability Requirements, as described in section 5.4(c) of this Attachment DD, by the applicable quantity of declared non-viable megawatts, and shall update the PJM Region Reliability Requirement and each LDA Reliability Requirement for such Second Incremental Auction only

if the combined change of the applicable adjustment and applicable recalculation is greater than or equal to the lessor of (i) 500 megawatts or (ii) one percent of the prior PJM Region Reliability Requirement or one percent of the prior LDA Reliability Requirement, as applicable.

D. Prior to the start of each Applicable Delivery Year, the Office of the Interconnection shall reduce, by type of Demand Resource and by Zone or sub-Zone, the capacity commitment of each Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year based on the non-viable megawatts declared by the Affected Curtailment Service Provider under this transition provision. If the Affected Curtailment Service Provider cleared megawatts from multiple Affected Demand Resources of the same type and Zone or sub-Zone, or cleared megawatts in multiple RPM Auctions for the Applicable Delivery Year, the Office of the Interconnection shall allocate the reduction in capacity commitment by type of Demand Resource and by Zone or sub-Zone across the applicable Affected Demand Resources and relevant RPM Auctions. Such allocation shall be performed on a pro-rata basis, based on megawatts cleared by the Affected Demand Resources in the relevant RPM Auctions.

E. For each Applicable Delivery Year, an Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year relinquishes an Affected Demand Resource's RPM Auction Credits for the amount of capacity commitment reduction as determined under subsection D above. Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are also adjusted accordingly.

#### **5.14D Capacity Performance and Base Capacity Transition Provision for RPM Delivery Years 2016/2017 and 2017/2018**

A. This transition provision applies only for procuring Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years.

B. For both the 2016/2017 and 2017/2018 Delivery Years, PJM will hold a Capacity Performance Transition Incremental Auction to procure Capacity Performance Resources.

1. For each Capacity Performance Transition Incremental Auction, the optimization algorithm shall consider:

- the target quantities of Capacity Performance Resources specified below;
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity of Capacity Performance Resources specified for that Delivery Year. For the 2016/2017 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a quantity of Capacity Performance Resources equal to 60 percent of the updated Reliability Requirement for the PJM Region. For the 2017/2018 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a

quantity of Capacity Performance Resources equal to 70 percent of the updated Reliability Requirement for the PJM Region.

2. For each Capacity Performance Transition Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. For the 2016/2017 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year. For the 2017/2018 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year.

3. A Capacity Market Seller may offer any Generation Capacity Resource that has not been committed in an FRR Capacity Plan, that qualifies as a Capacity Performance Resource under section 5.5A(a) and that (i) has not cleared an RPM Auction for that Delivery Year; or (ii) has cleared in an RPM Auction for that Delivery Year. A Capacity Market Seller may offer an external Generation Capacity Resource to the extent that such resource: (i) is reasonably expected, by the relevant Delivery Year, to meet all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction; (ii) has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and (iii) is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions.

4. Capacity Resources that already cleared an RPM Auction for a Delivery Year, retain the capacity obligations for that Delivery Year, and clear in a Capacity Performance Transition Incremental Auction for the same Delivery Year shall: (i) receive a payment equal to the Capacity Resource Clearing Price as established in that Capacity Performance Transition Incremental Auction; and (ii) not be eligible to receive a payment for clearing in any prior RPM Auction for that Delivery Year.

D. All Capacity Performance Resources that clear in a Capacity Performance Transition Incremental Auction will be subject to the Non-Performance Charge set forth in section 10A.

## **6. MARKET POWER MITIGATION**

### **6.1 Applicability**

The provisions of the Market Monitoring Plan (in Attachment M and Attachment - M Appendix to this Tariff and this section 6) shall apply to the Reliability Pricing Model Auctions.

### **6.2 Process**

(a) [Reserved for Future Use]

(b) In accordance with the schedule specified in the PJM Manuals, following PJM's conduct of a Base Residual Auction or Incremental Auction pursuant to section 5.12, but prior to the Office of the Interconnection's final determination of clearing prices and charges pursuant to section 5.14, the Office of the Interconnection shall: (i) apply the Market Structure Test to any LDA having a Locational Price Adder greater than zero and to the entire PJM region; (ii) apply Market Seller Offer Caps, if required under this section 6; and (iii) recompute the optimization algorithm to clear the auction with the Market Seller Offer Caps in place.

(c) Within seven days after the deadline for submission of Sell Offers in a Base Residual Auction or Incremental Auction, the Office of the Interconnection shall file with FERC a report of any determination made pursuant to sections 5.14(h), 6.5(a)(ii), or 6.7(c) identified in such sections as subject to the procedures of this section. Such report shall list each such determination, the information considered in making each such determination, and an explanation of each such determination. Any entity that objects to any such determination may file a written objection with FERC no later than seven days after the filing of the report. Any such objection must not merely allege that the determination was in error, and must provide support for the objection, demonstrating that the determination overlooked or failed to consider relevant evidence. In the event that no objection is filed, the determination shall be final. In the event that an objection is filed, FERC shall issue any decision modifying the determination no later than 60 days after the filing of such report; otherwise, the determination shall be final. Final auction results shall reflect any decision made by FERC regarding the report.

### **6.3 Market Structure Test**

(a) [Reserved for Future Use]

(b) Market Structure Test.

A constrained LDA or the PJM Region shall fail the Market Structure Test, and mitigation shall be applied to all jointly pivotal suppliers (including all Affiliates of such suppliers, and all third-party supply in the relevant LDA controlled by such suppliers by contract), if, as to the Sell Offers that comprise the incremental supply determined pursuant to section 6.3(c) that are based on Generation Capacity Resources, there are not more than three jointly pivotal suppliers. The Office of the Interconnection shall apply the Market Structure Test. The Office of the Interconnection shall confirm the results of the Market Structure Test with the Market Monitoring Unit.



## (c) Determination of Incremental Supply

In applying the Market Structure Test, the Office of the Interconnection shall consider all (i) incremental supply (provided, however, that the Office of the Interconnection shall consider only such supply available from Generation Capacity Resources) available to solve the constraint applicable to a constrained LDA offered at less than or equal to 150% of the cost-based clearing price; or (ii) supply for the PJM Region, offered at less than or equal to 150% of the cost-based clearing price, provided that supply in this section includes only the lower of cost-based or priced based offers from Generation Capacity Resources. Cost-based clearing prices are the prices resulting from the RPM auction algorithm using the lower of cost-based or price-based offers for all Capacity Resources.

**6.4 Market Seller Offer Caps**

(a) The Market Seller Offer Cap, stated in dollars per MW/day of unforced capacity, applicable to price-quantity offers within the Base Offer Segment for an Existing Generation Capacity Resource shall be the Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, stated in dollars per MW/day of unforced capacity, provided, however, that the Market Seller Offer Cap for any Capacity Performance Resource shall be the Net Cost of New Entry applicable for the Delivery Year and Locational Deliverability Area for which such Capacity Performance Resource is offered, and that the submission of a Sell Offer with an Offer Price at or below the revised Market Seller Offer Cap permitted under this proviso shall not, in and of itself, be deemed an exercise of market power in the RPM market. Notwithstanding the previous sentence, should a Capacity Performance Resource seek a Market Seller Offer Cap that exceeds the Net Cost of New Entry, it shall be subject to and comply with paragraph (b) of this section 6.4. The Market Seller Offer Cap for an Existing Generation Capacity Resource shall be the Opportunity Cost for such resource, if applicable, as determined in accordance with section 6.7. Nothing herein shall preclude any Capacity Market Seller and the Market Monitoring Unit from agreeing to, nor require either such entity to agree to, an alternative market seller offer cap determined on a mutually agreeable basis. Any such alternative offer cap shall be filed with the Commission for its approval. This provision is duplicated in section II.E.3 of Attachment M- Appendix.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection data and documentation required under section 6.67 to establish the level of the Market Seller Offer Cap applicable to each resource by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller must promptly address any concerns identified by the Market Monitoring Unit regarding the data and documentation provided, review the Market Seller Offer Cap proposed by the Market Monitoring Unit, and attempt to reach agreement with the Market Monitoring Unit on the level of the Market Seller Offer Cap by no later than ninety (90) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, whether an agreement with the Market Monitoring Unit has been reached or, if no agreement has been reached, specifying the level of Market Seller Offer Cap to which it commits by no later than

eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. The Office of the Interconnection shall review the data submitted by the Capacity Market Seller, make a determination whether to accept or reject the requested unit-specific Market Seller Offer Cap, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination in writing, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction. If the Market Monitoring Unit does not provide its determination to the Capacity Market Seller and the Office of the Interconnection by the specified deadline, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction the Office of the Interconnection will make the determination of the level of the Market Seller Offer Cap, which shall be deemed to be final. If the Capacity Market Seller does not notify the Market Monitoring Unit and the Office of the Interconnection of the Market Seller Offer Cap it desires to utilize by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction, it shall be required to utilize a Market Seller Offer Cap determined using the applicable default Avoidable Cost Rate specified in section 6.7(c).

(c) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the Sell Offer complies with the requirements of the Tariff.

(d) For any Third Incremental Auction for Delivery Years through the 2017/2018 Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 or 2019/2020 Delivery Years, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Base Capacity resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 Delivery Year or any subsequent Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Capacity Performance Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to the greater of the Net Cost of New Entry for the relevant LDA and Delivery Year or 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year.

## 6.5 Mitigation

The Office of the Interconnection shall apply market power mitigation measures in any Base Residual Auction or Incremental Auction for any LDA, Unconstrained LDA Group, or the PJM Region that fails the Market Structure Test.

- (a) Mitigation for Generation Capacity Resources.
  - i) Existing Generation Capacity Resource

Mitigation will be applied on a unit-specific basis and only if the Sell Offer of Unforced Capacity from an Existing Generation Capacity Resource: (1) is greater than the Market Seller Offer Cap applicable to such resource; and (2) would, absent mitigation, increase the Capacity Resource Clearing Price in the relevant auction. If such conditions are met, such Sell Offer shall be set equal to the Market Seller Offer Cap.

ii) Planned Generation Capacity Resources

(A) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) shall be presumed to be competitive and shall not be subject to market power mitigation in any Base Residual Auction or Incremental Auction for which such resource qualifies as a Planned Generation Capacity Resource, but any such Sell Offer shall be rejected if it meets the criteria set forth in subsection (C) below, unless the Capacity Market Seller obtains approval from FERC for use of such offer prior to the deadline for submission of such offers in the applicable auction. Such resources are Existing Generation Capacity Resources in the auctions for any Delivery Year following the Delivery Year for which such resource cleared an RPM Auction. Such resources may receive certain price assurances for the two Delivery Years immediately following the first Delivery Year of service under certain conditions as set forth in section 5.14 of this Attachment. Notwithstanding the foregoing, a Generation Capacity Resource for which construction has not commenced and which would otherwise have been treated as a Planned Generation Capacity Resource but for the fact that it was bid into RPM Auctions for at least two consecutive Delivery Years, and cleared the last such auction only because it was considered existing and its mitigated offer cap was accepted when its price offer would not have otherwise been accepted, shall be deemed to be a Planned Generation Capacity Resource.

(B) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) submitted for the first year in which such resources qualify as Planned Generation Capacity Resources shall be deemed competitive and not be subject to mitigation if: (1) collectively all such Sell Offers provide Unforced Capacity in an amount equal to or greater than two times the incremental quantity of new entry required to meet the LDA Reliability Requirement; and (2) at least two unaffiliated suppliers have submitted Sell Offers for Planned Generation Capacity Resources in such LDA. Notwithstanding the foregoing, any Capacity Market Seller, together with Affiliates, whose Sell Offers based on Planned Generation Capacity Resources in that LDA are pivotal, shall be subject to mitigation.

(C) Where the two conditions stated in subsection (B) are not met, or the Sell Offer is pivotal, the Sell Offer shall be rejected if it exceeds 140 percent of: 1) the average of location-adjusted Sell Offers for Planned

Generation Capacity Resources from the same asset class as such Sell Offer, submitted (and not rejected) (Asset-Class New Plant Offers) for such Delivery Year; or 2) if there are no Asset-Class New Plant Offers for such Delivery Year, the average of Asset-Class New Plant Offers for all prior Delivery Years; or 3) if there are no Asset-Class New Plant Offers for any prior Delivery Year, the Net CONE applicable for such Delivery Year in the LDA for which such offer was submitted. For purposes of this section, asset classes shall be as stated in section 6.7(c) as effective for such Delivery Year, and Asset-Class New Plant Offers shall be location-adjusted by the ratio between the Net CONE effective for such Delivery Year for the LDA in which the Sell Offer subject to this section was submitted and the average, weighted by installed capacity, of the Net CONEs for all LDAs in which the units underlying such Asset Class New Plant Offers are located. Following the conduct of the applicable auction and before the final determination of clearing prices, in accordance with Section 6.2(b) above, each Capacity Market Seller whose Sell Offer is so rejected shall be notified in writing by the Office of the Interconnection by no later than one (1) business day after the close of the offer period for the applicable RPM Auction and allowed an opportunity to submit a revised Sell Offer that does not exceed such threshold within one business (1) day of the Office of the Interconnection's rejection of such Sell Offer. If such revised Sell Offer is accepted by the Office of the Interconnection, the Office of the Interconnection then shall clear the auction with such revised Sell Offer in place.

(b) Mitigation for Demand Resources

The Market Seller Offer Cap shall not be applied to Sell Offers of Demand Resources or Energy Efficiency Resources.

## 6.6 Offer Requirement for Capacity Resources

(a) To avoid application of subsection (h), all of the installed capacity of all Existing Generation Capacity Resources located in the PJM Region shall be offered by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff. The Unforced Capacity of such resources is determined using the EFORD value that is submitted by the Capacity Market Seller in its Sell Offer, which shall not exceed the maximum EFORD for that resource as defined in Section 6.6(b). If a resource should be included on the list of Existing Generation Capacity Resources subject to the must-offer requirement that is maintained by the Market Monitoring Unit pursuant to Section II.C.1 of Attachment M – Appendix of the Tariff, but is omitted therefrom whether by mistake of the Market Monitoring Unit or failure of the Capacity Market Seller that owns or controls all or part of such resource to provide information about the resource

to the Market Monitoring Unit, this shall not excuse such resource from the must-offer requirement.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must timely provide to the Market Monitoring Unit and the Office of the Interconnection all data and documentation required under section 6.6 to establish the maximum EFORD applicable to each resource in accordance with standards and procedures specified in the PJM Manuals. The maximum EFORD that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORDs used for a Delivery Year are posted, is the greater of (i) the average EFORD for the five consecutive years ending on the September 30 that last precedes the Base Residual Auction, or (ii) the EFORD for the 12 months ending on the September 30 that last precedes the Base Residual Auction.

Notwithstanding the foregoing, a Capacity Market Seller may request an alternate maximum EFORD for Sell Offers submitted in such auctions if it has a documented, known reason that would result in an increase in its EFORD, by submitting a written request to the Market Monitoring Unit and Office of the Interconnection, along with data and documentation required to support the request for an alternate maximum EFORD, by no later one hundred twenty (120) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. The Capacity Market Seller must address any concerns identified by the Market Monitoring Unit and/or the Office of the Interconnection regarding the data and documentation provided and attempt to reach agreement with the Market Monitoring Unit on the level of the alternate maximum EFORD by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. As further described in Section II.C of Attachment M-Appendix, the Market Monitoring Unit shall notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination of the requested alternate maximum EFORD by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. By no later than eighty (80) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year, the Capacity Market Seller shall notify the Office of the Interconnection and the Market Monitoring Unit in writing whether it agrees with the Market Monitoring Unit on the alternate maximum EFORD or, if no agreement has been reached, specifying the level of alternate maximum EFORD to which it commits. If a Capacity Market Seller fails to request an alternate maximum EFORD prior to the specified deadlines, the maximum EFORD for the applicable RPM Auction shall be deemed to be the default EFORD calculated pursuant to this section.

The maximum EFORD that may be used in a Sell Offer for Third Incremental Auctions, and for Conditional Incremental Auctions held after the date on which the final EFORD used for a Delivery Year is posted, is the EFORD for the 12 months ending on the September 30 that last precedes the submission of such offers.

(c) [Reserved for Future Use]

(d) In the event that a Capacity Market Seller and the Market Monitoring Unit cannot agree on the maximum level of the alternate EFORD that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORDs used for a Delivery Year are posted,

the Office of the Interconnection shall make its own determination of the maximum level of the alternate EFORD based on the requirements of the Tariff and the PJM Manuals, per Section 5.8 of Attachment DD, by no later than sixty-five (65) days prior to the commencement of the offer period for the Base Residual for the applicable Delivery Year, and shall notify the Capacity Market Seller and the Market Monitoring Unit in writing of such determination.

(e) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the EFORD complies with the requirements of the Tariff.

(f) Notwithstanding the foregoing, a Capacity Market Seller may submit an EFORD that it chooses for an RPM Auction held prior to the date on which the final EFORD used for a Delivery Year is posted, provided that (i) it has participated in good faith with the process described in this section 6.6 and in section II.C of Attachment M - Appendix, (ii) the offer is no higher than the level defined in any agreement reached by the Capacity Market Seller and the Market Monitoring Unit that resulted from the foregoing process, and (iii) the offer is accepted by the Office of the Interconnection subject to the criteria set forth in the Tariff and the PJM Manuals.

(g) A Capacity Market Seller that owns or controls an existing generation resource in the PJM Region that is capable of qualifying as an Existing Generation Capacity Resource as of the date on which bidding commences for an RPM Auction may not avoid the rule in subsection (a) or be removed from Capacity Resource status by failing to qualify as a Generation Capacity Resource, or by attempting to remove a unit previously qualified as a Generation Capacity Resource from classification as a Capacity Resource for that RPM Auction. However, generation resource may qualify for an exception to the must-offer requirement, as shown by appropriate documentation, if the Capacity Market Seller that owns or controls such resource demonstrates that it: (i) is reasonably expected to be physically unable to participate in the relevant Delivery Year; (ii) has a financially and physically firm commitment to an external sale of its capacity, or (iii) was interconnected to the Transmission System as an Energy Resource and not subsequently converted to a Capacity Resource.

In order to establish that a resource is reasonably expected to be physically unable to participate in the relevant auction as set forth in (i) above, the Capacity Market Seller must demonstrate that:

- A. It has a documented plan in place to retire the resource prior to or during the Delivery Year, and has submitted a notice of Deactivation to the Office of the Interconnection consistent with Section 113.1 of the PJM Tariff, without regard to whether the Office of the Interconnection has requested the Capacity Market Seller to continue to operate the resource beyond its desired deactivation date in accordance with Section 113.2 of the PJM Tariff for the purpose of maintaining the reliability of the PJM Transmission System and the Capacity Market Seller has agreed to do so;
- B. Significant physical operational restrictions cause long term or permanent changes to the installed capacity value of the resource, or the resource is under major repair that will

extend into the applicable Delivery Year, that will result in the imposition of RPM performance penalties pursuant to Attachment DD of the PJM Tariff;

- C. The Capacity Market Seller is involved in an ongoing regulatory proceeding (e.g. – regarding potential environmental restrictions) specific to the resource and has received an order, decision, final rule, opinion or other final directive from the regulatory authority that will result in the retirement of the resource; or
- D. A resource considered an Existing Generating Capacity Resource because it cleared an RPM Auction for a Delivery Year prior to the Delivery Year of the relevant auction, but which is not yet in service, is unable to achieve full commercial operation prior to the Delivery Year of the relevant auction. The Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer certifying that the resource will not be in full commercial operation prior to the referenced Delivery Year.

In order to establish that a resource has a financially and physically firm commitment to an external sale of its capacity as set forth in (ii) above, the Capacity Market Seller must demonstrate that it has entered into a unit-specific bilateral transaction for service to load located outside the PJM Region, by a demonstration that such resource is identified on a unit-specific basis as a network resource under the transmission tariff for the control area applicable to such external load, or by an equivalent demonstration of a financially and physically firm commitment to an external sale. The Capacity Market Seller additionally shall identify the megawatt amount, export zone, and time period (in days) of the export.

A Capacity Market Seller that seeks to remove a Generation Capacity Resource from PJM Capacity Resource status and/or seeks approval for an exception to the must-offer requirement, for any reason other than the reason specified in Paragraph A above, shall first submit such request in writing, along with all supporting data and documentation, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction.

In order to obtain an exception to the must-offer requirement for the reason specified in Paragraph A above, a Capacity Market Seller shall first submit a preliminary exception request in writing, along with supporting data and documentation indicating the reasons and conditions upon which the Capacity Market Seller is relying in its analysis of whether to retire such resource, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than (a) November 1, 2013 for the Base Residual Auction for the 2017/2018 Delivery Year, (b) the September 1 that last precedes the Base Residual Auction for the 2018/2019 and subsequent Delivery Years, and (c) two hundred forty (240) days prior to the commencement of the offer period for the applicable Incremental Auction. By no later than five (5) business days after receipt of any such preliminary exception requests, the Office of the Interconnection will post on its website a summary of the number of megawatts of Generation Capacity Resources for which it has received notification of preliminary exception requests, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

Thereafter, as applicable, such Capacity Market Seller shall by no later than (a) the December 1 that last precedes the Base Residual Auction for the applicable Delivery Year, or (b) one hundred twenty (120) days prior to the commencement of the offer period for the applicable Incremental Auction, either (a) notify the Office of the Interconnection and the Market Monitoring Unit in writing that it is withdrawing its preliminary exception request and explaining the changes to its analysis of whether to retire such resource that support its decision to withdraw, or (b) demonstrate that it has met the requirements specified under Paragraph A above. By no later than five (5) business days after receipt of such notification, the Office of the Interconnection will post on its website a revised summary of the number of megawatts of Generation Capacity Resources for which it has received requests for exceptions to the must-offer requirement for the reason specified in Paragraph A above, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

A Capacity Market Seller may only remove the Generation Capacity Resource from PJM Capacity Resource status if (i) the Market Monitoring Unit has determined that the Generation Capacity Resource meets the applicable criteria set forth in Sections 5.6.6 and 6.6 of Attachment DD and the Office of the Interconnection agrees with this determination, or (ii) the Commission has issued an order terminating the Capacity Resource status of the resource. Nothing herein shall require a Market Seller to offer its resource into an RPM Auction prior to seeking to remove a resource from Capacity Resource status, subject to satisfaction of Section 6.6.

If the Capacity Market Seller disagrees with the Market Monitoring Unit's determination of its request to remove a resource from Capacity Resource status or its request for an exception to the must-offer requirement, it must notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, of the same by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. After the Market Monitoring Unit has made its determination of whether a resource has satisfied the must-offer requirement or meets one of the exceptions thereto and has notified the Capacity Market Seller and the Office of the Interconnection of the same pursuant to Section II.C.4 of Attachment M – Appendix, the Office of the Interconnection shall approve or deny the exception request. The exception request shall be deemed to be approved by the Office of the Interconnection, consistent with the determination of the Market Monitoring Unit, unless the Office of the Interconnection notifies the Capacity Market Seller and Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences, that the exception request is denied.

If the Market Monitoring Unit does not timely notify the Capacity Market Seller and the Office of the Interconnection of its determination of the request to remove a Generation Capacity Resource from Capacity Resource status or for an exception to the must-offer requirement, the Office of the Interconnection shall make the determination whether the request shall be approved or denied, and will notify the Capacity Market Seller of its determination in writing, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences.

After the Market Monitoring Unit and the Office of the Interconnection have made their determinations of whether a resource meets the criteria to qualify for an exception to the must-



offer requirement, the Capacity Market Seller must notify the Market Monitoring Unit and the Office of the Interconnection whether it intends to exclude from its Sell Offer some or all of the subject capacity on the basis of an identified exception by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. PJM does not make determinations of whether withholding of capacity constitutes market power. A Generation Capacity Resource that does not qualify for submission into an RPM Auction because it is not owned or controlled by the Capacity Market Seller for a full Delivery Year is not subject to the offer requirement hereunder; provided, however, that a Capacity Market Seller planning to transfer ownership or control of a Generation Capacity Resource during a Delivery Year pursuant to a sale or transfer agreement entered into after March 26, 2009 shall be required to satisfy the offer requirement hereunder for the entirety of such Delivery Year and may satisfy such requirement by providing for the assumption of this requirement by the transferee of ownership or control under such agreement.

If a Capacity Market Seller doesn't timely seek to remove a Generation Capacity Resource from Capacity Resource status or timely submit a request for an exception to the must-offer requirement, the Generation Capacity Resource shall only be removed from Capacity Resource status, and may only be approved for an exception to the must-offer requirement, upon the Capacity Market Seller requesting and receiving an order from FERC, prior to the close of the offer period for the applicable RPM Auction, directing the Office of the Interconnection to remove the resource from Capacity Resource status and/or granting an exception to the must-offer requirement or a waiver of the must-offer requirement as to such resource.

(h) Any existing generation resource located in the PJM Region that satisfies the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for the Base Residual Auction for a Delivery Year, that is not offered into such Base Residual Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All generation resources located in the PJM Region that satisfy the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for an Incremental Auction for a particular Delivery Year, but that did not satisfy such criteria as of the date that on which bidding commenced in the Base Residual Auction for that Delivery Year, that is not offered into that Incremental Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All Existing Generation Capacity Resources that are offered into a Base Residual Auction or Incremental Auction for a particular Delivery Year but do not clear in such auction, that are not offered into each subsequent Incremental Auction, and that do not meet any of the exceptions

stated in the prior subsection (g): (i) may not participate in any Incremental Auctions conducted for such Delivery Year subsequent to such failure to offer; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

Any such Existing Generation Capacity Resources may also be subject to further action by the Market Monitoring Unit under the terms of Attachment M and Attachment M – Appendix.

(i) In addition to the remedies set forth in subsections (g) and (h) above, if the Market Monitoring Unit determines that one or more Capacity Market Sellers' failure to offer part or all of one or more existing generation resources, for which the Office of the Interconnection has not approved an exception to the must-offer requirement, into an RPM Auction as required by this Section 6.6 would result in an increase of greater than five percent in any Zonal Capacity Price determined through such auction, and the Office of the Interconnection agrees with that determination, the Office of the Interconnection shall apply to FERC for an order, on an expedited basis, directing such Capacity Market Seller to participate in the relevant RPM Auction, or for other appropriate relief, and PJM will postpone clearing the auction pending FERC's decision on the matter. If the Office of the Interconnection disagrees with the Market Monitoring Unit's determination and does not apply to FERC for an order directing the Capacity Market Seller to participate in the auction or for other appropriate relief, the Market Monitoring Unit may exercise its powers to inform Commission staff of its concerns and to seek appropriate relief.

#### **6.6A Offer Requirement for Capacity Performance Resources**

(a) For the 2018/2019 Delivery Year and subsequent Delivery Years, the installed capacity of every Generation Capacity Resource located in the PJM Region that is capable (or that reasonably can become capable) of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each such Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff.

(b) Determinations of EFORD and Unforced Capacity made under section 6.6 hereof as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.

(c) Exceptions to the requirement in subsection (a) shall be permitted only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be physically incapable of satisfying the requirements of a Capacity Performance Resource. Intermittent Resources, Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies

such requirements. Exceptions shall be determined using the same timeline and procedures as specified in section 6.6.

(d) A resource not exempted or excepted under subsection (c) hereof that is capable of qualifying as a Capacity Performance Resource and does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.

## 6.7 Data Submission

(a) Potential participants in any PJM Reliability Pricing Model Auction shall submit, together with supporting documentation for each item, to the Market Monitoring Unit and the Office of the Interconnection no later than one hundred twenty (120) days prior to the posted date for the conduct of such auction, a list of owned or controlled generation resources by PJM transmission zone for the specified Delivery Year, including the amount of gross capacity, the EFORd and the net (unforced) capacity. A potential participant intending to offer any Capacity Performance Resource choosing an offer cap at or below the Net Cost of New Entry must provide the associated offer cap and the MW to which the offer cap applies.

(b) Except as provided in subsection (c) below, potential participants in any PJM Reliability Pricing Model Auction in any LDA or Unconstrained LDA Group that request a unit specific Avoidable Cost Rate shall, in addition, submit the following data, together with supporting documentation for each item, to the Market Monitoring Unit no later than one hundred twenty (120) days prior to the commencement of the offer period for such auction:

i. If the Capacity Market Seller intends to submit a non-zero price in its Sell Offer in any such auction, the Capacity Market Seller shall submit a calculation of the Avoidable Cost Rate and Projected PJM Market Revenues, as defined in subsection (d) below, together with detailed supporting documentation.

ii. If the Capacity Market Seller intends to submit a Sell Offer based on opportunity cost, the Capacity Market Seller shall also submit a calculation of Opportunity Cost, as defined in subsection (d), with detailed supporting documentation.

(c) Potential auction participants identified in subsection (b) above need not submit the data specified in that subsection for any Generation Capacity Resource:

i. that is in an Unconstrained LDA Group or, if this is the relevant market, the entire PJM Region, and is in a resource class identified in the table below as not likely to include the marginal price-setting resources in such auction; or

ii. for which the potential participant commits that any Sell Offer it submits as to such resource shall not include any price above: (1) the applicable default level identified below for the relevant resource class, less (2) the Projected PJM Market Revenues for such resource, as determined in accordance with this Tariff.

Nothing herein precludes the Market Monitoring Unit from requesting additional information from any potential auction participant as deemed necessary by the Market Monitoring Unit, including, without limitation, additional cost data on resources in a class that is not otherwise expected to include the marginal price setting resource as outlined in section II.G of Attachment M-Appendix. Any Sell Offer submitted in any auction that is inconsistent with any agreement or commitment made pursuant to this subsection shall be rejected, and the Capacity Market Seller shall be required to resubmit a Sell Offer that complies with such agreement or commitment within one (1) business day of the Office of the Interconnection's rejection of such Sell Offer. If the Capacity Market Seller does not timely resubmit its Sell Offer, fails to request a unit-specific Avoidable Cost Rate by the specified deadline, or if the Office of the Interconnection determines that the information provided by the Capacity Market Seller in support of the requested unit-specific Avoidable Cost Rate or Sell Offer is incomplete, the Capacity Market Seller shall be deemed to have submitted a Sell Offer that complies with the commitments made under this subsection, with a default offer for the applicable class of resource or nearest comparable class of resource determined under this subsection (c)(ii). The obligation imposed under section 6.6(a) shall not be satisfied unless and until the Capacity Market Seller submits (or is deemed to have submitted) a Sell Offer that conforms to its commitments made pursuant to this subsection or subject to the procedures set forth in section 6.4 and section II.H of Attachment M - Appendix.

The default retirement and mothball Avoidable Cost Rates ("ACR") referenced in this subsection (c)(ii) are as set forth in the tables below for the 2013/2014 Delivery Year through the 2016/2017 Delivery Year. Capacity Market Sellers shall use the one-year mothball Avoidable Cost Rate shown below, unless such Capacity Market Seller satisfies the criteria set forth in section 6.7(e), in which case the Capacity Market Seller may use the retirement Avoidable Cost Rate. PJM shall also publish on its Web site the number of Generation Capacity Resources and megawatts per LDA that use the retirement Avoidable Cost Rates.

<b>Maximum Avoidable Cost Rates by Technology Class</b>								
<b>Technology</b>	<b>2013/14 Mothball ACR (\$/MW-Day)</b>	<b>2013/14 Retirement ACR (\$/MW-Day)</b>	<b>2014/15 Mothball ACR (\$/MW-Day)</b>	<b>2014/15 Retirement ACR (\$/MW-Day)</b>	<b>2015/16 Mothball ACR (\$/MW-Day)</b>	<b>2015/16 Retirement ACR (\$/MW-Day)</b>	<b>2016/2017 Mothball ACR (\$/MW-Day)</b>	<b>2016/2017 Retirement ACR (\$/MW-Day)</b>
Nuclear	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pumped Storage	\$23.64	\$33.19	\$24.56	\$34.48	\$25.56	\$35.89	\$24.05	\$33.78
Hydro	\$80.80	\$105.67	\$83.93	\$109.76	\$87.35	\$114.24	\$82.23	\$107.55
Sub-Critical Coal	\$193.98	\$215.02	\$201.49	\$223.35	\$209.71	\$232.46	\$197.43	\$218.84
Super Critical Coal	\$200.41	\$219.21	\$208.17	\$227.70	\$216.66	\$236.99	\$203.96	\$223.10
Waste Coal - Small	\$255.81	\$309.83	\$265.72	\$321.83	\$276.56	\$334.96	\$260.35	\$315.34
Waste Coal – Large	\$94.61	\$114.29	\$98.27	\$118.72	\$102.28	\$123.56	\$96.29	\$116.32
Wind	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CC-2 on 1 Frame F	\$35.18	\$49.90	\$36.54	\$51.83	\$38.03	\$53.94	\$35.81	\$50.79
CC-3 on 1	\$39.06	\$52.89	\$40.57	\$54.94	\$42.23	\$57.18	\$39.75	\$53.83

Frame E/Siemens								
CC-3 or More on 1 or More Frame F	\$30.46	\$42.28	\$31.64	\$43.92	\$32.93	\$45.71	\$30.99	\$43.03
CC-NUG Cogen. Frame B or E Technology	\$130.76	\$175.71	\$135.82	\$182.52	\$141.36	\$189.97	\$133.09	\$178.83
CT - 1st & 2nd Gen. Aero (P&W FT 4)	\$27.96	\$37.19	\$29.04	\$38.63	\$30.22	\$40.21	\$28.45	\$37.85
CT - 1st & Gen. Frame B	\$27.63	\$36.87	\$28.70	\$38.30	\$29.87	\$39.86	\$28.11	\$37.52
CT - 2nd Gen. Frame E	\$26.26	\$35.14	\$27.28	\$36.50	\$28.39	\$37.99	\$26.73	\$35.77
CT - 3rd Gen. Aero (GE LM 6000)	\$63.57	\$93.70	\$66.03	\$97.33	\$68.72	\$101.30	\$64.70	\$95.37
CT - 3rd Gen. Aero (P&W FT - 8 TwinPak)	\$33.34	\$49.16	\$34.63	\$51.06	\$36.04	\$53.14	\$33.93	\$50.03
CT - 3rd Gen. Frame F	\$26.96	\$38.83	\$28.00	\$40.33	\$29.14	\$41.98	\$27.43	\$39.52
Diesel	\$29.92	\$37.98	\$31.08	\$39.45	\$32.35	\$41.06	\$30.44	\$38.66
Oil and Gas Steam	\$74.20	\$90.33	\$77.07	\$93.83	\$80.21	\$97.66	\$75.51	\$91.94

Commencing with the Base Residual Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall determine the default retirement and mothball Avoidable Cost Rates referenced in section (c)(ii) above, and post them on its website, by no later than one hundred fifty (150) days prior to the commencement of the offer period for each Base Residual Auction. To determine the applicable ACR rates, the Office of the Interconnection shall use the actual rate of change in the historical values from the Handy-Whitman Index of Public Utility Construction Costs or a comparable index approved by the Commission (“Handy-Whitman Index”) to the extent they are available to update the base values for the Delivery Year, and for future Delivery Years for which the updated Handy-Whitman Index values are not yet available the Office of the Interconnection shall update the base values for the Delivery Year using the most recent ten-calendar-year annual average rate of change. The ACR rates shall be expressed in dollar values for the applicable Delivery Year.

<b>Maximum Avoidable Cost Rates by Technology Class (Expressed in 2011 Dollars for the 2011/2012 Delivery Year)</b>		
<b>Technology</b>	<b>Mothball ACR (\$/MW-Day)</b>	<b>Retirement ACR (\$/MW-Day)</b>
Combustion Turbine - Industrial Frame	\$24.13	\$33.04
Coal Fired	\$136.91	\$157.83
Combined Cycle	\$29.58	\$40.69
Combustion Turbine - Aero Derivative	\$26.13	\$37.18
Diesel	\$25.46	\$32.33
Hydro	\$68.78	\$89.96
Oil and Gas Steam	\$63.16	\$76.90
Pumped Storage	\$20.12	\$28.26

To determine the default retirement and mothball ACR values for the 2017/2018 Delivery Year, the Office of the Interconnection shall multiply the base default retirement and mothball ACR values in the table above by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Indices for the 2011 to 2013 calendar years to determine updated base default retirement and mothball ACR values. The updated base default retirement and mothball ACR values shall then be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website.

To determine the default retirement and mothball ACR values for the 2018/2019 and subsequent Delivery Years, the Office of the Interconnection shall multiply the updated base default retirement and mothball ACR values from the immediately preceding Delivery Year by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Index. These values become the new adjusted base default retirement and mothball ACR values, as calculated by the Office of the Interconnection and posted to its website. These resulting adjusted base values for the Delivery Year shall be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman

Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website; provided, however, that after the Handy-Whitman indexing methodology has been employed to determine the default retirement and mothball ACR values for the RPM Auctions for the 2017/2018 through 2020/2021 Delivery Years, the Office of the Interconnection shall: i) review the default retirement and mothball ACR values to determine whether any changes other than those produced by such methodology are warranted for subsequent Delivery Years (including seeking the analysis and advice of the Market Monitoring Unit on such matter) and report its conclusions to the Members in writing no later than June 1, 2017; and ii) file with FERC resulting changes, if any, to this section no later than October 1, 2017, to be effective for the Base Residual Auction for the 2021/2022 Delivery Year; provided further, that nothing herein precludes the Office of the Interconnection from filing with FERC changes to the default retirement and mothball ACR values or any other provision of this section prior to the deadline stated in the previous clause, or at any other time.

PJM shall also publish on its website the number of Generation Capacity Resources and megawatts per LDA that use the retirement Avoidable Cost Rates.

After the Market Monitoring Unit conducts its annual review of the table of default Avoidable Cost Rates included in section 6.7(c) above in accordance with the procedure specified in section II.H of Attachment M – Appendix, it will provide updated values or notice of its determination that updated values are not needed to Office of the Interconnection. In the event that the Office of the Interconnection determines that the values should be updated, the Office of the Interconnection shall file its proposed values with the Commission by no later than October 30th prior to the commencement of the offer period for the first RPM Auction for which it proposes to apply the updated values.

(d) In order for costs to qualify for inclusion in the Market Seller Offer Cap, the Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection relevant unit-specific cost data concerning each data item specified as set forth in section 6 by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. If cost data is not available at the time of submission for the time periods specified in section 6.8, costs may be estimated for such period based on the most recent data available, with an explanation of and basis for the estimate used, as may be further specified in the PJM Manuals. Based on the data and calculations submitted by the Capacity Market Sellers for each existing generation resource and the formulas specified below, the Market Monitoring Unit shall calculate the Market Seller Offer Cap for each such resource, and notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination pursuant to section II.E of Attachment M-Appendix.

i. **Avoidable Cost Rate:** The Avoidable Cost Rate for an existing generation resource shall be determined using the formula below and applied to the unit's Base Offer Segment.

ii. **Opportunity Cost:** Opportunity Cost shall be the documented price available to an existing generation resource in a market external to PJM. In the event that the total MW of existing generation resources submitting opportunity cost offers in any auction for a Delivery Year exceeds the firm export capability of the PJM system for such Delivery Year, or the capability of external markets to import capacity in such year, the Office of the

Interconnection will accept such offers on a competitive basis. PJM will construct a supply curve of opportunity cost offers, ordered by opportunity cost, and accept such offers to export starting with the highest opportunity cost, until the maximum level of such exports is reached. The maximum level of such exports is the lesser of the Office of the Interconnection's ability to permit firm exports or the ability of the importing area(s) to accept firm imports or imports of capacity, taking account of relevant export limitations by location. If, as a result, an opportunity cost offer is not accepted from an existing generation resource, the Market Seller Offer Cap applicable to Sell Offers relying on such generation resource shall be the Avoidable Cost Rate less the Projected Market Revenues for such resource (as defined in Section 6.4). The default Avoidable Cost Rate shall be the one year mothball Avoidable Cost Rate set forth in the tables in section 6.7(c) above unless Capacity Market Seller satisfies the criteria delineated in section 6.7(e) below.

iii. **Projected PJM Market Revenues:** Projected PJM Market Revenues are defined by section 6.8(d), for any Generation Capacity Resource to which the Avoidable Cost Rate is applied.

(e) In order for the retirement Avoidable Cost Rate set forth in the table in section 6.7(c) to apply, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction, a Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer representing that the Capacity Market Seller will retire the Generation Capacity Resource if it does not receive during the relevant Delivery Year at least the applicable retirement Avoidable Cost Rate because it would be uneconomic to continue to operate the Generation Capacity Resource in the Delivery Year without the retirement Avoidable Cost Rate, and specifying the date the Generation Capacity Resource would otherwise be retired.

## 6.8 Avoidable Cost Definition

### (a) Avoidable Cost Rate:

The Avoidable Cost Rate for a Generation Capacity Resource that is the subject of a Sell Offer shall be determined using the following formula, expressed in dollars per MW-year:

$$\text{Avoidable Cost Rate} = [\text{Adjustment Factor} * (\text{AOML} + \text{AAE} + \text{AFAE} + \text{AME} + \text{AVE} + \text{ATFI} + \text{ACC} + \text{ACLE}) + \text{ARPIR} + \text{APIR} + \text{CPQR}]$$

Where:

- **Adjustment Factor** equals 1.10 (to provide a margin of error for understatement of costs) plus an additional adjustment referencing the 10-year average Handy-Whitman Index in order to account for expected inflation from the time interval between the submission of the Sell Offer and the commencement of the Delivery Year.
- **AOML (Avoidable Operations and Maintenance Labor)** consists of the avoidable labor expenses related directly to operations and maintenance of the generating unit for the twelve months preceding the month in which the data



must be provided. The categories of expenses included in AOML are those incurred for: (a) on-site based labor engaged in operations and maintenance activities; (b) off-site based labor engaged in on-site operations and maintenance activities directly related to the generating unit; and (c) off-site based labor engaged in off-site operations and maintenance activities directly related to generating unit equipment removed from the generating unit site.

- **AAE (Avoidable Administrative Expenses)** consists of the avoidable administrative expenses related directly to employees at the generating unit for twelve months preceding the month in which the data must be provided. The categories of expenses included in AAE are those incurred for: (a) employee expenses (except employee expenses included in AOML); (b) environmental fees; (c) safety and operator training; (d) office supplies; (e) communications; and (f) annual plant test, inspection and analysis.
- **AFAE (Avoidable Fuel Availability Expenses)** consists of avoidable operating expenses related directly to fuel availability and delivery for the generating unit that can be demonstrated by the Capacity Market Seller based on data for the twelve months preceding the month in which the data must be provided , or on reasonable projections for the Delivery Year supported by executed contracts, published tariffs, or other data sufficient to demonstrate with reasonable certainty the level of costs that have been or shall be incurred for such purpose. The categories of expenses included in AFAE are those incurred for: (a) firm gas pipeline transportation; (b) natural gas storage costs; (c) costs of gas balancing agreements; and (d) costs of gas park and loan services. AFAE expenses are for firm fuel supply and apply solely for offers for a Capacity Performance Resource
- **AME (Avoidable Maintenance Expenses)** consists of avoidable maintenance expenses (other than expenses included in AOML) related directly to the generating unit for the twelve months preceding the month in which the data must be provided. The categories of expenses included in AME are those incurred for: (a) chemical and materials consumed during maintenance of the generating unit; and (b) rented maintenance equipment used to maintain the generating unit.
- **AVE (Avoidable Variable Expenses)** consists of avoidable variable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The categories of expenses included in AVE are those incurred for: (a) water treatment chemicals and lubricants; (b) water, gas, and electric service (not for power generation); and (c) waste water treatment.
- **ATFI (Avoidable Taxes, Fees and Insurance)** consists of avoidable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The

categories of expenses included in AFTI are those incurred for: (a) insurance, (b) permits and licensing fees, (c) site security and utilities for maintaining security at the site; and (d) property taxes.

- **ACC (Avoidable Carrying Charges)** consists of avoidable short-term carrying charges related directly to the generating unit in the twelve months preceding the month in which the data must be provided. Avoidable short-term carrying charges shall include short term carrying charges for maintaining reasonable levels of inventories of fuel and spare parts that result from short-term operational unit decisions as measured by industry best practice standards. For the purpose of determining ACC, short term is the time period in which a reasonable replacement of inventory for normal, expected operations can occur.
- **ACLE (Avoidable Corporate Level Expenses)** consists of avoidable corporate level expenses directly related to the generating unit incurred in the twelve months preceding the month in which the data must be provided. Avoidable corporate level expenses shall include only such expenses that are directly linked to providing tangible services required for the operation of the generating unit proposed for Deactivation. The categories of avoidable expenses included in ACLE are those incurred for: (a) legal services, (b) environmental reporting; and (c) procurement expenses.
- **CPQR (Capacity Performance Quantifiable Risk)** consists of the documented and quantifiable costs of mitigating the risks associated with submission of a Capacity Performance Resource offer, such as insurance expenses solely attributable to risks of being a Capacity Performance Resource. CPQR applies solely for offers for a Capacity Performance Resource.
- **APIR (Avoidable Project Investment Recovery Rate) =  $PI * CRF$**

Where:

- **PI** is the amount of project investment completed prior to June 1 of the Delivery Year, except for Mandatory Capital Expenditures (“CapEx”) for which the project investment must be completed during the Delivery Year, that is reasonably required to enable a Generation Capacity Resource that is the subject of a Sell Offer to continue operating or improve availability during Peak-Hour Periods during the Delivery Year.
- **CRF** is the annual capital recovery factor from the following table, applied in accordance with the terms specified below.

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Levelized CRF
1 to 5	30	0.107
6 to 10	25	0.114
11 to 15	20	0.125
16 to 20	15	0.146
21 to 25	10	0.198
25 Plus	5	0.363
Mandatory CapEx	4	0.450
40 Plus Alternative	1	1.100

Unless otherwise stated, Age of Existing Unit shall be equal to the number of years since the Unit commenced commercial operation, up to and through the relevant Delivery Year.

Remaining Life of Plant defines the amortization schedule (i.e., the maximum number of years over which the Project Investment may be included in the Avoidable Cost Rate.)

### **Capital Expenditures and Project Investment**

For any given Project Investment, a Capacity Market Seller may make a one-time election to recover such investment using: (i) the highest CRF and associated recovery schedule to which it is entitled; or (ii) the next highest CRF and associated recovery schedule. For these purposes, the CRF and recovery schedule for the 25 Plus category is the next highest CRF and recovery schedule for both the Mandatory CapEx and the 40 Plus Alternative categories. The Capacity Market Seller using the above table must provide the Market Monitoring Unit with information, identifying and supporting such election, including but not limited to the age of the unit, the amount of the Project Investment, the purpose of the investment, evidence of corporate commitment (e.g., an SEC filing, a press release, or a letter from a duly authorized corporate officer indicating intent to make such investment), and detailed information concerning the governmental requirement (if applicable). Absent other written notification, such election shall be deemed based on the CRF such Seller employs for the first Sell Offer reflecting recovery of any portion of such Project Investment.

For any resource using the CRF and associated recovery schedule from the CRF table that set the Capacity Resource Clearing Price in any Delivery Year, such Capacity Market Seller must also provide to the Market Monitoring Unit, for informational purposes only, evidence of the actual expenditure of the Project Investment, when such information becomes available.

If the project associated with a Project Investment that was included in a Sell Offer using a CRF and associated recovery schedule from the above table has not entered into commercial operation prior to the end of the relevant Delivery Year, and the resource's Sell Offer sets the clearing price for the relevant LDA, the Capacity Market Seller shall be required to elect to either (i) pay a charge that is equal to the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR component of the Avoidable Cost Rate, this difference to be multiplied by the cleared MW volume from such Resource ("rebate payment"); (ii) hold such rebate payment in escrow, to be released to the Capacity Market Seller in the event that the project enters into commercial operation during the subsequent Delivery Year or rebated to LSEs in the relevant LDA if the

project has not entered into commercial operation during the subsequent Delivery Year; or (iii) make a reasonable investment in the amount of the PI in other Existing Generation Capacity Resources owned or controlled by the Capacity Market Seller or its Affiliates in the relevant LDA. The revenue from such rebate payments shall be allocated pro rata to LSEs in the relevant LDA(s) that were charged a Locational Reliability Charge for such Delivery Year, based on their Daily Unforced Capacity Obligation in the relevant LDA(s). If the Sell Offer from the Generation Capacity Resource did not set the Capacity Resource Clearing Price in the relevant LDA, no alternative investment or rebate payment is required. If the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR amount does not exceed the greater of \$10 per MW-day or a 10% increase in the clearing price, no alternative investment or rebate payment is required.

### **Mandatory CapEx Option**

The Mandatory CapEx CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), to a resource that must make a Project Investment to comply with a governmental requirement that would otherwise materially impact operating levels during the Delivery Year, where: (i) such resource is a coal, oil or gas-fired resource that began commercial operation no fewer than fifteen years prior to the start of the first Delivery Year for which such recovery is sought, and such Project Investment is equal to or exceeds \$200/kW of capitalized project cost; or (ii) such resource is a coal-fired resource located in an LDA for which a separate VRR Curve has been established for the relevant Delivery Years, and began commercial operation at least 50 years prior to the conduct of the relevant BRA.

A Capacity Market Seller that wishes to elect the Mandatory CapEx option for a Project Investment must do so beginning with the Base Residual Auction for the Delivery Year in which such project is expected to enter commercial operation. A Sell Offer submitted in any Base Residual Auction for which the Mandatory CapEx option is selected may not exceed an offer price equivalent to 0.90 times the then-current Net CONE (on an unforced-equivalent basis).

### **40 Plus Alternative Option**

The 40 Plus Alternative CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), for a resource that is a gas- or oil-fired resource that began commercial operation no less than 40 years prior to the conduct of the relevant BRA (excluding, however, any resource in any Delivery Year for which the resource is receiving a payment under Part V of the PJM Tariff. Generation Capacity Resources electing this 40 Plus Alternative CRF shall be treated as At Risk Generation for purposes of the sensitivity runs in the RTEP process). Resources electing the 40 Plus Alternative option will be modeled in the RTEP process as “at-risk” at the end of the one-year amortization period.

A Capacity Market Seller that wishes to elect the 40 Plus Alternative option for a Project Investment must provide written notice of such election to the Office of the Interconnection no later than six months prior to the Base Residual Auction for which such election is sought; provided however that shorter notice may be provided if unforeseen circumstances give rise to the need to make such election and such seller gives notice as soon as practicable.

The Office of the Interconnection shall give market participants reasonable notice of such election, subject to satisfaction of requirements under the PJM Operating Agreement for protection of confidential and commercially sensitive information. A Sell Offer submitted in any Base Residual Auction for which the 40 Plus Alternative option is selected may not exceed an offer price equivalent to the then-current Net CONE (on an unforced-equivalent basis).

### **Multi-Year Pricing Option**

A Seller submitting a Sell Offer with an APIR component that is based on a Project Investment of at least \$450/kW may elect this Multi-Year Pricing Option by providing written notice to such effect the first time it submits a Sell Offer that includes an APIR component for such Project Investment. Such option shall be available on the same terms, and under the same conditions, as are available to Planned Generation Capacity Resources under section 5.14(c) of this Attachment.

- **ARPIR (Avoidable Refunds of Project Investment Reimbursements)** consists of avoidable refund amounts of Project Investment Reimbursements payable by a Generation Owner to PJM under Part V, Section 118 of this Tariff or avoidable refund amounts of project investment reimbursements payable by a Generation Owner to PJM under a Cost of Service Recovery Rate filed under Part V, Section 119 of the Tariff and approved by the Commission.

(b) For the purpose of determining an Avoidable Cost Rate, avoidable expenses are incremental expenses directly required to operate a Generation Capacity Resource that a Generation Owner would not incur if such generating unit did not operate in the Delivery Year or meet Availability criteria during Peak-Hour Periods during the Delivery Year.

(c) For the purpose of determining an Avoidable Cost Rate, avoidable expenses shall exclude variable costs recoverable under cost-based offers to sell energy from operating capacity on the PJM Interchange Energy Market under the Operating Agreement.

(d) Projected PJM Market Revenues for any Generation Capacity Resource to which the Avoidable Cost Rate is applied shall include all actual unit-specific revenues from PJM energy markets, ancillary services, and unit-specific bilateral contracts from such Generation Capacity Resource, net of marginal costs for providing such energy (i.e., costs allowed under cost-based offers pursuant to Section 6.4 of Schedule 1 of the Operating Agreement) and ancillary services from such resource.

(i) For the first three BRAs (for Delivery Years 2007-08, 2008-09, 2009-10), the calculation of Projected PJM Market Revenues shall be equal to the simple average of such net revenues as described above for calendar years 2001-2006; and

(ii) For the fourth BRA (delivery year 2010-11) and thereafter, the calculation of Projected PJM Market Revenues shall be equal to the rolling simple average of such net revenues as described above from the three most recent whole calendar years prior to the year in which the BRA is conducted.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because the Generation Capacity Resource was not integrated into PJM during the full period, then the Projected PJM Market Revenues shall be calculated using only those whole calendar years within the full period in which such Resource received PJM market revenues.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because it was not in commercial operation during the entire period, or if data is not available to the Capacity Market Seller for the entire period, despite the good faith efforts of such seller to obtain such data, then the Projected PJM Market Revenues shall be calculated based upon net revenues received over the entire period by comparable units, to be developed by the MMU and the Capacity Market Seller.

## **7. GENERATION RESOURCE RATING TEST FAILURE CHARGE**

### **7.1 Generation Resource Rating Test Failure Charges**

A Generation Resource Rating Test Failure Charge shall be assessed on any Market Seller that commits a Generation Capacity Resource for a Delivery Year, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, if such resource fails a generation resource capacity test, as provided herein.

#### **a) Generation Resource Fails Capacity Test in Delivery Year**

Each Generation Capacity Resource committed for a Delivery Year shall be obligated to complete a generation resource capacity test, as described in the PJM Manuals. The Market Seller that committed the resource, or Locational UCAP Seller that sold the resource, may perform an unlimited number of tests during each such period. If none of the tests during a testing period certify full delivery of the megawatt amount of installed capacity the Market Seller committed, or Locational UCAP Seller sold, for such Delivery Year, the Market Seller or Locational UCAP Seller shall be assessed a daily Generation Resource Rating Test Failure Charge for each day from the first day of the Summer or Winter Season in which such resource failed the rating test through the last day of such Delivery Year, provided, however, that such a seller that fails or is expected to fail a rating test may obtain and commit Unforced Capacity from a replacement Capacity Resource meeting the same locational requirements. Such Unforced Capacity may include uncommitted or uncleared Sell Offer blocks from Generation Capacity Resources that were otherwise committed. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection, and shall reduce the amount of installed capacity committed from the Generation Capacity Resource, that failed or was expected to fail such rating test, in accordance with the determination prescribed by subsection (b) below.

#### **b) Generation Resource Rating Test Failure Charge**

The Generation Resource Rating Test Failure Charge shall equal the Daily Deficiency Rate multiplied by the following megawatt quantity, converted to an Unforced Capacity basis using the Generation Capacity Resource's EFORD for the twelve months ending the September 30 last preceding the Delivery Year: (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the highest installed capacity rating determined for such resource in any test during the relevant testing period. The Daily Deficiency Rate shall equal the Capacity Resource Clearing Price (weighted as necessary to reflect the clearing prices in all RPM Auctions that resulted in installed capacity commitments from such resource), in \$/MW-day, applicable to the Generation Capacity Resource (for purposes of replacement capacity, including Locational UCAP transactions, the applicable Capacity Resource Clearing Price shall be the clearing price for the Locational

Deliverability Area in which such resource is located) plus the greater of (iii) 0.20 times such weighted average Capacity Resource Clearing Price; or (iv) \$20/MW-Day, provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller's cleared Sell Offer or Locational UCAP Seller's Locational UCAP sale due to derating, delay, or retirement, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a charge under section 8 for such unavailability; and provided further that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource capacity rating deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource capacity rating deficiency and Performance Shortfall. If a single resource is the basis for installed capacity commitments of multiple Capacity Market Sellers or Locational UCAP Sellers, the installed capacity shortfall determined under (i) and (ii) above shall be assessed upon such sellers on a pro-rata basis in accordance with the megawatts of capacity from such resource in their cleared Sell Offers, Locational UCAP sales, or other commitment as replacement capacity.

c) Allocation of Revenue Collected from Generation Resource Rating Test Failure Charges.

The revenue collected from Generation Resource Rating Test Failure Charges shall be distributed on a pro-rata basis to LSEs that were charged a Locational Reliability Charge for the Delivery Year for which the Generation Resource Rating Test Failure Charge was assessed. The charges shall be allocated on a pro-rata basis to LSEs based on their Daily Unforced Capacity Obligation.



## **8. CAPACITY RESOURCE DEFICIENCY CHARGE**

### **8.1**

A Capacity Resource Deficiency Charge shall be assessed on any Capacity Market Seller that commits a Capacity Resource, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, for a Delivery Year that is unable or unavailable to deliver Unforced Capacity for all or any part of such Delivery Year for any reason, including but not limited to the following, and that does not obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource) in the megawatt quantity required to satisfy the capacity committed from such resource by such seller as a result of all cleared Sell Offers from such seller based on such resource in any RPM Auctions for such Delivery Year, the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource:

a) Unit Derating – Such Capacity Resource is a Generation Capacity Resource and its capacity value is derated prior to or during the Delivery Year;

b) EFORD Increase – Such Capacity Resource is a Generation Capacity Resource and the EFORD value determined for such resource at least two (2) months prior to the Third Incremental Auction is higher than the EFORD value submitted in the Capacity Market Seller's cleared Sell Offer;

c) External Generation Resource – Such Capacity Resource is an Existing Generation Capacity Resource that is located outside of the PJM Control Area and arrangements for the firm delivery of the output of such resource to the interface with the PJM Region are not in place for such resource prior to the start of the Delivery Year;

d) Planned Generation Resource – Such Capacity Resource is a Planned Generation Capacity Resource and Interconnection Service has not commenced as to such resource prior to the start of the Delivery Year;

e) Planned Demand Resource - Such Capacity Resource is a Planned Demand Resource or an Energy Efficiency Resource and the associated demand response program or energy efficiency measure is not installed prior to the start of the Delivery Year; or

f) Existing Demand Resource – Such Capacity Resource is an existing Demand Resource or Energy Efficiency Resource and, subject to section 8.4, is not capable of providing the megawatt quantity of load response specified in the cleared Sell Offer for the time periods of availability associated with the product type.

### **8.2. Capacity Resource Deficiency Charge**

The Capacity Resource Deficiency Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the megawatt quantity of deficiency below the level of capacity committed in such Capacity Market Seller's Sell Offer(s) or bilateral capacity commitments, or Locational UCAP Seller's Locational UCAP sale for each day such seller is deficient, provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource deficiency and Performance Shortfall.

### **8.3. Allocation of Revenue Collected from Capacity Resource Deficiency Charges**

The revenue collected from the assessment of a Capacity Resource Deficiency Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

### **8.4 Relief from Charges**

A Capacity Market Seller or Locational UCAP Seller that is otherwise subject to the Capacity Resource Deficiency Charge solely as a result of section 8.1(f) may receive relief from such Charge if it demonstrates that the inability to provide the level of demand response specified in its Sell Offer is due to the permanent departure (due to plant closure, efficiency gains, or similar reasons) from the Transmission System of load that was relied upon for load response in such Sell Offer; provided, however, that such seller must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief. Such seller shall receive no RPM Auction Credit for the amount of reduction in the committed Existing Demand Resources.

## 9. PEAK SEASON MAINTENANCE COMPLIANCE PENALTY CHARGE.

### a) Purpose

To preserve and maintain the reliability of the PJM Region and to recognize the impact of planned outages and maintenance outages of Generation Capacity Resources during the Peak Season, each Capacity Market Seller that commits a Generation Capacity Resource for a Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for a Delivery Year, must ensure that such Generation Capacity Resource has available sufficient Unforced Capacity during the Peak Season to satisfy the megawatt amount committed from such resource as a result of all Sell Offers by such seller based on such resource in any RPM Auctions for such Delivery Year the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource.

### b) Peak Season Requirement

To the extent the Generation Capacity Resource will not be available due to a planned or maintenance outage that occurs during the Peak Season without the approval of the Office of the Interconnection, the Capacity Market Seller or Locational UCAP Seller must obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) from a Capacity Resource that is not already committed for such Delivery Year and that meets all characteristics specified in the Sell Offer or Locational UCAP transaction, including the megawatt quantity of Unforced Capacity committed for such Delivery Year (with such Unforced Capacity, in the case of a Generation Capacity Resource, determined on the basis of such Generation Capacity Resource's EFORD for the twelve months ending on the September 30 last preceding the Delivery Year), or otherwise, for Delivery Years through May 31, 2018, pay a Peak Season Maintenance Compliance Penalty Charge. The Capacity Market Seller or Locational UCAP Seller shall commit such replacement Capacity Resource in accordance with the procedure set forth in the PJM Manuals.

### c) Peak Season Planned and Maintenance Outages

The Office of the Interconnection shall adopt and maintain rules and procedures for determining the allowable Peak Season planned and maintenance outages.

### d) Peak Season Maintenance Compliance Penalty Charge

The Peak Season Maintenance Compliance Penalty Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the unforced value of a positive shortfall calculated for the capacity committed for each day during the Peak Season that such resource is out-of-service on a maintenance outage that is not authorized by the Office of the Interconnection. The shortfall shall equal (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and

for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the summer net dependable rating minus the amount of capacity out-of-service on unapproved planned or maintenance outage on a peak season day.

e) Allocation of Revenue Collected from Peak Season Maintenance Compliance Penalty Charges

The revenue collected from assessment of a Peak Season Maintenance Compliance Penalty Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which the Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to all such LSEs based on their Daily Unforced Capacity Obligation.

## 10. PEAK-HOUR-PERIOD AVAILABILITY CHARGES AND CREDITS

(a) To preserve and maintain the reliability of the PJM Region and to encourage Capacity Market Sellers and Locational UCAP Sellers to maintain the availability of Generation Capacity Resources during critical peak hours of the Delivery Year, each Capacity Market Seller that commits a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, shall be credited or charged to the extent the critical peak-period availability of its committed Generation Capacity Resources exceeds or falls short, respectively, of the expected availability of such resources. Charges and credits hereunder shall not apply to wind or solar resources.

(b) Critical peak periods for purposes of this assessment (“Peak-Hour Periods”) shall be the hour ending 1500 local prevailing time through the hour ending 1900 local prevailing time on any day during the calendar months of June through August that is not a Saturday, Sunday, or federal holiday, and the hour ending 800 local prevailing time through the hour ending 900 local prevailing time and the hour ending 1900 local prevailing time through the hour ending 2000 local prevailing time on any day during the calendar months of January and February that is not a Saturday, Sunday or federal holiday.

(c) Peak-Period Equivalent Forced Outage Rate and Peak-Period Capacity Calculations

The Peak-Period Equivalent Forced Outage Rate shall be calculated for Peak-Hour Periods based on the following formula:

$$\text{EFORP (\%)} = (\text{FOH} + \text{EFPOH}) / (\text{SH} + \text{FOH})$$

where

FOH = full forced outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below);

EFPOH = equivalent forced partial outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below); and

SH = service hours as defined pursuant to NERC GADS standards.

The Peak-Period Capacity of a Generation Capacity Resource shall be calculated as follows:

$$\text{PCAP} = \text{ICAP} * (1.0 - \text{EFOR}_p)$$

where

ICAP = the installed capacity rating of such Generation Capacity Resource

(d) Determination of Expected EFOR<sub>P</sub> and PCAP for Generation Capacity Resources

For each Delivery Year, the expected EFOR<sub>P</sub> and PCAP of each Generation Capacity Resource committed to serve load in such Delivery Year shall be the EFORD and UCAP, respectively, calculated on a rolling-average basis using such resource's service history during the five consecutive annual periods of twelve consecutive months ending September 30 last preceding such Delivery Year. Such EFOR<sub>D</sub> and UCAP shall be determined in accordance with Schedule 5 of the Reliability Assurance Agreement, which excludes (for purposes of Capacity Resource UCAP calculations) outages deemed outside management control in accordance with the standards and guidelines of NERC, as defined in the Generating Availability Data System, Data Reporting Instructions in Attachment K or its successor ("Outside Plant Management Control" or "OMC").

(e) For each Delivery Year, the actual EFOR<sub>P</sub> and PCAP of each Generation Capacity Resource shall be calculated during the Peak-Hour Periods of such Delivery Year, provided however, that such calculation shall not include any day such a resource was unavailable if such unavailability resulted in a charge or penalty due to delay, cancellation, retirement, de-rating, or rating test failure. The full or partial forced outage hours when called upon shall be those outage hours during which the cost-based offer for energy from the resource would have been less than the applicable Locational Marginal Price for such resource, or when the Office of the Interconnection would have called upon the resource (absent the outage) for Operating Reserves, in both cases as determined by the Office of the Interconnection in accordance with the procedures specified in the PJM Manuals (including, without limitation, respecting such unit's current operating constraints). In addition, for single-fueled, natural gas-fired units, a failure to perform during the winter Peak-Hour Period shall be excused for purposes of this section if the Capacity Market Seller, or Locational UCAP Seller, as applicable, can demonstrate to the Office of the Interconnection that such failure was due to non-availability of gas to supply the unit.

(f) If the calculation under subsection (e) for any Generation Capacity Resource for a Delivery Year results in fewer than fifty total Service Hours during Peak Hours, then the actual EFOR<sub>P</sub> for purposes of such calculation shall be the lower of the resource's EFOR<sub>D</sub> (based on Delivery Year outage data) and its EFOR<sub>P</sub> and the actual PCAP for purposes of such calculation shall be, respectively, the resource's UCAP or its PCAP.

(g) For each Delivery Year, the excess or shortfall in Peak-Hour Period availability for each Generation Capacity Resource shall be determined by comparing such resource's expected and actual PCAP, subject to the limitation under subsection (i) below. The net Peak-Hour Period availability shortfall or excess for each Capacity Market Seller and FRR Entity in each Locational Deliverability Area shall be the net of the shortfalls and excesses of all Generation Capacity Resources in such Locational Deliverability Area committed by such Capacity Market Seller or Locational UCAP Seller for such Delivery Year. If there is a net positive Peak Hour Period availability shortfall in the LDA for such committed resources in the LDA, the sum of the excesses of all Generation Capacity Resources in such Locational Deliverability Area owned or controlled by such Capacity Market Seller, available for the Delivery Year but not committed for such Delivery Year, and satisfying all obligations of a

committed Capacity Resource for such Delivery Year shall be used to reduce the net positive Peak Hour Period availability shortfall in the LDA of committed resources by the amount of the sum of the excesses of such available uncommitted resources; however, such reduction shall not result in a net Peak Hour Period availability excess in the LDA.

(h) As to any Generation Capacity Resource experiencing or expected to experience a full or partial outage during any Peak-Hour Period that would or could result in a shortfall under subsection (g) above, a Capacity Market Seller or Locational UCAP Seller may obtain and commit Unforced Capacity from a replacement Capacity Resource (not previously committed) meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) as such resource. Such Unforced Capacity shall be recognized for purposes of this section prospectively from the effective date of commitment of such replacement resource, and to the extent such replacement Unforced Capacity thereafter is available during Peak-Hour Periods, any shortfall that otherwise would have been calculated shall be reduced to that extent. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection.

(i) The shortfall determined for any Generation Capacity Resource shall not exceed an amount equal to 0.50 times the Unforced Capacity of such resource; provided, however, that if such limitation is triggered as to any Generation Capacity Resource for a Delivery Year, then the decimal multiplier for this calculation as to such resource in the immediately succeeding Delivery Year shall be increased to 0.75, and if such limitation again is triggered in such succeeding Delivery Year, then the multiplier shall be increased to 1.00. The multiplier shall remain at either such elevated level for each succeeding Delivery Year until the shortfall experienced by such resource is less than 0.50 times the Unforced Capacity of such resource for three consecutive Delivery Years.

(j) A Peak-Hour Period Availability Charge shall be assessed on each Capacity Market Seller or Locational UCAP Seller with a net shortfall in PCAP in an LDA, where such charge is equal to such shortfall times the Capacity Resource Clearing Price determined for such Locational Deliverability Area for such Delivery Year.

(k) The revenues from such charges shall be distributed to the Capacity Market Sellers, Locational UCAP Sellers, and FRR Entities that committed Generation Capacity Resources, in such Locational Deliverability Area that have net excess PCAP for such Delivery Year, provided however that any such seller shall be paid no more than the product of such seller's net excess PCAP times the Capacity Clearing Price determined for such Locational Deliverability Area for such Delivery Year. Any excess revenues remaining after such distribution shall be distributed on a pro-rata basis to all LSEs in the Zone that were charged the same Locational Reliability Charge for the Delivery Year for which the Peak Hour Availability Charge was assessed, and to all FRR Entities in the Zone that are LSEs and whose FRR Capacity Plan resources over-performed in the Delivery Year, on a pro-rata basis in accordance with each LSE's Daily Unforced Capacity Obligation.

(l) The Office of the Interconnection shall provide estimated charges and credits based on the summer Peak-Hour Periods within three calendar months after the end of the

summer period. Final charges and credits for the Delivery Year shall be billed within three calendar months following the end of the Delivery Year.



## 10A. CHARGES FOR NON-PERFORMANCE AND CREDITS FOR PERFORMANCE

(a) For the 2018/2019 Delivery Year and any subsequent Delivery Year (and for certain purposes for the 2016/2017 and 2017/2018 Delivery Years as provided in subsections (h) and (i) hereof), each Capacity Market Seller that commits a Capacity Resource for a Delivery Year (whether through an RPM Auction, a bilateral transaction, or as Locational UCAP), and each Locational UCAP Seller that sells Locational UCAP from a Capacity Resource for a Delivery Year, shall be charged to the extent the performance of each of its committed Capacity Resources during all or any part of a clock-hour when an Emergency Action is in effect falls short of the expected performance of such resources (as determined herein) and the revenue from such charges shall be provided to Market Participants with generation or demand response resources that perform during such hour in excess of the level expected based on commitments (if any) of such resources.

(b) Performance shall be measured for purposes of this assessment during each Performance Assessment Hour.

(c) For each Performance Assessment Hour, the Office of the Interconnection shall determine whether, and the extent to which, the actual performance of each Capacity Resource and Locational UCAP has fallen short of the performance expected of such committed Capacity Resource, and the magnitude of any such shortfall, based on the following formula:

Performance Shortfall = Expected Performance - Actual Performance

Where the result of such formula is a positive number and where:

Expected Performance =

for Generation Capacity Resources and Capacity Storage Resources: [(Resource Committed Capacity / All Committed Generation and Storage Capacity) \* (All Actual Generation Performance, Storage Resource Performance, Net Energy Imports and Demand Response Bonus Performance)];

where

Resource Committed Capacity = the total megawatts of Unforced Capacity of the Capacity Resource committed by such Capacity Market Seller or Locational UCAP Seller;

All Committed Generation and Storage Capacity = the total megawatts of Unforced Capacity of all Generation Capacity Resources and all Capacity Storage Resources committed by all Capacity Market Sellers, FRR Entities, Locational UCAP Sellers;

All Actual Generation Performance and Storage Resource Performance = the total amount of Actual Performance for all generation resources and storage resources during the interval;

Net Energy Imports = the sum of interchange transactions importing energy into PJM not including those associated with external Capacity Resources and therefore included in All Actual Generation Performance minus the sum of interchange transactions exporting energy out of PJM, but not less than zero;

Demand Response Bonus Performance = the sum of Bonus performance provided by Demand Response resources as calculated in (g) below;

and for Demand Resources, Energy Efficiency Resources, and Qualifying Transmission Upgrades: Resource Committed Capacity;

where

Resource Committed Capacity = the total megawatts of capacity committed from such Capacity Resource committed capacity without making any adjustment for the Forecast Pool Requirement

and

Actual Performance =

for each generation resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each storage resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each Demand Resource, the demand response provided by such resource, plus such resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour, as established through the PJM demand response settlement procedure consistent with the standards specified in Schedule 6 of the RAA;

for each Energy Efficiency Resource, the load reduction quantity approved by PJM subsequent to the pre-delivery year submittal of a post-installation measurement and verification report; and

for each Qualified Transmission Upgrade, the megawatt quantity cleared by such Qualified Transmission Upgrade if it is in service during the Performance

Assessment Hour, and zero if it is not in service during such Performance Assessment Hour.

Such calculation shall encompass all resources located in the area defined by the Emergency Action. For such purpose, Qualifying Transmission Upgrades shall be deemed to be located in the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit, and a Qualifying Transmission Upgrade shall be included in calculations of Expected Performance and Actual Performance only if, and to the extent that, the declared Emergency Action encompasses the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit. The Performance Shortfall shall be calculated for each Performance Assessment Hour, and any committed Capacity Resource for which the above calculation produces a negative number for a Performance Assessment Hour shall not have a Performance Shortfall for such Performance Assessment Hour.

(d) Notwithstanding subsection (c) above, a Capacity Resource or Locational UCAP of a Capacity Market Seller or Locational UCAP Seller shall not be considered in the calculation of a Performance Shortfall for a Performance Assessment Hour to the extent such Capacity Resource or Locational UCAP was unavailable during such Performance Assessment Hour solely because the resource on which such Capacity Resource or Locational UCAP is based was on a Generator Planned Outage or Generator Maintenance Outage approved by the Office of the Interconnection, or was not scheduled to operate by the Office of the Interconnection, or was online but was scheduled down, by the Office of the Interconnection, for reasons other than (i) limitations specified by such seller in the resource operating parameters, or (ii) the submission by such seller of a market-based offer higher than its cost-based offer.

(e) Subject to the Non-Performance Charge Limit specified in subsection (f) hereof, each Capacity Market Seller and Locational UCAP Seller shall be assessed a Non-Performance Charge for each of its Capacity Resources or Locational UCAP that has a Performance Shortfall for a Performance Assessment Hour based on the following formula, applied to each such resource:

$$\text{Non-Performance Charge} = \text{Performance Shortfall} * \text{Non-Performance Charge Rate}$$

Where

For Capacity Performance Resources the Non-Performance Charge Rate = (Net Cost of New Entry (stated in terms of installed capacity) for the LDA and Delivery Year for which such calculation is performed \* (365 / 30)

and for Base Capacity Resources the Non-Performance Charge Rate = (Weighted Average Resource Clearing Price applicable to the resource \* (365 / 30)

(f) The Non-Performance Charge for each Capacity Performance Resource or (including Locational UCAP from such a resource) shall not exceed a Non-Performance Charge Limit equal to, for any calendar month of a Delivery Year, 0.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a

Delivery Year, an amount equal to 1.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365. All references to Net Cost of New Entry in this section 10A shall be to the Net Cost of New Entry for the LDA and Delivery Year for which the calculation is performed. The Non-Performance Charge for each Base Capacity Resource (including Locational UCAP from such a resource) shall not exceed a Non-Performance Charge Limit equal to, for a Delivery Year, an amount equal to the total payments due such Capacity Resource or Locational UCAP under section 5.14 of this Attachment DD for such Delivery Year.

(g) Revenues collected from assessment of Non-Performance Charges for a Performance Assessment Hour shall be distributed to each Market Participant, whether or not such Market Participant committed a Capacity Resource or Locational UCAP for a Performance Assessment Hour, that provided energy or load reductions above the levels expected for such resource during such hour. For purposes of this provision, the performance expected of a resource, and the revenue distribution payment, if any, for a resource, shall be determined in accordance with the following formulae:

Formula 1: Market Participant Bonus Performance = Actual Performance – Expected Performance

And

Formula 2: Performance Payment = (Market Participant Bonus Performance / All Market Participants Bonus Performance) \* Non-Performance Charge Revenues.

Where the result of Formula 1 is a positive number and where:

Actual Performance is as defined in subsection (c), provided, however, that Actual Performance for purposes of this calculation shall not exceed the megawatt level at which such resource was scheduled by the Office of the Interconnection during the Performance Assessment Hours;

Expected Performance is as defined in subsection (c), provided, however, that for purposes of this calculation, Expected Performance shall be zero for any resource that is not a Capacity Resource or Locational UCAP, or that is a Capacity Resource or Locational UCAP, but for which the Performance Assessment Hour occurs outside the resource's capacity obligation period, including, without limitation, a Base Capacity Demand Resource providing demand response during non-summer months; and

All Market Participants Bonus Performance is the sum of the results of calculating Formula 1 of this subsection (g) for all Market Participants that have Bonus Performance during such Performance Assessment Hour.

(h) The provisions of this section 10A shall apply during the 2016/-2017 Delivery Year, provided that:

(i) Non-Performance Charges shall be determined solely for and assessed solely on, Capacity Performance Resources committed for such Delivery Year;

(ii) The Non-Performance Charge shall be 0.5 times the Non-Performance Charge calculated under subsection (e) hereof; and

(iii) The Non-Performance Charge Limit for any calendar month shall be 0.25 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.75 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(i) The provisions of this section 10A shall apply during the 2017-2018 Delivery Year, provided that:

(i) Non-Performance Charges shall be determined solely for, and assessed solely on, Capacity Performance Resources committed for such Delivery Year;

(ii) The Non-Performance Charge shall be 0.6 times the Non-Performance Charge calculated under subsection (e) hereof; and

(iii) The Non-Performance Charge Limit for any calendar month shall be 0.3 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.9 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(j) The Office of the Interconnection shall bill charges and credits for performance during Performance Assessment Hours within three calendar months after the calendar month that included such Performance Assessment Hours, provided, for any Non-Performance Charge, the amount shall be divided by the number of months remaining in the Delivery Year for which no invoice has been issued, and the resulting amount shall be invoiced each such remaining month in the Delivery Year.

## 11. DEMAND RESOURCE COMPLIANCE PENALTY CHARGE

(a) The Office of the Interconnection shall separately evaluate compliance of each Demand Resource committed for a Delivery Year, in accordance with procedures set forth in the PJM Manuals Manuals and, for Delivery Years through May 31, 2018, shall assess a Demand Resource Compliance Penalty Charge on Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time.

The compliance is evaluated separately by Load Management Event in each CAA for Demand Resources dispatched by the Office of Interconnection. The Demand Resource Compliance Penalty Charges will not be assessed to resources that are dispatched on a subzonal basis for the 2012/2013 and 2013/2014 Delivery Years. For the 2014/2015 Delivery Year, the Demand Resource Compliance Penalty Charge will not be assessed to resources that are dispatched on a subzonal basis unless such subzone is defined and publically posted the day before the Load Management Event as set forth in the PJM Manuals. To the extent a Demand Resource cannot respond, another Demand Resource in the same geographic location defined by the PJM dispatch instruction with the same designated lead time and comparable capacity commitment may be substituted. Any Demand Resource used as a substitute during a Load Management Event will have the same obligation to respond to future Load Management Event(s) as if it did not respond to such Load Management Event. Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time based on the capacity commitment shall be assessed a Demand Resource Compliance Penalty Charge; provided, however, that such under compliance shall be determined on an aggregate basis for all dispatched Demand Resources committed by the same Capacity Market Seller or same Locational UCAP Seller in a CAA.

(b) The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the on-peak period, which includes all hours specified in the Reliability Assurance Agreement definition of the Limited Demand Resource, shall equal the lesser of (1/the number of Load Management Events during the on-peak period for which such Demand Resources were dispatched, or 0.50) times the weighted daily revenue rate for such seller resources dispatched, multiplied by the net under-compliance in such on-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. Net CAA under compliance for the Load Management Event will be prorated to individual under compliant registrations in the CAA based on performance of each registration in order to determine net under compliance(s). The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the off-peak period, which includes all hours specified in the Reliability Assurance Agreement definitions of Extended Summer Demand Resource or Annual Demand Resource, but does not include all hours in the on-peak period, shall equal 1/52 times the weighted daily revenue rate for resources dispatched for such seller, multiplied by the net undercompliance in such off-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such

CAA for each Load Management Event called by the Office of the Interconnection. If a Load Management Event is comprised of both an on-peak period and an off-peak period then such Demand Resource Compliance Penalty Charge will be the higher of the charges calculated under the prior two sentences. The total Compliance Penalty Charge for the Delivery Year is not to exceed the annual revenue received for such resources. The net CAA undercompliance for each such Load Management Event shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the megawatts of load reduction capability committed by such seller on the day of the Load Management Event for all dispatched resources minus (ii) the megawatts of load reduction actually provided by all such dispatched Demand Resources during such Load Management Event. A seller's net undercompliance in a CAA shall be reduced by the seller's total amount of Capacity Resource deficiency shortfalls on the day of the Load Management Event, determined pursuant to section 8 of Attachment DD of this Tariff, in a CAA for the seller's committed Demand Resources that are the same product(s) dispatched. The daily revenue rate for a Demand Resource shall be the Resource Clearing Price that the resource received in the auction in which it cleared, including any adjustment pursuant to Attachment DD-1, section C of this Tariff. The weighted daily revenue rate for a Capacity Market Seller shall be the average rate for all cleared Demand Resources, weighted by the megawatts cleared at each price. The total charge per megawatt that may be assessed on a Capacity Market Seller in a Delivery Year shall be capped at the weighted daily revenue rate the Capacity Market Seller would receive in the Delivery Year.

The Demand Resource Compliance Penalty Charges for a Load Management Event for Limited Demand Resources are assessed daily and initially billed by the later of the month of October during such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The initial billing for a Load Management Event for Limited Demand Resources will reflect the amounts due from the start of the Delivery Year to the last day that is reflected in the initial billing. The remaining charges for such Load Management Event will be assessed daily and billed monthly through the remainder of the Delivery Year. The Demand Resource Compliance Penalty Charges for a Load Management Event for Annual or Extended Summer Demand Resources are assessed daily and billed by the later of the month of June following such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The billing for the Load Management Event for Annual or Extended Summer Demand Resources will be in a lump sum and reflect the accrued charges for the entire Delivery Year.

c) Daily revenues from assessment of a Demand Resource Compliance Penalty Charge shall be distributed on a pro-rata basis to Demand Resource Providers and Locational UCAP Sellers that provided load reductions in excess of the amount such resources were committed to provide. Such revenue distribution, however, shall not exceed for any Capacity Market Seller the quantity of excess megawatts provided by such Capacity Market Seller during a single Load Management Event times 0.20 times the weighted daily revenue rate for such Capacity Market Seller for resources dispatched.

To the extent any such revenues remain after such distribution, the remaining revenues shall be distributed to LSEs based on each LSE's Daily Unforced Capacity Obligation.



## 11A DEMAND RESOURCES TEST FAILURE CHARGE

a) Beginning with the Delivery Year that commences on June 1, 2009, Capacity Market Sellers that commit Demand Resources may be charged to the extent their committed resources fail performance tests, as set forth herein.

b)

(i) For Delivery Years through May 31, 2018:

For Limited Demand Resources: If a registration for a Limited Demand Resource committed by a Capacity Market Seller is not dispatched by the Office of the Interconnection for a Load Management event prior to August 15 of the relevant Delivery Year, then such registration must demonstrate that it was tested as described below in (iii), in a zone for a one-hour period during any hour when a PJM Load Management event may be called between June 1 and September 30, inclusive. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between August 16 and September 30, no test will be required. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of Interconnection for a PJM Load Management event in a subzone between June 1 and September 30 of the 2012/2013 and 2013/2014 Delivery Years, and such registration performs at or above the nominated amount of capacity on the registration, no test will be required and no Demand Resources Test Failure Charges will be assessed for such registrations. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between June 1 and September 30, inclusive, then Demand Resources Test Failure Charges will not be assessed.

For Annual Demand Resources: if an Annual Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then the Annual Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Annual Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the Interconnection for a Load Management event during the Delivery Year, then no test will be required.

For Extended Summer Demand Resources: if an Extended Summer Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through October or the following May, then the Extended

Summer Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Extended Summer Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year.

(ii) For the 2018/2019 Delivery Year and subsequent Delivery Years:

For Base Capacity Demand Resources: if an Base Capacity Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through September, then the Base Capacity Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Base Capacity Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through September of the relevant Delivery Year.

For Demand Resources that commit as Capacity Performance Resources: if a Demand Resource that is a Capacity Performance Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then that Demand Resource registration committed by a Capacity Market Seller must demonstrate that that Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the Interconnection for a Load Management event during the Delivery Year, then no test will be required.

- (iii) All registrations in a zone required to test must be tested simultaneously for each product except that, when less than 25 percent (by megawatts) of a provider's total resources in a zone fail a test, the provider may conduct a re-test limited to all registrations that failed the prior test, provided that such re-test must be at the same time of day and under approximately the same weather conditions as the prior test, and provided further that all affiliated registrations must test simultaneously, where affiliated means registrations that have any ability to shift load and are owned or controlled by the same entity. If less than 25 percent of resources fail the test and the provider chooses to conduct a retest, the provider may elect to maintain the performance compliance result for registration(s) achieved during the test if provider: (1)

notifies the Office of the Interconnection 48 hours prior to the retest under this election; and (2) the provider retests affiliated registrations under this election as set forth in the PJM Manual.

c) a Capacity Market Seller that committed Demand Resources shall be assessed a Demand Resources Test Failure Charge equal to the net capability testing shortfall for such products tested in a Zone during such test in the aggregate of all of such Seller's Demand Resources tested in such Zone times the Demand Resources Test Failure Charge Rate. The net capability testing shortfall in such Zone shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the summer daily average of the megawatts of load reduction capability committed by such seller in such Zone for such product(s) tested minus (ii) the megawatts of load reduction actually provided by all such Demand Resources in such Zone during such test. The net capability testing shortfall in such Zone for such product(s) tested shall be reduced by the provider's summer daily average of the Capacity Resource deficiency shortfalls, determined pursuant to section 8 of Attachment DD of this Tariff, in such Zone for all of the provider's committed Demand Resources that are of the same product(s) tested.

d) the Demand Resources Test Failure Charge Rate shall equal such Seller's Weighted Daily Revenue Rate in such Zone for the product(s) tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day). The Daily Demand Resources Test Failure Charge in a zone for the product(s) tested shall be equal to the net capability testing shortfall in such Zone for such product(s) tested times the Demand Resources Test Failure Charge Rate. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.

e) revenues collected from assessment of Demand Resources Test Failure Charges shall be distributed to Load Serving Entities that were charged a Locational Reliability Charge for the Delivery Year for which the Demand Resources Test Failure Charge was assessed, pro-rata based on such Load Serving Entities' Daily Unforced Capacity Obligations.

## 12. QUALIFYING TRANSMISSION UPGRADE COMPLIANCE PENALTY CHARGE

If a Qualifying Transmission Upgrade forming the basis of a Sell Offer that cleared in the Base Residual Auction for a Delivery Year is not in service at the commencement of such Delivery Year, and the Capacity Market Seller does not obtain replacement Capacity Resources in the LDA for which such upgrade was to increase CETL, such seller shall pay a compliance penalty charge for each day such upgrade is delayed during such Delivery Year equal to the megawatt quantity of Import Capability cleared in the Base Residual Auction based on such upgrade, multiplied by the greater of: (i) ~~two~~<sup>1.2</sup> times the ~~Locational Price Adder~~Capacity Resource Clearing Price of the LDA into which the Qualifying Transmission Upgrade is cleared, in \$/MW-day; or (ii) the Net Cost of New Entry ~~less the clearing price in the LDA from which CETL was increased~~; provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource delay addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource delay and Performance Shortfall. The revenue collected from the assessment of Qualifying Transmission Upgrade Compliance Penalty Charges shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

## ATTACHMENT DD-1

Preface: The provisions of this Attachment incorporate into the Tariff for ease of reference the provisions of Schedule 6 of the Reliability Assurance Agreement among Load Serving Entities in the PJM Region. As a result, this Attachment will be modified, subject to FERC approval, so that the terms and conditions set forth herein remain consistent with the corresponding terms and conditions of Schedule 6 of the RAA. Capitalized terms used herein that are not otherwise defined in Attachment DD or elsewhere in this Tariff have the meaning set forth in the RAA.

### PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource, or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance

with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

- 1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;
- 2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;
- 3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,
- 4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the

Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand

Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) **Summary Information.** The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) **Existing Demand Resources.** The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) **Planned Demand Resources.** The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

(i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:

- method(s) of achieving load reduction at customer site(s);
- equipment to be controlled or installed at customer site(s), if any;
- plan and ability to acquire customers;
- types of customer targeted;
- support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
- assumptions regarding regulatory approval of program(s), if applicable; and
- if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not



identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and
- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the current Delivery Year (at the time of plan submission) and two preceding Delivery Years;
- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.

C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.

D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.

E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.

F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.

G. PJM measures Demand Resources in the following ~~four~~<sup>three</sup> ways:

Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider's market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers

may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

**Firm Service Level (FSL)** – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

**Guaranteed Load Drop (GLD)** – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

Customer Baseline Load (CBL) - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:

- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
- Supplemental status reports, detailing Demand Resources available, as requested by PJM;
- Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
- Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for Provider-initiated events, in accordance with established reporting guidelines.
- Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.

I. The Nominated Value of each Demand Resource shall be determined consistent with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other

ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer’s contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer’s Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an “unrestricted” peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider’s Demand Resources dispatched by the Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event

took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.

For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$(PLC) - (Load * LF)$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection, for at least 30 minutes of the clock hour (i.e., "partial dispatch compliance hour"). The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour and as defined in the Manuals. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering

meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer's Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer's retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or after June 1, 2012. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value,<sup>5</sup> ~~which~~

For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00



EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;

- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, t~~The~~ Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.

4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.

5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.

6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.

7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

Section(s) of the  
PJM Reliability Assurance Agreement

(Marked / Redline Format)

## ARTICLE 1 – DEFINITIONS

Unless the context otherwise specifies or requires, capitalized terms used herein shall have the respective meanings assigned herein or in the Schedules hereto for all purposes of this Agreement (such definitions to be equally applicable to both the singular and the plural forms of the terms defined). Unless otherwise specified, all references herein to Articles, Sections or Schedules, are to Articles, Sections or Schedules of this Agreement. As used in this Agreement:

### **1.1 Agreement**

Agreement shall mean this Reliability Assurance Agreement, together with all Schedules hereto, as amended from time to time.

### **1.1A Annual Demand Resource**

Annual Demand Resource shall mean a resource that is placed under the direction of the Office of the Interconnection during the Delivery Year, and will be available for an unlimited number of interruptions during such Delivery Year by the Office of the Interconnection, and will be capable of maintaining each such interruption ~~for at least a 10-hour duration~~ between the hours of 10:00AM to 10:00PM Eastern Prevailing Time for the months of June through October and the following May, and 6:00AM through 9:00PM Eastern Prevailing Time for the months of November through April unless there is an Office of the Interconnection approved maintenance outage during October through April. The Annual Demand Resource must be available in the corresponding Delivery year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Annual Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.1B Annual Energy Efficiency Resource**

Annual Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer and winter periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2 Applicable Regional Entity**

Applicable Regional Entity shall have the same meaning as in the PJM Tariff.

### **1.2A Base Capacity Demand Resource**

Base Capacity Demand Resource shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through September of a Delivery Year, and will be available to the Office of the Interconnection for an unlimited number of interruptions during such months, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Base Capacity Demand Resource must be available June through September in the corresponding Delivery Year to be offered for sale or self-supplied in an RPM Auction, or included as an Base Capacity Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.2B Base Capacity Energy Efficiency Resource**

Base Capacity Energy Efficiency Resource shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer peak periods as described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Base Capacity Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2C Base Capacity Resource**

Base Capacity Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.3 Base Residual Auction**

Base Residual Auction shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.4 Behind The Meter Generation**

Behind The Meter Generation shall mean a generating unit that delivers energy to load without using the Transmission System or any distribution facilities (unless the entity that owns or leases the distribution facilities consented to such use of the distribution facilities and such consent has been demonstrated to the satisfaction of the Office of the Interconnection; provided, however, that Behind The Meter Generation does not include (i) at any time, any portion of such generating unit's capacity that is designated as a Capacity Resource or (ii) in any hour, any portion of the output of such generating unit that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market.

### **1.5 Black Start Capability**

Black Start Capability shall mean the ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the power system.

### **1.6 Capacity Emergency Transfer Objective (“CETO”)**

Capacity Emergency Transfer Objective (“CETO”) shall mean the amount of electric energy that a given area must be able to import in order to remain within a loss of load expectation of one event in 25 years when the area is experiencing a localized capacity emergency, as determined in accordance with the PJM Manuals. Without limiting the foregoing, CETO shall be calculated based in part on EFORD determined in accordance with Paragraph C of Schedule 5.

### **1.7 Capacity Emergency Transmission Limit (“CETL”)**

Capacity Emergency Transmission Limit (“CETL”) shall mean the capability of the transmission system to support deliveries of electric energy to a given area experiencing a localized capacity emergency as determined in accordance with the PJM Manuals.

#### **1.7A Capacity Import Limit**

Capacity Import Limit shall mean, (a) for the PJM Region, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines for each Delivery Year, through appropriate modeling and the application of engineering judgment, the transmission system can receive, in aggregate at the interface of the PJM Region with all external balancing authority areas and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus (2) the then-applicable Capacity Benefit Margin; and (b) for certain source zones identified in the PJM manuals as groupings of one or more balancing authority areas, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines the transmission system can receive at the interface of the PJM Region with each such source zone and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus the then-applicable Capacity Benefit Margin times (2) the ratio of the maximum import quantity from each such source zone divided by the PJM total maximum import quantity. As more fully set forth in the PJM Manuals, PJM shall make such determination based on the latest peak load forecast for the studied period, the same computer simulation model of loads, generation and transmission topography employed in the determination of Capacity Emergency Transmission Limit for such Delivery Year, including external facilities from an industry standard model of the loads, generation, and transmission topography of the Eastern Interconnection under peak conditions. PJM shall specify in the PJM Manuals the areas and minimum distribution factors for identifying monitored bulk electric system facilities that have an electrically significant response to such transfers on the PJM interface. Employing such tools, PJM shall model increased power transfers from external areas

into PJM to determine the transfer level at which one or more reliability criteria is violated on any monitored bulk electric system facilities that have an electrically significant response to such transfers. For the PJM Region Capacity Import Limit, PJM shall optimize transfers from other source areas not experiencing any reliability criteria violations as appropriate to increase the Capacity Import Limit. The aggregate megawatt quantity of transfers into PJM at the point where any increase in transfers on the interface would violate reliability criteria will establish the Capacity Import Limit. Notwithstanding the foregoing, a Capacity Resource located outside the PJM Region shall not be subject to the Capacity Import Limit if the Capacity Market Seller seeks an exception thereto by demonstrating to PJM, by no later than five (5) business days prior to the commencement of the offer period for the relevant RPM Auction, that such resource meets all of the following requirements:

(i) it has, at the time such exception is requested, met all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction, or the Capacity Market Seller has committed in writing that it will meet such requirements, unless prevented from doing so by circumstances beyond the control of the Capacity Market Seller, prior to the relevant Delivery Year;

(ii) at the time such exception is requested, it has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and

(iii) it is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions;

provided, however, that (a) the total megawatt quantity of all exceptions granted hereunder for a Delivery Year, plus the Capacity Import Limit for the applicable interface determined for such Delivery Year, may not exceed the total megawatt quantity of Network External Designated Transmission Service on such interface that PJM has confirmed for such Delivery Year; and (b) if granting a qualified exception would result in a violation of the rule in clause (a), PJM shall grant the requested exception but reduce the Capacity Import Limit by the quantity necessary to ensure that the total quantity of Network External Designated Transmission Service is not exceeded.

### **1.7B Capacity Performance Resource**

Capacity Performance Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

## **1.8 Capacity Resources**

Capacity Resources shall mean megawatts of (i) net capacity from **eExisting Generation Capacity Resources** or Planned Generation Capacity Resources meeting the requirements of Schedules 9 and 10 that are or will be owned by or contracted to a Party and that are or will be committed to satisfy that Party's obligations under this Agreement, or to satisfy the reliability

requirements of the PJM Region, for a Delivery Year; (ii) net capacity from ~~e~~Existing Generation Capacity Resources or Planned Generation Capacity Resources ~~within the PJM Region~~ not owned or contracted for by a Party which are accredited to the PJM Region pursuant to the procedures set forth in Schedules 9 and 10; and (iii) load reduction capability provided by Demand Resources or Energy Efficiency Resources that are accredited to the PJM Region pursuant to the procedures set forth in Schedule 6.

## **1.9 Capacity Transfer Right**

Capacity Transfer Right shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.9.1 Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall have the same meaning as in the PJM Tariff.

### **1.10 Control Area**

Control Area shall mean an electric power system or combination of electric power systems bounded by interconnection metering and telemetry to which a common generation control scheme is applied in order to:

- (a) match the power output of the generators within the electric power system(s) and energy purchased from entities outside the electric power system(s), with the load within the electric power system(s);
- (b) maintain scheduled interchange with other Control Areas, within the limits of Good Utility Practice;
- (c) maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice and the criteria of NERC and each Applicable Regional Entity;
- (d) maintain power flows on transmission facilities within appropriate limits to preserve reliability; and
- (e) provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practice.

### **1.11 Daily Unforced Capacity Obligation**

Daily Unforced Capacity Obligation shall have the meaning set forth in Schedule 8 or, as to an FRR Entity, in Schedule 8.1.

### **1.12 Delivery Year**



Delivery Year shall mean a Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Attachment DD to the Tariff or pursuant to an FRR Capacity Plan.

### **1.13 Demand Resource**

Demand Resource or “DR” shall mean a Limited Demand Resource, Extended Summer Demand Resource, ~~or Annual Demand Resource, or Base Capacity Demand Resource~~ with a demonstrated capability to provide a reduction in demand or otherwise control load in accordance with the requirements of Schedule 6 that offers and that clears load reduction capability in a Base Residual Auction or Incremental Auction or that is committed through an FRR Capacity Plan. ~~As set forth in Schedule 6, a Limited Demand Resource, Extended Summer Demand Resource or Annual Demand Resource may be an existing demand response resource or a Planned Demand Resource.~~

#### **1.13A Demand Resource Officer Certification Form**

Demand Resource Officer Certification Form shall mean a certification as to an intended Demand Resource Sell Offer, in accordance with Schedules 6 and 8.1 of this Agreement and the PJM Manuals.

### **1.14 [Reserved for Future Use]**

#### **1.14A Demand Resource Sell Offer Plan**

Demand Resource Sell Offer Plan shall mean the plan required by Schedules 6 and 8.1 of this Agreement in support of an intended offer of Demand Resources in an RPM Auction, or an intended inclusion of Demand Resources in an FRR Capacity Plan.

### **1.15 DR Factor**

DR Factor shall mean, for Delivery Years through May 31, 2018, that factor approved from time to time by the PJM Board used to determine the unforced capacity value of a Demand Resource in accordance with Schedule 6.

### **1.16 [Reserved for Future Use]**

### **1.17 Electric Cooperative**

Electric Cooperative shall mean an entity owned in cooperative form by its customers that is engaged in the generation, transmission, and/or distribution of electric energy.

### **1.18 Electric Distributor**

Electric Distributor shall mean an entity that owns or leases with rights equivalent to ownership electric distribution facilities that are providing electric distribution service to electric load within the PJM Region.

### **1.19 Emergency**

Emergency shall mean (i) an abnormal system condition requiring manual or automatic action to maintain system frequency, or to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property; or (ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel; or (iii) a condition that requires implementation of emergency procedures as defined in the PJM Manuals.

### **1.20 End-Use Customer**

End-Use Customer shall mean a Member that is a retail end-user of electricity within the PJM Region.

### **1.20A Energy Efficiency Resource**

Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during ~~peak~~ the periods ~~as~~-described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention. Annual Energy Efficiency Resources and Base Capacity Energy Efficiency Resources are types of Energy Efficiency Resources.

#### **1.20A.1 Existing Demand Resource**

Existing Demand Resource shall mean a Demand Resource for which the Demand Resource Provider has identified existing end-use customer sites that are registered for the current Delivery Year with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the Delivery Year for which such resource is offered.

#### **1.20B Existing Generation Capacity Resource**

Existing Generation Capacity Resource shall mean, for purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource that, as of the date on which bidding commences for such auction: (a) is in

~~full commercial operation and for which service; or (b) is not yet in service, but has cleared any RPM Auction for any prior Delivery Year. Notwithstanding the foregoing, a Generation Capacity Resource for which construction has not commenced and which would otherwise have been treated as a Planned Generation Capacity Resource but for the fact that it was bid into RPM Auctions for at least two consecutive Delivery Years, and cleared the last such auction only because it was considered existing and its mitigated offer cap was accepted when its price offer would not have otherwise been accepted, shall be deemed to be a Planned Generation Capacity Resource. A Generation Capacity Resource shall be deemed to be in service if interconnection service has ever commenced (for resources located in the PJM Region), or if it is physically and electrically interconnected to an external Control Area and is in full commercial operation (for resources not located in the PJM Region). The additional megawatts of a Generation Capacity Resource that is being, or has been, modified to increase the number of megawatts of available installed capacity thereof shall not be deemed to be an Existing Generation Capacity Resource until such time as those megawatts are in full commercial operation and Interconnection Service has commenced(a) are in service; or (b) are not yet in service, but have cleared any RPM Auction for any prior Delivery Year.~~

### **1.20C Extended Summer Demand Resource**

Extended Summer Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through October and the following May, and will be available for an unlimited number of interruptions during such months by the Office of the Interconnection, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Extended Summer Demand Resource must be available June through October and the following May in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Extended Summer Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.21 Facilities Study Agreement**

Facilities Study Agreement shall have the same meaning as in the PJM Tariff

### **1.22 FERC**

FERC shall mean the Federal Energy Regulatory Commission or any successor federal agency, commission or department.

### **1.23 Firm Point-To-Point Transmission Service**

Firm Point-To-Point Transmission Service shall mean Firm Transmission Service provided pursuant to the rates, terms and conditions set forth in Part II of the PJM Tariff.

### **1.24 Firm Transmission Service**

Firm Transmission Service shall mean transmission service that is intended to be available at all times to the maximum extent practicable, subject to an Emergency, an unanticipated failure of a facility, or other event beyond the control of the owner or operator of the facility or the Office of the Interconnection.

### **1.25 Fixed Resource Requirement Alternative or FRR Alternative**

Fixed Resource Requirement Alternative or FRR Alternative shall mean an alternative method for a Party to satisfy its obligation to provide Unforced Capacity hereunder, as set forth in Schedule 8.1 to this Agreement.

### **1.26 Forecast Pool Requirement**

Forecast Pool Requirement or FPR shall mean the amount equal to one plus the unforced reserve margin (stated as a decimal number) for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

### **1.27 [Reserved]**

### **1.28 [Reserved]**

### **1.29 FRR Capacity Plan or FRR Plan**

FRR Capacity Plan or FRR Plan shall mean a long-term plan for the commitment of Capacity Resources to satisfy the capacity obligations of a Party that has elected the FRR Alternative, as more fully set forth in Schedule 8.1 to this Agreement.

### **1.30 FRR Entity**

FRR Entity shall mean, for the duration of such election, a Party that has elected the FRR Alternative hereunder.

### **1.31 FRR Service Area**

FRR Service Area shall mean (a) the service territory of an IOU as recognized by state law, rule or order; (b) the service area of a Public Power Entity or Electric Cooperative as recognized by franchise or other state law, rule, or order; or (c) a separately identifiable geographic area that is: (i) bounded by wholesale metering, or similar appropriate multi-site aggregate metering, that is visible to, and regularly reported to, the Office of the Interconnection, or that is visible to, and regularly reported to an Electric Distributor and such Electric Distributor agrees to aggregate the load data from such meters for such FRR Service Area and regularly report such aggregated information, by FRR Service Area, to the Office of the Interconnection; and (ii) for which the FRR Entity has or assumes the obligation to provide capacity for all load (including load growth) within such area. In the event that the service obligations of an Electric Cooperative or Public Power Entity are not defined by geographic boundaries but by physical connections to a defined set of customers, the FRR Service Area in such circumstances shall be

defined as all customers physically connected to transmission or distribution facilities of such Electric Cooperative or Public Power Entity within an area bounded by appropriate wholesale aggregate metering as described above.

### **1.32 Full Requirements Service**

Full Requirements Service shall mean wholesale service to supply all of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

### **1.33 Generation Capacity Resource**

Generation Capacity Resource shall mean a generation unit, or the contractual right to capacity from a specified generation unit, that meets the requirements of Schedules 9 and 10 of this Agreement, and, for generation units that are committed to an FRR Capacity Plan, that meets the requirements of Schedule 8.1 of this Agreement. A Generation Capacity Resource may be an Existing Generation Capacity Resource or a Planned Generation Capacity Resource.

### **1.34 Generation Owner**

Generation Owner shall mean a Member that owns or leases with rights equivalent to ownership, facilities for the generation of electric energy that are located within the PJM Region. Purchasing all or a portion of the output of a generation facility shall not be sufficient to qualify a Member as a Generation Owner.

### **1.35 Generator Forced Outage**

Generator Forced Outage shall mean an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the PJM Manuals. A reduction in output or removal from service of a generating unit in response to changes in market conditions shall not constitute a Generator Forced Outage.

### **1.36 Generator Maintenance Outage**

Generator Maintenance Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit in order to perform repairs on specific components of the facility, if removal of the facility qualifies as a maintenance outage pursuant to the PJM Manuals.

### **1.37 Generator Planned Outage**

Generator Planned Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit for inspection, maintenance or repair with the approval of the Office of the Interconnection in accordance with the PJM Manuals.

### **1.38 Good Utility Practice**

Good Utility Practice shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region.

### **1.39 [Reserved]**

### **1.40 Incremental Auction**

Incremental Auction shall mean the First Incremental Auction, the Second Incremental Auction, the Third Incremental Auction, or the Conditional Incremental Auction, each as defined in Attachment DD to the PJM Tariff.

### **1.41 Interconnection Agreement**

Interconnection Agreement shall have the same meaning as in the PJM Tariff.

### **1.42 [Reserved]**

### **1.43 IOU**

IOU shall mean an investor-owned utility with substantial business interest in owning and/or operating electric facilities in any two or more of the following three asset categories: generation, transmission, distribution.

### **1.43A Limited Demand Resource**

Limited Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will, at a minimum, be available for interruption for at least 10 Load Management Events during the summer period of June through September in the Delivery Year, and will be capable of maintaining each such interruption for at least a 6-hour duration. At a minimum, the Limited Demand Resource shall be available for such interruptions on weekdays, other than NERC holidays, from 12:00PM (noon) to 8:00PM Eastern Prevailing Time. The Limited Demand Resource must be available during the summer period of June through September in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as a Limited Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.44 Load Serving Entity or LSE**

Load Serving Entity or LSE shall mean any entity (or the duly designated agent of such an entity), including a load aggregator or power marketer, (i) serving end-users within the PJM Region, and (ii) that has been granted the authority or has an obligation pursuant to state or local law, regulation or franchise to sell electric energy to end-users located within the PJM Region. Load Serving Entity shall include any end-use customer that qualifies under state rules or a utility retail tariff to manage directly its own supply of electric power and energy and use of transmission and ancillary services.

#### **1.45 Locational Reliability Charge**

Locational Reliability Charge shall mean the charge determined pursuant to Schedule 8.

#### **1.46 Markets and Reliability Committee**

Markets and Reliability Committee shall mean the committee established pursuant to the Operating Agreement as a Standing Committee of the Members Committee.

#### **1.46A Maximum Emergency Service Level**

Maximum Emergency Service Level or MESL of Price Responsive Demand shall mean the level, determined at a PRD Substation level, to which Price Responsive Demand shall be reduced during the Delivery Year when a Maximum Generation Emergency is declared and the Locational Marginal Price exceeds the price associated with such Price Responsive Demand identified by the PRD Provider in its PRD Plan.

#### **1.47 Member**

Member shall mean an entity that satisfies the requirements of Sections 1.24 and 11.6 of the PJM Operating Agreement. In accordance with Article 4 of this Agreement, each Party to this Agreement also is a Member.

#### **1.48 Members Committee**

Members Committee shall mean the committee specified in Section 8 of the PJM Operating Agreement composed of the representatives of all the Members.

#### **1.49 NERC**

NERC shall mean the North American Electric Reliability Council or any successor thereto.

#### **1.49A Network External Designated Transmission Service**

Network External Designated Transmission Service shall mean the quantity of network transmission service confirmed by PJM for use by a market participant to import power and

energy from an identified Generation Capacity Resource located outside the PJM Region, upon demonstration by such market participant that it owns such Generation Capacity Resource, has an executed contract to purchase power and energy from such Generation Capacity Resource, or has a contract to purchase power and energy from such Generation Capacity Resource contingent upon securing firm transmission service from such resource.

### **1.50 Network Resources**

Network Resources shall have the meaning set forth in the PJM Tariff.

### **1.51 Network Transmission Service**

Network Transmission Service shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Part III of the PJM Tariff or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner (as that term is defined in the PJM Tariff).

#### **1.51A Nominal PRD Value**

Nominal PRD Value shall mean, as to any PRD Provider, an adjustment, determined in accordance with Schedule 6.1 of this Agreement, to the peak-load forecast used to determine the quantity of capacity sought through an RPM Auction, reflecting the aggregate effect of Price Responsive Demand on peak load resulting from the Price Responsive Demand to be provided by such PRD Provider.

### **1.52 Nominated Demand Resource Value**

Nominated Demand Resource Value shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.53 [Reserved]**

### **1.54 Non-Retail Behind the Meter Generation**

Non-Retail Behind the Meter Generation shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, and electric distribution companies to serve load.

### **1.55 Obligation Peak Load**

Obligation Peak Load shall have the meaning specified in Schedule 8 of this Agreement.

### **1.56 Office of the Interconnection**



Office of the Interconnection shall mean the employees and agents of PJM Interconnection, L.L.C., subject to the supervision and oversight of the PJM Board, acting pursuant to the Operating Agreement.

### **1.57 Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement**

Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement shall mean that certain agreement, dated April 1, 1997 and as amended and restated June 2, 1997 and as amended from time to time thereafter, among the members of the PJM Interconnection, L.L.C.

#### **1.57A Operating Day**

Operating Day shall have the same meaning as provided in the Operating Agreement.

### **1.58 Operating Reserve**

Operating Reserve shall mean the amount of generating capacity scheduled to be available for a specified period of an Operating Day to ensure the reliable operation of the PJM Region, as specified in the PJM Manuals.

### **1.59 Other Supplier**

Other Supplier shall mean a Member that is (i) a seller, buyer or transmitter of electric capacity or energy in, from or through the PJM Region, and (ii) is not a Generation Owner, Electric Distributor, Transmission Owner or End-Use Customer.

### **1.60 Partial Requirements Service**

Partial Requirements Service shall mean wholesale service to supply a specified portion, but not all, of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

#### **1.60A Performance Assessment Hour**

Performance Assessment Hour shall have the meaning specified in Attachment DD of the PJM Tariff.

### **1.61 Percentage Internal Resources Required**

Percentage Internal Resources Required shall mean, for purposes of an FRR Capacity Plan, the percentage of the LDA Reliability Requirement for an LDA that must be satisfied with Capacity Resources located in such LDA.

### **1.62 Party**

Party shall mean an entity bound by the terms of this Agreement.

### **1.63 PJM**

PJM shall mean the PJM Board and the Office of the Interconnection.

### **1.64 PJM Board**

PJM Board shall mean the Board of Managers of the PJM Interconnection, L.L.C., acting pursuant to the Operating Agreement.

### **1.65 PJM Manuals**

PJM Manuals shall mean the instructions, rules, procedures and guidelines established by the Office of the Interconnection for the operation, planning and accounting requirements of the PJM Region.

### **1.66 PJM Open Access Transmission Tariff or PJM Tariff**

PJM Open Access Transmission Tariff or PJM Tariff shall mean the tariff for transmission service within the PJM Region, as in effect from time to time, including any schedules, appendices, or exhibits attached thereto.

### **1.67 PJM Region**

PJM Region shall have the same meaning as provided in the Operating Agreement.

### **1.68 PJM Region Installed Reserve Margin**

PJM Region Installed Reserve Margin shall mean the percent installed reserve margin for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

### **1.69 Planned Demand Resource**

Planned Demand Resource shall mean any Demand Resource that does not currently have the capability to provide a reduction in demand or to otherwise control load, but that is scheduled to be capable of providing such reduction or control on or before the start of the Delivery Year for which such resource is to be committed, as determined in accordance with the requirements of Schedule 6. As set forth in Schedules 6 and 8.1 of this Agreement, a Demand Resource Provider submitting a DR Sell Offer Plan shall identify as Planned Demand Resources in such plan all Demand Resources in excess of those that qualify as Existing Demand Resources.

### **1.69A Planned External Generation Capacity Resource**

Planned External Generation Capacity Resource shall mean a proposed Generation Capacity Resource, or a proposed increase in the capability of a Generation Capacity Resource, that (a) is to be located outside the PJM Region, (b) participates in the generation interconnection process of a Control Area external to PJM, (c) is scheduled to be physically and electrically interconnected to the transmission facilities of such Control Area on or before the first day of the Delivery Year for which such resource is to be committed to satisfy the reliability requirements of the PJM Region, and (d) is in full commercial operation prior to the first day of such Delivery Year, such that it is sufficient to provide the Installed Capacity set forth in the Sell Offer forming the basis of such resource's commitment to the PJM Region. Prior to participation in any ~~Reliability Pricing Model~~ Base Residual Auction for such Delivery Year, the Capacity Market Seller must demonstrate that it has a fully executed ~~an~~ system impact study agreement ~~interconnection agreement or other documentation which is~~ (functionally equivalent to a System Impact Study Agreement under the PJM Tariff or, for resources which are greater than 20MWs participating in a Base Residual Auction for the 2019/2020 Delivery Year and subsequent Delivery Years, an agreement or other documentation which is functionally equivalent to a Facilities Study Agreement under the PJM Tariff), with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as applicable, the transmission provider. ~~Prior to participating in any for Base Residual Auction and an Interconnection Service Agreement under the PJM Tariff for Incremental Auction) for such Delivery Year, the Capacity Market Seller must demonstrate it has entered into an interconnection agreement, or such other documentation that is functionally equivalent to an Interconnection Service Agreement under the PJM Tariff, with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as-if applicable, the transmission provider. A Planned External Generation Capacity Resource must provide evidence to PJM that it has been studied as a Network Resource, or such other similar interconnection product in such external Control Area, must provide contractual evidence that it has applied for or purchased transmission service to be deliverable to the PJM border, and must provide contractual evidence that it has applied for transmission service to be deliverable to the bus at which energy is to be delivered, the agreements for which must have been executed prior to participation in any Reliability Pricing Model Auction for such Delivery Year. Any such External Generation Capacity Resource shall cease to be considered a Planned External Generation Capacity Resource as of ~~the earlier of (i) the date that interconnection service commences as to such resource; or (ii) the resource has cleared an RPM Auction,~~ in which case it shall become an Existing Generation Capacity Resource for purposes of the mitigation of offers for any RPM Auction for all subsequent Delivery Years.~~

### 1.70 Planned Generation Capacity Resource

Planned Generation Capacity Resource shall mean a Generation Capacity Resource, or additional megawatts to increase the size of a Generation Capacity Resource that is being or has been modified to increase the number of megawatts of available installed capacity thereof, participating in the generation interconnection process under Part IV, Subpart A of the PJM Tariff, as applicable, for which: (i) Interconnection Service is scheduled to commence on or before the first day of the Delivery Year for which such resource is to be committed to RPM or to an FRR Capacity Plan; - (ii) for any such resource seeking to offer into a Base Residual

Auction, or for any such resource of 20 MWs or less seeking to offer into a Base Residual Auction, a System Impact Study Agreement (or, for resources for which a System Impact Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a System Impact Study Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; (iii) for any such resource of more than 20 MWs seeking to offer into a Base Residual Auction for the 2019/2020 Delivery Year and subsequent Delivery Years, a Facilities Study Agreement (or, for resources for which a Facilities Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a Facility Studies Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; and (iv) an Interconnection Service Agreement has been executed prior to any Incremental Auction for such Delivery Year in which such resource plans to participate; and (iv) no megawatts of capacity have cleared an RPM Auction for any prior Delivery Year. For purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource shall cease to be considered a Planned Generation Capacity Resource as of the earlier of (i) the date that the resource is in full commercial operation and Interconnection Service commences as to such resource; ~~or (ii) the resource has cleared an RPM Auction for any Delivery Year~~, in which case it shall become an Existing Generation Capacity Resource ~~for any RPM Auction for all subsequent Delivery Years. Notwithstanding the foregoing, a Generation Capacity Resource for which construction has not commenced and which would otherwise have been treated as a Planned Generation Capacity Resource but for the fact that it was bid into RPM Auctions for at least two consecutive Delivery Years, and cleared the last such auction only because it was considered existing and its mitigated offer cap was accepted when its price offer would not have otherwise been accepted, shall be deemed to be a Planned Generation Capacity Resource.~~

### **1.71 Planning Period**

Planning Period shall mean the 12 months beginning June 1 and extending through May 31 of the following year, or such other period approved by the Members Committee.

#### **1.71A PRD Curve**

PRD Curve shall mean a price-consumption curve at a PRD Substation level, if available, and otherwise at a Zonal (or sub-Zonal LDA, if applicable) level, that details the base consumption level of Price Responsive Demand and the decreasing consumption levels at increasing prices.

#### **1.71B PRD Provider**

PRD Provider shall mean (i) a Load Serving Entity that provides PRD; or (ii) an entity without direct load serving responsibilities that has entered contractual arrangements with end-use customers served by a Load Serving Entity that satisfy the eligibility criteria for Price Responsive Demand.

#### **1.71C PRD Provider's Zonal Expected Peak Load Value of PRD**

PRD Provider's Zonal Expected Peak Load Value of PRD shall mean the expected contribution to Delivery Year peak load of a PRD Provider's Price Responsive Demand, were such demand not to be reduced in response to price, based on the contribution of the end-use customers comprising such Price Responsive Demand to the most recent prior Delivery Year's peak demand, escalated to the Delivery Year in question, as determined in a manner consistent with the Office of the Interconnection's load forecasts used for purposes of the RPM Auctions.

#### **1.71D PRD Reservation Price**

PRD Reservation Price shall mean an RPM Auction clearing price identified in a PRD Plan for Price Responsive Demand load below which the PRD Provider desires not to commit the identified load as Price Responsive Demand.

#### **1.71E PRD Substation**

PRD Substation shall mean an electrical substation that is located in the same Zone or in the same sub-Zonal LDA as the end-use customers identified in a PRD Plan or PRD registration and that, in terms of the electrical topography of the Transmission Facilities comprising the PJM Region, is as close as practicable to such loads.

#### **1.71F Price Responsive Demand**

Price Responsive Demand or PRD shall mean end-use customer load registered by a PRD Provider pursuant to Schedule 6.1 of the PJM Reliability Assurance Agreement that have, as set forth in more detail in the PJM Manuals, the metering capability to record electricity consumption at an interval of one hour or less, Supervisory Control capable of curtailing such load (consistent with applicable RERRA requirements) at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency declared by the Office of the Interconnection, and a retail rate structure, or equivalent contractual arrangement, capable of changing retail rates as frequently as an hourly basis, that is linked to or based upon changes in real-time Locational Marginal Prices at a PRD Substation level and that results in a predictable automated response to varying wholesale electricity prices.

#### **1.71G Price Responsive Demand Credit**

Price Responsive Demand Credit shall mean a credit, based on committed Price Responsive Demand, as determined under Schedule 6.1 of this Agreement.

#### **1.71H Price Responsive Demand Plan or PRD Plan**

Price Responsive Demand Plan or PRD Plan shall mean a plan, submitted by a PRD Provider and received by the Office of the Interconnection in accordance with Schedule 6.1 of this Agreement and procedures specified in the PJM Manuals, claiming a peak demand limitation due to Price Responsive Demand to support the determination of such PRD Provider's Nominal PRD Value.

### **1.72 Public Power Entity**

Public Power Entity shall mean any agency, authority, or instrumentality of a state or of a political subdivision of a state, or any corporation wholly owned by any one or more of the foregoing, that is engaged in the generation, transmission, and/or distribution of electric energy.

### **1.73 Qualifying Transmission Upgrades**

Qualifying Transmission Upgrades shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.74 [Reserved for Future Use]**

#### **1.74A Relevant Electric Retail Regulatory Authority**

Relevant Electric Retail Regulatory Authority or RERRA shall have the meaning specified in the PJM Operating Agreement.

### **1.75 Reliability Principles and Standards**

Reliability Principles and Standards shall mean the principles and standards established by NERC or an Applicable Regional Entity to define, among other things, an acceptable probability of loss of load due to inadequate generation or transmission capability, as amended from time to time.

### **1.76 Required Approvals**

Required Approvals shall mean all of the approvals required for this Agreement to be modified or to be terminated, in whole or in part, including the acceptance for filing by FERC and every other regulatory authority with jurisdiction over all or any part of this Agreement.

### **1.77 Self-Supply**

Self-Supply shall have the meaning provided in Attachment DD to the PJM Tariff.

#### **1.77A Small Commercial Customer**

“Small Commercial Customer” shall have the same meaning as in the PJM Tariff.

### **1.78 [Reserved for Future Use]**

### **1.79 [Reserved for Future Use]**

### **1.80 State Consumer Advocate**

State Consumer Advocate shall mean a legislatively created office from any State, all or any part of the territory of which is within the PJM Region, and the District of Columbia established, inter alia, for the purpose of representing the interests of energy consumers before the utility regulatory commissions of such states and the District of Columbia and the FERC.

### **1.81 State Regulatory Structural Change**

State Regulatory Structural Change shall mean as to any Party, a state law, rule, or order that, after September 30, 2006, initiates a program that allows retail electric consumers served by such Party to choose from among alternative suppliers on a competitive basis, terminates such a program, expands such a program to include classes of customers or localities served by such Party that were not previously permitted to participate in such a program, or that modifies retail electric market structure or market design rules in a manner that materially increases the likelihood that a substantial proportion of the customers of such Party that are eligible for retail choice under such a program (a) that have not exercised such choice will exercise such choice; or (b) that have exercised such choice will no longer exercise such choice, including for example, without limitation, mandating divestiture of utility-owned generation or structural changes to such Party's default service rules that materially affect whether retail choice is economically viable.

#### **1.81A Supervisory Control**

Supervisory Control shall mean the capability to curtail, in accordance with applicable RERRA requirements, load registered as Price Responsive Demand at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency declared by the Office of the Interconnection. Except to the extent automation is not required by the provisions of this Agreement, the curtailment shall be automated, meaning that load shall be reduced automatically in response to control signals sent by the PRD Provider or its designated agent directly to the control equipment where the load is located without the requirement for any action by the end-use customer.

### **1.82 Threshold Quantity**

Threshold Quantity shall mean, as to any FRR Entity for any Delivery Year, the sum of (a) the Unforced Capacity equivalent (determined using the Pool-Wide Average EFORD) of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan for such Delivery Year, plus (b) the lesser of (i) 3% of the Unforced Capacity amount determined in (a) above or (ii) 450 MW. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base FRR Scaling Factor (as determined in accordance with Schedule 8.1).

### **1.83 Transmission Facilities**

Transmission Facilities shall mean facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC's Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.

#### **1.84 Transmission Owner**

Transmission Owner shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

#### **1.85 Transmission Owners Agreement**

Transmission Owners Agreement shall mean that certain Consolidated Transmission Owners Agreement, dated as of December 15, 2005 and as amended from time to time, among transmission owners within the PJM Region.

#### **1.86 Unforced Capacity**

Unforced Capacity shall mean installed capacity rated at summer conditions that is not on average experiencing a forced outage or forced derating, calculated for each Capacity Resource on the 12-month period from October to September without regard to the ownership of or the contractual rights to the capacity of the unit.

#### **1.87 [Reserved for Future Use]**

#### **1.88 Zonal Capacity Price**

Zonal Capacity Price shall mean the price of Unforced Capacity in a Zone that an LSE that has not elected the FRR Alternative is obligated to pay for a Delivery Year as determined pursuant to Attachment DD to the PJM Tariff.

#### **1.89 Zone or Zonal**

Zone or Zonal shall refer to an area within the PJM Region, as set forth in Schedule 15, or as such areas may be (i) combined as a result of mergers or acquisitions or (ii) added as a result of the expansion of the boundaries of the PJM Region. A Zone shall include any Non-Zone Network Load (as defined in the PJM Tariff) located outside the PJM Region that is served from such Zone under Schedule H-A of the PJM Tariff.



## SCHEDULE 5

### FORCED OUTAGE RATE CALCULATION

- A. The equivalent demand forced outage rate ("EFOR<sub>D</sub>") shall be calculated as follows:

$$\text{EFOR}_D (\%) = \{(f_f * \text{FOH} + f_p * \text{EFPOH}) / (\text{SH} + f_f * \text{FOH})\} * 100$$

where

$f_f$  = full outage factor

$f_p$  = partial outage factor

FOH = full forced outage hours

EFPOH = equivalent forced partial outage hours

SH = service hours

- B. Calculation of EFOR<sub>D</sub> for individual Generation Capacity Resources.

For each Delivery Year, EFOR<sub>D</sub> shall be calculated at least one month prior to the start of the Third Incremental Auction for: (i) each Generation Capacity Resource for which a sell offer will be submitted in such Third Incremental Auction; and (ii) each Generation Capacity Resource previously committed to serve load in such Delivery Year pursuant to an FRR Capacity Plan or prior auctions for such Delivery Year. Such calculation shall be based upon such resource's service history in the twelve (12) consecutive months ending September 30 last preceding such auction. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments approved by the Members Committee to adjust the parameters of a designated unit. For purposes of the calculations under this Paragraph B, for Delivery Years through May 31, 2018, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered.

1. The EFOR<sub>D</sub> of a unit in service twelve or more full calendar months prior to the calculation month shall be the average rate experienced by such unit during the twelve-month period specified above. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals.
2. The EFOR<sub>D</sub> of a unit in service at least one full calendar month but less than the twelve-month period specified above shall be the average of the EFOR<sub>D</sub> experienced by the unit weighted by full months of service, and the class average rate for units with that capability and of that type weighted by a factor of [(twelve) minus (the number of months the unit was in service)]. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals.

### C. Calculation of average EFOR<sub>D</sub> for the PJM Region

The forecast average EFOR<sub>D</sub> for the PJM Region in a Delivery Year shall be the average of the forced outage rates, weighted for unit capability and expected time in service, attributable to all of the Generation Capacity Resources within the PJM Region, that are planned to be in service during the Delivery Year, including Generation Capacity Resources purchased from specified units and excluding Generation Capacity Resources sold outside the PJM Region from specified units. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments developed by the Office of Interconnection and maintained in the PJM Manuals to adjust the parameters of a designated unit when such parameters are or will be used to determine a future PJM Region reserve requirement and such adjustment is required to more accurately predict the future performance of such unit in light of extraordinary circumstances. For the purposes of this Schedule, the average EFOR<sub>D</sub> shall be the average of the capacity-weighted EFOR<sub>D</sub>s of all units committed to serve load in the PJM Region; and for purposes of the EFOR<sub>D</sub> calculations under this Paragraph C for any Delivery Year beginning after May 31, 2010, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered. All rates shall be in percent.

1. The EFOR<sub>D</sub> of a unit not yet in service or which has been in service less than one full calendar year at the time of forecast shall be the class average rate for units with that capability and of that type, as estimated and used in the calculation of the Forecast Pool Requirement.
2. The EFOR<sub>D</sub> of a unit in service five or more full calendar years at the time of forecast shall be the average rate experienced by such unit during the five most recent calendar years. Historical data shall be based on official reports of the Parties under rules and practices developed by the Office of Interconnection and maintained in the PJM Manuals.
3. The EFOR<sub>D</sub> of a unit in service at least one full calendar year but less than five full calendar years at the time of the forecast shall be determined as follows:

#### Full Calendar Years of Service

- |   |  |
|---|--|
| 1 | One-fifth the rate experienced during the calendar year, plus four-fifths the class average rate.                  |
| 2 | Two-fifths the average rate experienced during the two calendar years, plus three-fifths the class average rate.   |
| 3 | Three-fifths the average rate experienced during the three calendar years, plus two-fifths the class average rate. |

4

Four-fifths the average rate experienced during the four calendar years, plus one-fifth the class average rate.

## SCHEDULE 6

### **PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY**

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically

incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;

2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;

3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,

4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) Summary Information. The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total

Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) Existing Demand Resources. The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) Planned Demand Resources. The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

(i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:

- method(s) of achieving load reduction at customer site(s);
- equipment to be controlled or installed at customer site(s), if any;
- plan and ability to acquire customers;
- types of customer targeted;
- support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
- assumptions regarding regulatory approval of program(s), if applicable; and
- if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall

preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and
- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the



current Delivery Year (at the time of plan submission) and two preceding Delivery Years;

- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the

threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource, times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.

C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified

in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.

- D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.
- E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.
- F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.
- G. PJM measures Demand Resources in the following ~~three~~four ways:

Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider's market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must

periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

Firm Service Level (FSL) – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

Guaranteed Load Drop (GLD) – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

Customer Baseline Load (CBL) - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

- H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:
- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
  - Supplemental status reports, detailing Demand Resources available, as requested by PJM;
  - Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
  - Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for Provider-initiated events, in accordance with established reporting guidelines.
  - Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.
- I. The Nominated Value of each Demand Resource shall be determined consistent with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer's Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

- J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an "unrestricted" peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

- K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider's Demand Resources dispatched by the Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.

For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$$(PLC) - (Load * LF)$$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection for at least 30 minutes of the clock hour (i.e., "partial dispatch compliance hour". The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour and as defined in the Manual. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations

on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer's Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer's retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.
2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or after June 1, 2011. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value, which



- For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;
- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.
4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part



of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.

5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.
6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.
7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

## SCHEDULE 8

### DETERMINATION OF UNFORCED CAPACITY OBLIGATIONS

- A. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of a Party that has not elected the FRR Alternative for such Delivery Year shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = OPL x Final Zonal RPM Scaling Factor x FPR

Where:

OPL =Obligation Peak Load, defined as:

~~The Parties' share of the Zonal Obligation Peak Load as assigned by the EDC for the daily summation of the weather-adjusted coincident summer peak, last preceding the Delivery Year, of~~ the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal RPM Scaling Factor = the factor determined as set forth in sections B and C of this Schedule

FPR = the Forecast Pool Requirement

Netting of Behind the Meter Generation for a Party with regard to Non-Retail Behind the Meter Generation shall be subject to the following limitation:

For the 2006/2007 Planning Period, 100 percent of the operating Non-Retail Behind the Meter Generation shall be netted, provided that the total amount of Non-Retail Behind the Meter Generation in the PJM Region does not exceed 1500 megawatts ("Non-Retail Threshold"). For each Planning Period/Delivery Year thereafter, the Non-Retail threshold shall be proportionately increased based on load growth in the PJM Region but shall not be greater than 3000 megawatts. Load growth shall be determined by the Office of the Interconnection based on the most recent forecasted weather-adjusted coincident summer peak for the PJM Region divided by the weather-adjusted coincident peak for the previous summer for the same area. After the load growth factor is applied, the Non-Retail Threshold will be rounded up or down to the nearest whole megawatt and the rounded number shall be the Non-Retail Threshold for the current Planning Period and the base amount for calculating the Non-Retail Threshold for the succeeding planning period. If the Non-Retail Threshold is exceeded, the amount of operating Non-Retail Behind the Meter Generation that a Party may net shall be adjusted according to the following formula:

Party Netting Credit = (NRT/ PJM NRBTMG) \* Party Operating NRBTMG

Where: NRBTMG is Non-Retail Behind the Meter Generation

NRT is the Non-Retail Threshold

PJM NRBTMG is the total amount of Non-Retail Behind the Meter Generation in the PJM Region

The total amount of Non-Retail Behind the Meter Generation that is eligible for netting in the PJM Region is 3000 megawatts. Once this 3000 megawatt limit is reached, any additional Non-Retail Behind the Meter Generation which operates in the PJM Region will be ineligible for netting under this section.

In addition, the Party NRBTMG Netting Credit shall be adjusted pursuant to Schedule 16 of this Agreement, if applicable.

A Party shall be required to report to PJM such information as is required to facilitate the determination of its NRBTMG Netting Credit in accordance with the procedures set forth in the PJM Manuals.

B. Following the Base Residual Auction and each Incremental Auction for a Delivery Year, the Office of the Interconnection shall determine the RTO Unforced Capacity Obligation, as well as the ~~Base~~-Zonal RPM Scaling Factor and the ~~Base~~-Zonal Unforced Capacity Obligation for each Zone for such Delivery Year, as follows: The RTO Unforced Capacity Obligation for a Delivery Year shall be equal to the sum of the Unforced Capacity obligations satisfied through the Base Residual Auction and all Incremental Auctions conducted for such Delivery Year. The Unforced Capacity obligation satisfied in an Incremental Auction may be negative if capacity is decommitted in such auction.

~~Base Zonal Unforced Capacity Obligation = (ZWNSP \* Base Zonal RPM Scaling Factor \* FPR) + Zonal Short-Term Resource Procurement Target~~

~~and~~

~~Base Zonal RPM Scaling Factor = ZPLDY/ZWNSP \* [RUCO / (RPLDY \* FPR)]~~

Where:

~~ZPLDY = Preliminary Zonal Peak Load Forecast for such Delivery Year~~

~~ZWNSP = Zonal Weather-Normalized Summer Peak for the summer season concluding four years prior to the commencement of such Delivery Year~~

~~RUCO = the RTO Unforced Capacity Obligation satisfied in the Base Residual Auction for such Delivery Year.~~

~~RPLDY = RTO Preliminary Peak Load Forecast for such Delivery Year.~~

~~For purposes of such determination, PJM shall determine the Preliminary RTO Peak Load Forecast, and the Preliminary Zonal Peak Load Forecasts for each Zone, in accordance with the PJM Manuals for each Delivery Year no later than one month prior to the Base Residual Auction for such Delivery Year. PJM shall determine the Updated RTO and Zonal Peak Load Forecasts in accordance with the PJM Manuals for each Delivery Year no later than one month prior to each of the First, Second, and Third Incremental Auctions for such Delivery Year. PJM shall determine the most recent Weather Normalized Summer Peak for each Zone no later than seven months prior to the start of the Delivery Year, and shall calculate the RTO Weather Normalized Summer Peak as the sum of the Weather Normalized Summer Peaks for all Zones.~~

~~C. The Final RTO Unforced Capacity Obligation for a Delivery Year shall be equal to the sum of the unforced capacity obligations satisfied through the Base Residual Auction and the First, Second, Third, and any Conditional Incremental Auctions for such Delivery Year. The unforced capacity obligation satisfied in an Incremental Auction may be negative if capacity is decommitted in such auction.~~

~~For Delivery Years through May 31, 2018, the Zonal Obligation Peak Load for a Zone shall be equal to the weather-normalized summer peak for the Zone for the summer concluding prior to the most recent RPM Auction conducted for such Delivery Year; and, the Final Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro rata share of the Final RTO Unforced Capacity Obligation for the Delivery Year based on the Final Zonal Peak Load Forecast made one month prior to the Third Incremental most recent RPM Auction conducted for such Delivery Year. The Final Zonal RPM Scaling Factor shall be equal to the Final Zonal Unforced Capacity Obligation divided by (FPR times the Zonal Weather Normalized Summer Obligation Peak Load for the summer concluding prior to the commencement of such Delivery Year).~~

~~For the 2018/2019 Delivery Year and subsequent Delivery Years, the Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance Assessment Hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 of the calendar year prior to the most recent RPM Auction conducted for such Delivery Year; and, the Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro-rata share of the RTO Unforced Capacity Obligation for the Delivery Year based on the Zonal Obligation Peak Load. The Zonal RPM Scaling Factor shall be~~

equal to the Zonal Unforced Capacity Obligation divided by (FPR times the the Zonal Obligation Peak Load).

- ~~DC~~. 1. No later than five months prior to the start of each Delivery Year, the Electric Distributor for a Zone shall allocate the most recent ~~Weather Normalized Summer Peak Zonal Obligation Peak Load~~ for such Zone to determine the ~~Obligation Peak Load~~ peak load contribution for each end-use customer within such Zone.
2. During the Delivery Year, no later than 36 hours prior to the start of each Operating Day, the Electric Distributor shall provide to PJM for each Party to this Agreement serving load in such Electric Distributor's Zone the Obligation Peak Load ~~for all end-use customers served by such Party in such Zone~~. The Electric Distributor may submit corrections to the Obligation Peak Load data up to 12:00PM Eastern Prevailing Time of the next business day following the Operating Day.
3. For purposes of such allocations, the daily sum of the Obligation Peak Loads of all Parties serving load in a Zone must equal the Zonal Obligation Peak Load for such Zone.

### C. Election, and Termination of Election, of FRR Alternative

1. No less than two months before the conduct of the Base Residual Auction for the first Delivery Year for which such election is to be effective, any Party seeking to elect the FRR Alternative shall notify the Office of the Interconnection in writing of such election. Such election shall be for a minimum term of five consecutive Delivery Years. No later than one month before such Base Residual Auction, such Party shall submit its FRR Capacity Plan demonstrating its commitment of Capacity Resources for the term of such election sufficient to meet such Party's Daily Unforced Capacity Obligation (and all other applicable obligations under this Schedule) for the load identified in such plan. At the same time an FRR Entity submits its (i) first FRR Capacity Plan (for FRR Entities electing the FRR Alternative to be effective starting with the 2018/2019 Delivery Year) or (ii) extended or updated FRR Capacity Plan (for FRR Entities which elected the FRR Alternative to be effective starting with Delivery Years prior the 2018/2019 Delivery Year), the FRR Entity must also elect whether it seeks to be subject to the Non-Performance Charge, as provided in section 10A of Attachment DD of the PJM Tariff, and described in section G.1 of this Schedule 8.1, or to physical non-performance assessments, as described in section G.2 of this Schedule 8.1. This is a one-time election that will apply for the remainder of the FRR Alternative commitment.

2. An FRR Entity may terminate its election of the FRR Alternative effective with the commencement of any Delivery Year following the minimum five Delivery Year commitment by providing written notice of such termination to the Office of the Interconnection no later than two months prior to the Base Residual Auction for such Delivery Year. An FRR Entity that has terminated its election of the FRR Alternative shall not be eligible to re-elect the FRR Alternative for a period of five consecutive Delivery Years following the effective date of such termination.

3. Notwithstanding subsections C.1 and C.2 of this Schedule, in the event of a State Regulatory Structural Change, a Party may elect, or terminate its election of, the FRR Alternative effective as to any Delivery Year by providing written notice of such election or termination to the Office of the Interconnection in good faith as soon as the Party becomes aware of such State Regulatory Structural Change but in any event no later than two months prior to the Base Residual Auction for such Delivery Year.

4. To facilitate the elections and notices required by this Schedule, the Office of the Interconnection shall post, in addition to the information required by Section 5.11(a) of Attachment DD to the PJM Tariff, the percentage of Capacity Resources required to be located in each Locational Deliverability Area by no later than one month prior to the deadline for a Party to provide such elections and notices.

## D. FRR Capacity Plans

1. Each FRR Entity shall submit its initial FRR Capacity Plan as required by subsection C.1 of this Schedule, and shall annually extend and update such plan by no later than one month prior to the Base Residual Auction for each succeeding Delivery Year in such plan. Each FRR Capacity Plan shall indicate the nature and current status of each resource, including the status of each Planned Generation Capacity Resource or Planned Demand Resource, the planned deactivation or retirement of any Generation Capacity Resource or Demand Resource, and the status of commitments for each sale or purchase of capacity included in such plan.

1.1 Beginning with the 2020/2021 Delivery Year and for all subsequent Delivery Years, the FRR Capacity Plan shall comprise only Capacity Performance Resources as defined in section 5.5A of Attachment DD of the PJM Tariff.

2. The FRR Capacity Plan of each FRR Entity that commits that it will not sell surplus Capacity Resources as a Capacity Market Seller in any auction conducted under Attachment DD of the PJM Tariff, or to any direct or indirect purchaser that uses such resource as the basis of any Sell Offer in such auction, shall designate Capacity Resources in a megawatt quantity no less than the Forecast Pool Requirement for each applicable Delivery Year times the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast for such Delivery Year, as determined in accordance with procedures set forth in the PJM Manuals. For the 2016/2017 Delivery Year and prior Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must meet the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation. For the 2017/2018 Delivery Year ~~and subsequent Delivery Years~~, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Limited Resource Constraints and the Sub-Annual Resource Constraints applicable to the FRR Entity's capacity obligation. For the 2018/2019 and 2019/2020 Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Base Capacity Resource Constraints and Base Capacity Demand Resource Constraints applicable to the FRR Entity's capacity obligation. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base Zonal FRR Scaling Factor. The FRR Capacity Plan of each FRR Entity that does not commit that it will not sell surplus Capacity Resources as set forth above shall designate Capacity Resources at least equal to the Threshold Quantity. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast exceeds the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan shall be updated to designate additional Capacity Resources in an amount no less than the Forecast Pool Requirement times such increase; provided, however, any excess megawatts of Capacity Resources included in such FRR Entity's previously designated Threshold Quantity, if any, may be used to satisfy the capacity obligation for such increased load. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast is less than the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan may be updated to release previously designated Capacity Resources in an amount no greater than the Forecast Pool Requirement times such decrease. Peak load values referenced in this section shall be adjusted as necessary to take into account any

applicable Nominal PRD Values approved pursuant to Schedule 6.1 of this Agreement. Any FRR Entity seeking an adjustment to peak load for Price Responsive Demand must submit a separate PRD Plan in compliance with Section 6.1 (provided that the FRR Entity shall not specify any PRD Reservation Price), and shall register all PRD-eligible load needed to satisfy its PRD commitment and be subject to compliance charges as set forth in that Schedule under the circumstances specified therein; provided that for non-compliance by an FRR Entity, the compliance charge rate shall be equal to 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the FRR Entity's Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in the RPM auctions for such Delivery Year; and provided further that an alternative PRD Provider may provide PRD in an FRR Service Area by agreement with the FRR Entity responsible for the load in such FRR Service Area, subject to the same terms and conditions as if the FRR Entity had provided the PRD.

3. For the Delivery Years through May 31, 2018, Asas to any FRR Entity, the Base Zonal FRR Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZWNSP$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZWNSP$  = Zonal Weather-Normalized Summer Peak Load for such Zone for the summer concluding four years prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and all subsequent Delivery Years, as to any FRR Entity, the Base Zonal FRR Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZOPL$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZOPL$  = the Preliminary Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single performance hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 four years prior to the commencement of such Delivery Year.

4. Capacity Resources identified and committed in an FRR Capacity Plan shall meet all requirements under this Agreement, the PJM Tariff, and the PJM Operating Agreement applicable to Capacity Resources, including, as applicable, requirements and milestones for Planned Generation Capacity Resources and Planned Demand Resources. A Capacity Resource submitted in an FRR Capacity Plan must be on a unit-specific basis, and may not include "slice of system" or similar agreements that are not unit specific. An FRR Capacity Plan may include bilateral transactions that commit capacity for less than a full Delivery Year only if the resources included in such plan in the aggregate satisfy all obligations for all Delivery Years. All demand response, load management, energy efficiency, or similar programs on which such FRR Entity intends to rely for a Delivery Year must be included in the FRR Capacity Plan, subject to the



Base Capacity Demand Resource Constraint, submitted three years in advance of such Delivery Year and must satisfy all requirements applicable to Demand Resources or Energy Efficiency Resources, as applicable, including, without limitation, those set forth in Schedule 6 to this Agreement and the PJM Manuals; provided, however, that previously uncommitted Unforced Capacity from such programs may be used to satisfy any increased capacity obligation for such FRR Entity resulting from a Final Zonal Peak Load Forecast applicable to such FRR Entity. Without limiting the generality of the foregoing, the FRR Entity must submit a Demand Resource Sell Offer Plan 15 business days before the deadline for submitting an FRR Capacity Plan as to any Demand Resources it intends to include in such FRR Capacity Plan and may only include in such FRR Capacity Plan Demand Resources that are approved by PJM following review of such Demand Resource Sell Offer Plan. The requirements, standards, and procedures for a Demand Resource Sell Offer Plan shall be as set forth in Schedule 6 of this Agreement, provided that all references (including deadlines) in Schedule 6, section A-1 to submission or clearing of a Demand Resource offer in an RPM Auction shall be understood for purposes of FRR Entities as referring to inclusion of a Demand Resource in an FRR Capacity Plan, and a distinct Demand Resource Officer Certification Form shall be applicable to FRR Entities, as shown in the PJM Manuals and provided on the PJM website.

5. For each LDA for which the Office of the Interconnection has established a separate Variable Resource Requirement Curve for any Delivery Year addressed by such FRR Capacity Plan, the plan must include a ~~minimum percentage of Capacity Resources for such Delivery Year located within such LDA.~~ Percentage Internal Resources Required. For the 2018/2019 and 2019/2020 Delivery Years, the Percentage Internal Resources Required may be satisfied with one or more Capacity Performance Resources, Base Capacity Resources, Base Capacity Demand Resources, or Base Capacity Energy Efficiency Resources, subject to the Base Capacity Resource Constraint and Base Capacity Demand Response Constraint. The Such minimum percentage (“Percentage Internal Resources Required”<sup>22</sup>) will be calculated as the LDA Reliability Requirement less the CETL for the Delivery Year, as determined by the RTEP process as set forth in the PJM Manuals. Such requirement shall be expressed as a percentage of the Unforced Capacity Obligation based on the Preliminary Zonal Peak Load Forecast multiplied by the Forecast Pool Requirement.

6. An FRR Entity may reduce the Percentage Internal Resources Required such minimum percentage as to any LDA to the extent the FRR Entity commits to a transmission upgrade that increases the capacity emergency transfer limit for such LDA. Any such transmission upgrade shall adhere to all requirements for a Qualified Transmission Upgrade as set forth in Attachment DD to the PJM Tariff. The increase in CETL used in the FRR Capacity Plan shall be that approved by PJM prior to inclusion of any such upgrade in an FRR Capacity Plan. The FRR Entity shall designate specific additional Capacity Resources located in the LDA from which the CETL was increased, to the extent of such increase.

7. The Office of the Interconnection will review the adequacy of all submittals hereunder both as to timing and content. A Party that seeks to elect the FRR Alternative that submits an FRR Capacity Plan which, upon review by the Office of the Interconnection, is determined not to satisfy such Party’s capacity obligations hereunder, shall not be permitted to elect the FRR Alternative. If a previously approved FRR Entity submits an FRR Capacity Plan that, upon

review by the Office of the Interconnection, is determined not to satisfy such Party's capacity obligations hereunder, the Office of the Interconnection shall notify the FRR Entity, in writing, of the insufficiency within five (5) business days of the submittal of the FRR Capacity Plan. If the FRR Entity does not cure such insufficiency within five (5) business days after receiving such notice of insufficiency, then such FRR Entity shall be assessed an FRR Commitment Insufficiency Charge, in an amount equal to two times the Cost of New Entry for the relevant location, in \$/MW-day, times the shortfall of Capacity Resources below the FRR Entity's capacity obligation (including any Threshold Quantity requirement) in such FRR Capacity Plan, for the remaining term of such plan.

8. In a state regulatory jurisdiction that has implemented retail choice, the FRR Entity must include in its FRR Capacity Plan all load, including expected load growth, in the FRR Service Area, notwithstanding the loss of any such load to or among alternative retail LSEs. In the case of load reflected in the FRR Capacity Plan that switches to an alternative retail LSE, where the state regulatory jurisdiction requires switching customers or the LSE to compensate the FRR Entity for its FRR capacity obligations, such state compensation mechanism will prevail. In the absence of a state compensation mechanism, the applicable alternative retail LSE shall compensate the FRR Entity at the capacity price in the unconstrained portions of the PJM Region, as determined in accordance with Attachment DD to the PJM Tariff, provided that the FRR Entity may, at any time, make a filing with FERC under Sections 205 of the Federal Power Act proposing to change the basis for compensation to a method based on the FRR Entity's cost or such other basis shown to be just and reasonable, and a retail LSE may at any time exercise its rights under Section 206 of the FPA.

9. Notwithstanding the foregoing, in lieu of providing the compensation described above, such alternative retail LSE may, for any Delivery Year subsequent to those addressed in the FRR Entity's then-current FRR Capacity Plan, provide to the FRR Entity Capacity Resources sufficient to meet the capacity obligation described in paragraph D.2 for the switched load. Such Capacity Resources shall meet all requirements applicable to Capacity Resources pursuant to this Agreement, the PJM Tariff, and the PJM Operating Agreement, all requirements applicable to resources committed to an FRR Capacity Plan under this Agreement, and shall be committed to service to the switched load under the FRR Capacity Plan of such FRR Entity. The alternative retail LSE shall provide the FRR Entity all information needed to fulfill these requirements and permit the resource to be included in the FRR Capacity Plan. The alternative retail LSE, rather than the FRR Entity, shall be responsible for any performance charges or compliance penalties related to the performance of the resources committed by such LSE to the switched load. For any Delivery Year, or portion thereof, the foregoing obligations apply to the alternative retail LSE serving the load during such time period. PJM shall manage the transfer accounting associated with such compensation and shall administer the collection and payment of amounts pursuant to the compensation mechanism.

Such load shall remain under the FRR Capacity Plan until the effective date of any termination of the FRR Alternative and, for such period, shall not be subject to Locational Reliability Charges under Section 7.2 of this Agreement.

## **E. Conditions on Purchases and Sales of Capacity Resources by FRR Entities**

1. An FRR Entity may not include in its FRR Capacity Plan for any Delivery Year any Capacity Resource that has cleared in any auction under Attachment DD of the PJM Tariff for such Delivery Year. Nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan any Capacity Resource that has not cleared such an auction for such Delivery Year. Furthermore, nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan a Capacity Resource obtained from a different FRR Entity, provided, however, that each FRR Entity shall be individually responsible for meeting its capacity obligations hereunder, and provided further that the same megawatts of Unforced Capacity shall not be committed to more than one FRR Capacity Plan for any given Delivery Year.

2. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may offer to sell Capacity Resources in excess of that needed for the Threshold Quantity in any auction conducted under Attachment DD of the PJM Tariff for such Delivery Year, but may not offer to sell Capacity Resources in the auctions for any such Delivery Year in excess of an amount equal to the lesser of (a) 25% times the Unforced Capacity equivalent of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan(s) for such Delivery Year, or (b) 1300 MW.

3. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may not offer to sell such resources in any Reliability Pricing Model auction, but may use such resources to meet any increased capacity obligation resulting from unanticipated growth of the loads in its FRR Capacity Plan(s), subject to the limitations described in Subsection D.2 above, or may sell such resources to serve loads located outside the PJM Region, or to another FRR Entity, subject to subsection E.1 above.

4. A Party that has selected the FRR Alternative for only part of its load in the PJM Region pursuant to Section B.2 of this Schedule that designates Capacity Resources as Self-Supply in a Reliability Pricing Model Auction to meet such Party's expected Daily Unforced Capacity Obligation under Schedule 8 shall not be required, solely as a result of such designation, to identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity; provided, however, that such Party may not so designate Capacity Resources in an amount in excess of the lesser of (a) 25% times such Party's total expected Unforced Capacity obligation (under both Schedule 8 and Schedule 8.1), or (b) 200 MW. A Party that wishes to avoid the foregoing limitation must identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity.

## F. FRR Daily Unforced Capacity Obligations and Deficiency Charges

1. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of an FRR Entity shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = [(OPL \* Final Zonal FRR Scaling Factor) – Nominal PRD Value committed by the FRR Entity] \* FPR

where:

For for Delivery Years through May 31, 2018,

OPL =Obligation Peak Load, defined as:

the daily summation of the weather-adjusted coincident summer peak, last preceding the Delivery Year, of the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals; and

Final Zonal FRR Scaling Factor = FZPLDY/FZWNSP;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZWNSP = Zonal Weather-Normalized Peak Load for the summer concluding prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and subsequent Delivery Years,

OPL =Obligation Peak Load, defined as:

for the 2018/2019 Delivery Year and subsequent Delivery Years, the Parties' share of the Final Zonal Obligation Peak Load as assigned by the EDC for the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal FRR Scaling Factor = FZPLDY/FZOPL;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZOPL = the Final Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance Assessment Hour from each day containing

Performance Assessment Hours), occurring in the twelve month period ending October 31 prior to the commencement of such Delivery Year.

2. An FRR Entity shall be assessed an FRR Capacity Deficiency Charge in each Zone addressed in such entity's FRR Capacity Plan for each day during a Delivery Year that it fails to satisfy its Daily Unforced Capacity Obligation in each Zone. Such FRR Capacity Deficiency Charge shall be in an amount equal to the deficiency below such FRR Entity's Daily Unforced Capacity Obligation for such Zone times (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions).
3. If an FRR Entity acquires load that is not included in the Preliminary Zonal Peak Load Forecast such acquired load shall be treated in the same manner as provided in Sections H.1 and H.2 of this Schedule.
4. The shortages in meeting the minimum requirement within the constrained zones and the shortage in meeting the total obligation are first calculated. The shortage in the unconstrained area is calculated as the total shortage less shortages in constrained zones and excesses in constrained zones (the shortage is zero if this is a negative number). The Capacity Deficiency Charge is charged to the shortage in each zone and in the unconstrained area separately. This procedure is used to allow the use of capacity excesses from constrained zones to reduce shortage in the unconstrained area and to disallow the use of capacity excess from unconstrained area to reduce shortage in constrained zones.
5. For Delivery Years during the period starting June 1, 2014 and ending May 31, 2017, the shortages in meeting the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation are calculated separately. For such period, the applicable penalty rate is calculated for Annual Resources, Extended Summer Demand Resources, and Limited Resources as (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions). For Delivery Years beginning June 1, 2017, the FRR Entity shall receive no credit for Limited Demand Resources to the extent committed in excess of the applicable Limited Resource Constraint and shall receive no credit for the sum of Limited Demand Resources and Extended Summer Demand Resources to the extent the sum of the Unforced Capacity of such resources exceeds the applicable Sub-Annual Resource Constraint.

## G. Capacity Resource Performance

1. Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in sections 7, 9, 10, 10A, 11, and 13 of Attachment DD to the PJM Tariff; provided, however, (i) the Daily Deficiency Rate under sections 7, 9, and 13 thereof shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); (ii) the charges set forth in section 10A of Attachment DD to the PJM Tariff shall apply only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1 and the charge rates under section 10A thereof for Base Capacity Resources shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above; and (iii), and the charge rates under section 10 thereof, shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under ~~Sections~~ sections 7, 9, ~~and 10, and 10A~~ of Attachment DD to the PJM Tariff. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.

2. For any FRR Entity which opted to be subject to physical non-performance assessments under section C.1. of this Schedule 8.1, such FRR Entity will not be subject to charges under section 10A of Attachment DD of the PJM Tariff, but, rather, it will be required to update its FRR Capacity Plan with an additional 0.5 MW of Capacity Performance Resources for each megawatt of Performance Shortfall using the formulae contained in section 10A(c) of Attachment DD of the PJM Tariff. Such FRR Entity shall not be eligible for, or subject to, the revenue allocation described in section 10A(g) of Attachment DD of the PJM Tariff.

## **H. Annexation of service territory by Public Power Entity**

1. In the event a Public Power Entity that is an FRR Entity annexes service territory to include new customers on sites where no load had previously existed, then the incremental load on such a site shall be treated as unanticipated load growth, and such FRR Entity shall be required to commit sufficient resources to cover such obligation in the relevant Delivery Year.
2. In the event a Public Power Entity that is an FRR Entity annexes service territory to include load from a Party that has not elected the FRR Alternative, then:
  - a. For any Delivery Year for which a Base Residual Auction already has been conducted, such acquiring FRR Entity shall meet its obligations for the incremental load by paying PJM for incremental obligations (including any additional demand curve obligation) at the Capacity Resource Clearing Price for the relevant location. Any such revenues shall be used to pay Capacity Resources that cleared in the Base Residual Auction for that LDA.
  - b. For any Delivery Year for which a Base Residual Auction has not been conducted, such acquiring FRR Entity shall include such incremental load in its FRR Capacity Plan.
3. Annexation whereby a Party that has not elected the FRR Alternative acquires load from an FRR entity:
  - a. For any Delivery Year for which a Base Residual Auction already has been conducted, PJM would consider shifted load as unanticipated load growth for purposes of determining whether to hold a Second Incremental Auction. If a Second Incremental Auction is held, FRR entity would have a must offer requirement for sufficient capacity to meet the load obligation of such shifted load. If no Second Incremental Auction is conducted, the FRR Entity may sell the associated quantity of capacity into an RPM Auction or bilaterally.
  - b. For any Delivery Year for which a Base Residual Auction has not been conducted, the FRR Entity that lost such load would no longer include such load in its FRR Capacity Plan, and PJM would include such shifted load in future BRAs.



## Attachment B

PJM Open Access Transmission Tariff  
and  
PJM Reliability Assurance Agreement

(Clean Format)



Section(s) of the  
PJM Open Access Transmission Tariff  
(Clean Format)

## **ATTACHMENT Q**

### **PJM CREDIT POLICY**

#### **POLICY STATEMENT:**

It is the policy of PJM Interconnection, LLC (“PJM”) that prior to an entity participating in the PJM Markets, or in order to take Transmission Service, the entity must demonstrate its ability to meet PJMSettlement’s credit requirements.

Prior to becoming a Market Participant, Transmission Customer, and/or Member of PJM, PJMSettlement must accept and approve a Credit Application (including Credit Agreement) from such entity and establish a Working Credit Limit with PJMSettlement. PJMSettlement shall approve or deny an accepted Credit Application on the basis of a complete credit evaluation including, but not be limited to, a review of financial statements, rating agency reports, and other pertinent indicators of credit strength.

#### **POLICY INTENT:**

This credit policy describes requirements for: (1) the establishment and maintenance of credit by Market Participants, Transmission Customers, and entities seeking either such status (collectively “Participants”), pursuant to one or more of the Agreements, and (2) forms of security that will be deemed acceptable (hereinafter the “Financial Security”) in the event that the Participant does not satisfy the financial or other requirements to establish Unsecured Credit.

This policy also sets forth the credit limitations that will be imposed on Participants in order to minimize the possibility of failure of payment for services rendered pursuant to the Agreements, and conditions that will be considered an event of default pursuant to this policy and the Agreements.

These credit rules may establish certain set-asides of credit for designated purposes (such as for FTR or RPM activity). Such set-asides shall be construed to be applicable to calculation of credit requirements only, and shall not restrict PJMSettlement’s ability to apply such designated credit to any obligation(s) in case of a default.

PJMSettlement may post on PJM's web site, and may reference on OASIS, a supplementary document which contains additional business practices (such as algorithms for credit scoring) that are not included in this document. Changes to the supplementary document will be subject to stakeholder review and comment prior to implementation. PJMSettlement may specify a required compliance date, not less than 15 days from notification, by which time all Participants must comply with provisions that have been revised in the supplementary document.

#### **APPLICABILITY:**

This policy applies to all Participants.

## **IMPLEMENTATION:**

### **I. CREDIT EVALUATION**

Each Participant will be subject to a complete credit evaluation in order for PJMSettlement to determine creditworthiness and to establish an **Unsecured Credit Allowance**, if applicable; provided, however, that a Participant need not provide the information specified in section I.A or I.B if it notifies PJMSettlement in writing that it does not seek any Unsecured Credit Allowance. PJMSettlement will identify any necessary Financial Security requirements and establish a Working Credit Limit for each Participant. In addition, PJMSettlement will perform follow-up credit evaluations on at least an annual basis.

If a **Corporate Guaranty** is being utilized to establish credit for a Participant, the guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

PJMSettlement will provide a Participant, upon request, with a written explanation for any change in credit levels or collateral requirements. PJMSettlement will provide such explanation within ten Business Days.

If a Participant believes that either its level of unsecured credit or its collateral requirement has been incorrectly determined, according to this credit policy, then the Participant may send a request for reconsideration in writing to PJMSettlement. Such a request should include:

- A citation to the applicable section(s) of the PJMSettlement credit policy along with an explanation of how the respective provisions of the credit policy were not carried out in the determination as made
- A calculation of what the Participant believes should be the correct credit level or collateral requirement, according to terms of the credit policy

PJMSettlement will reconsider the determination and will provide a written response as promptly as practical, but no longer than ten Business Days of receipt of the request. If the Participant still feels that the determination is incorrect, then the Participant may contest that determination. Such contest should be in written form, addressed to PJMSettlement, and should contain:

- ◆ A complete copy of the Participant's earlier request for reconsideration, including citations and calculations
- ◆ A copy of PJMSettlement's written response to its request for reconsideration
- ◆ An explanation of why it believes that the determination still does not comply with the credit policy

PJMSettlement will investigate and will respond to the Participant with a final determination on the matter as promptly as practical, but no longer than 20 Business Days.

Neither requesting reconsideration nor contesting the determination following such request shall relieve or delay Participant's responsibility to comply with all provisions of this credit policy.

#### **A. Initial Credit Evaluation**

In completing the initial credit evaluation, PJMSettlement will consider:

##### **1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

##### **2) Financial Statements and Related Information**

Each Participant must submit with its application audited financial statements for the most recent fiscal quarter, as well as the most recent three fiscal years, or the period of existence of the Participant, if shorter. All financial and related information considered for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any.
- b. If privately held:
  - i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### **3) References**

PJMSettlement may request Participants to provide with their applications at least one (1) bank and three (3) utility credit references. In the case where a Participant does not have the required utility references, trade payable vendor references may be substituted.

### **4) Litigation, Commitments and Contingencies**

Each Participant is also required to provide with its application information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJMSettlement or are applying for membership with PJMSettlement. Each Participant is also required to disclose the existence of any ongoing investigations by the Securities and Exchange Commission ("SEC"), Federal Energy Regulatory Commission ("FERC"), Commodity Futures Trading Commission ("CFTC"), or any other governing, regulatory, or standards body. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

## **B. Ongoing Credit Evaluation**

On at least an annual basis, PJMSettlement will perform follow-up credit evaluations on all Participants. In completing the credit evaluation, PJMSettlement will consider:

### **1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

### **2) Financial Statements and Related Information**

Each Participant must submit audited annual financial statements as soon as they become available and no later than 120 days after fiscal year end. Each Participant is also required to provide PJMSettlement with quarterly financial statements promptly upon their issuance, but no later than 60 days after the end of each quarter. All financial and related information considered

for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement. If financial statements are not provided within the timeframe required, the Participant may not be granted an Unsecured Credit Allowance.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any, immediately upon issuance.
- b. If privately held:
  - i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### **3) Material Changes**

Each Participant is responsible for informing PJMSettlement immediately, in writing, of any Material change in its financial condition. However, PJMSettlement may also independently establish from available information that a Participant has experienced a Material change in its financial condition without regard to whether such Participant has informed PJMSettlement of the same.

For the purpose of this policy, a Material change in financial condition may include, but not be limited to, any of the following:

- a. a downgrade of any debt rating by any rating agency;
- b. being placed on a credit watch with negative implications by any rating agency;
- c. a bankruptcy filing;
- d. insolvency;

- e. a report of a quarterly or annual loss or a decline in earnings of ten percent or more compared to the prior period;
- f. restatement of prior financial statements;
- g. the resignation of key officer(s);
- h. the filing of a lawsuit that could adversely impact any current or future financial results by ten percent or more;
- i. financial default in another organized wholesale electric market futures exchange or clearing house;
- j. revocation of a license or other authority by any Federal or State regulatory agency; where such license or authority is necessary or important to the Participants continued business for example, FERC market-based rate authority, or State license to serve retail load; or
- k. a significant change in credit default spreads, market capitalization, or other market-based risk measurement criteria, such as a recent increase in Moody's KMV Expected Default Frequency (EDF<sup>tm</sup>) that is noticeably greater than the increase in its peers' EDF<sup>tm</sup> rates, or a collateral default swap (CDS) premium normally associated with an entity rated lower than investment grade.

If PJMSettlement determines that a Material change in the financial condition of the Participant has occurred, it may require the Participant to provide Financial Security within two Business Days, in an amount and form approved by PJMSettlement. If the Participant fails to provide the required Financial Security, the Participant shall be in default under this credit policy.

In the event that PJMSettlement determines that a Material change in the financial condition of a Participant warrants a requirement to provide Financial Security, PJMSettlement shall provide the Participant with a written explanation of why such determination was made. However, under no circumstances shall the requirement that a Participant provide the requisite Financial Security be deferred pending the issuance of such written explanation.

#### **4) Litigation, Commitments, and Contingencies**

Each Participant is also required to provide information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon initiation or change or as requested by PJMSettlement.

#### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJM or are applying for membership within PJM. Each Participant is also required to disclose the existence of any ongoing investigations by the SEC, FERC, CFTC or any other governing, regulatory, or standards body. These disclosures shall be made upon initiation or change, or as requested by PJMSettlement.

### **C. Corporate Guaranty**

If a Corporate Guaranty is being utilized to establish credit for a Participant, the Guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

An irrevocable and unconditional Corporate Guaranty may be utilized as part of the credit evaluation process, but will not be considered a form of Financial Security. The Corporate Guaranty will be considered a transfer of credit from the Guarantor to the Participant. The Corporate Guaranty must guarantee the (i) full and prompt payment of all amounts payable by the Participant under the Agreements, and (ii) performance by the Participant under this policy.

The Corporate Guaranty should clearly state the identities of the “Guarantor,” “Beneficiary” (PJMSettlement) and “Obligor” (Participant). The Corporate Guaranty must be signed by an officer of the Guarantor, and must demonstrate that it is duly authorized in a manner acceptable to PJMSettlement. Such demonstration may include either a Corporate Seal on the Guaranty itself, or an accompanying executed and sealed Secretary’s Certificate noting that the Guarantor was duly authorized to provide such Corporate Guaranty and that the person signing the Corporate Guaranty is duly authorized, or other manner acceptable to PJMSettlement.

A Participant supplying a Corporate Guaranty must provide the same information regarding the Guarantor as is required in the “Initial Credit Evaluation” §I.A. and the “Ongoing Evaluation” §I.B. of this policy, including providing the Rating Agency Reports, Financial Statements and Related Information, References, Litigation Commitments and Contingencies, and Other Disclosures. A Participant supplying a Foreign or Canadian Guaranty must also satisfy the requirements of §I.C.1 or §I.C.2, as appropriate.

If there is a Material change in the financial condition of the Guarantor or if the Corporate Guaranty comes within 30 days of expiring without renewal, the Participant will be required to provide Financial Security either in the form of a cash deposit or a letter of credit. Failure to provide the required Financial Security within two Business Days after request by PJMSettlement will constitute an event of default under this credit policy. A Participant may request PJMSettlement to perform a credit evaluation in order to determine creditworthiness and to establish an Unsecured Credit Allowance, if applicable. If PJMSettlement determines that a Participant does qualify for a sufficient Unsecured Credit Allowance, then Financial Security will not be required.

The PJMSettlement Credit Application contains an acceptable form of Corporate Guaranty that should be utilized by a Participant choosing to establish its credit with a Corporate Guaranty. If the Corporate Guaranty varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a Corporate Guaranty and meeting the policy provisions are the responsibility of the Participant.

### **1) Foreign Guaranties**

A Foreign Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in a country other than the United States or Canada. The entity providing a Foreign Guaranty on behalf of a Participant is a Foreign Guarantor. A Participant may provide a Foreign



Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met:

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Foreign Guaranty at any time, including for material adverse circumstances or occurrences.

- a. A Foreign Guaranty:
- i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  - iv. Will not be accepted towards a Participant's Unsecured Credit Allowance for more than the following limits, depending on the Foreign Guarantor's credit rating:

Rating of Foreign Guarantor	Maximum Accepted Guaranty if Country Rating is AAA	Maximum Accepted Guaranty if Country Rating is AA+
A- and above	USD50,000,000	USD30,000,000
BBB+	USD30,000,000	USD20,000,000
BBB	USD10,000,000	USD10,000,000
BBB- or below	USD 0	USD 0

- v. May not exceed 50% of the Participant's total credit, if the Foreign Grantor is rated less than BBB+.
- b. A Foreign Guarantor:
- i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.
  - ii. Must be an Affiliate of the Participant.
  - iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
  - iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Foreign Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
  - v. Must have a Senior Unsecured (or equivalent, in PJMSettlement's sole discretion) rating of BBB (one notch above BBB-) or greater by any and all agencies that provide rating coverage of the entity.
  - vi. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance

- vii. Must provide a Secretary's Certificate certifying the adoption of Corporate Resolutions:
  1. Authorizing and approving the Guaranty; and
  2. Authorizing the Officers to execute and deliver the Guaranty on behalf of the Guarantor.
- viii. Must be domiciled in a country with a minimum long-term sovereign (or equivalent) rating of AA+/Aa1, with the following conditions:
  1. Sovereign ratings must be available from at least two rating agencies acceptable to PJMSettlement (e.g. S&P, Moody's, Fitch, DBRS).
  2. Each agency's sovereign rating for the domicile will be considered to be the lowest of: country ceiling, senior unsecured government debt, long-term foreign currency sovereign rating, long-term local currency sovereign rating, or other equivalent measures, at PJMSettlement's sole discretion.
  3. Whether ratings are available from two or three agencies, the lowest of the two or three will be used.
- ix. Must be domiciled in a country that recognizes and enforces judgments of US courts.
- x. Must demonstrate financial commitment to activity in the United States as evidenced by one of the following:
  1. American Depository Receipts (ADR) are traded on the New York Stock Exchange, American Stock Exchange, or NASDAQ.
  2. Equity ownership worth over USD100,000,000 in the wholly-owned or majority owned subsidiaries in the United States.
- xi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this credit policy.
- xii. Must pay for all expenses incurred by PJMSettlement related to reviewing and accepting a foreign guaranty beyond nominal in-house credit and legal review.
- xiii. Must, at its own cost, provide PJMSettlement with independent legal opinion from an attorney/solicitor of PJMSettlement's choosing and licensed to practice law in the United States and/or Guarantor's domicile, in form and substance acceptable to PJMSettlement in its sole discretion, confirming the enforceability of the Foreign Guaranty, the Guarantor's legal authorization to grant the Guaranty, the conformance of the Guaranty, Guarantor, and Guarantor's domicile to all of these requirements, and such other matters as PJMSettlement may require in its sole discretion.

## **2) Canadian Guaranties**

A Canadian Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in Canada and satisfies all of the provisions below. The entity providing a Canadian Guaranty on behalf of a Participant is a Canadian Guarantor. A Participant may provide a Canadian Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met.

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Canadian Guaranty at any time for reasonable cause, including adverse material circumstances.

- a. A Canadian Guaranty:
  - i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  
- b. A Canadian Guarantor:
  - i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.
  - ii. Must be an Affiliate of the Participant.
  - iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
  - iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Canadian Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
  - v. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance.
  
  - vi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this Credit Policy.

## **Ia. MINIMUM PARTICIPATION REQUIREMENTS**

### **A. PJM Market Participation Eligibility Requirements**

To be eligible to transact in PJM Markets, a Market Participant must demonstrate in accordance with the Risk Management and Verification processes set forth below that it qualifies in one of the following ways:

1. an "appropriate person," as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act, or;
2. an "eligible contract participant," as that term is defined in Section 1a(18), or successor provision, of the Commodity Exchange Act, or;
3. a business entity or person who is in the business of: (1) generating, transmitting, or distributing electric energy, or (2) providing electric energy services that are necessary to support the reliable operation of the transmission system, or;

4. a Market Participant seeking eligibility as an “appropriate person” providing an unlimited Corporate Guaranty in a form acceptable to PJMSettlement as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty, or;
5. a Market Participant providing a letter of credit of at least \$5 million to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Market Participant acknowledges is separate from, and cannot be applied to meet, its credit requirements to PJMSettlement.

If, at any time, a Market Participant cannot meet the eligibility requirements set forth above, it shall immediately notify PJMSettlement and immediately cease conducting transactions in the PJM Markets. PJMSettlement shall terminate a Market Participant’s transaction rights in the PJM Markets if, at any time, it becomes aware that the Market Participant does not meet the minimum eligibility requirements set forth above.

In the event that a Market Participant is no longer able to demonstrate it meets the minimum eligibility requirements set forth above, and possesses, obtains or has rights to possess or obtain, any open or forward positions in PJM’s Markets, PJMSettlement may take any such action it deems necessary with respect to such open or forward positions, including, but not limited to, liquidation, transfer, assignment or sale; provided, however, that the Market Participant will, notwithstanding its ineligibility to participate in the PJM Markets, be entitled to any positive market value of those positions, net of any obligations due and owing to PJM and/or PJMSettlement.

## **B. Risk Management and Verification**

All Participants shall provide to PJMSettlement an executed copy of the annual certification set forth in Appendix 1 to this Attachment Q. This certification shall be provided before an entity is eligible to participate in the PJM Markets and shall be initially submitted to PJMSettlement together with the entity’s Credit Application. Thereafter, it shall be submitted each calendar year by all Participants during a period beginning on January 1 and ending April 30, except that new Participants who became eligible to participate in PJM markets during the period of January through April shall not be required to resubmit such certification until the following calendar year. Except for certain FTR Participants (discussed below) or in cases of manifest error, PJMSettlement will accept such certifications as a matter of course and Participants will not need further notice from PJMSettlement before commencing or maintaining their eligibility to participate in PJM markets. A Participant that fails to provide its annual certification by April 30 shall be ineligible to transact in the PJM markets and PJM will disable the Participant’s access to the PJM markets until such time as PJMSettlement receives the Participant’s certification.

Participants acknowledge and understand that the annual certification constitutes a representation upon which PJMSettlement will rely. Such representation is additionally made under the PJM Tariff, filed with and accepted by FERC, and any inaccurate or incomplete statement may subject the Participant to action by FERC. Failure to comply with any of the criteria or

requirements listed herein or in the certification may result in suspension of a Participant's transaction rights in the PJM markets.

Certain FTR Participants (those providing representations found in paragraph 3.b of the annual certification set forth in Appendix 1 to this Attachment Q) are additionally required to submit to PJMSettlement (at the time they make their annual certification) a copy of their current governing risk control policies, procedures and controls applicable to their FTR trading activities, except that if no substantive changes have been made to such policies, practices and/or controls applicable to their FTR trading activities, they may instead submit to PJMSettlement a certification stating that no changes have been made. PJMSettlement will review such documentation to verify that it appears generally to conform to prudent risk management practices for entities trading in FTR-type markets. If principles or best practices relating to risk management in FTR-type markets are published, as may be modified from time to time, by a third-party industry association, such as the Committee of Chief Risk Officers, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the fundamental sufficiency of the FTR Participant's risk controls. Those FTR Participants subject to this provision shall make a one-time payment of \$1,000.00 to PJMSettlement to cover costs associated with review and verification. Thereafter, if such FTR Participant's risk policies, procedures and controls applicable to its FTR trading activities change substantively, it shall submit such modified documentation, without charge, to PJMSettlement for review and verification at the time it makes its annual certification. Such FTR Participant's continued eligibility to participate in the PJM FTR markets is conditioned on PJMSettlement notifying such FTR Participant that its annual certification, including the submission of its risk policies, procedures and controls, has been accepted by PJMSettlement. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph, however, in all circumstances, PJMSettlement and any third-party it may retain will treat as confidential the documentation provided by an FTR Participant under this paragraph, consistent with the applicable provisions of PJM's Operating Agreement.

An FTR Participant that makes the representation in paragraph 3.a of the annual certification understand that PJMSettlement, given the visibility it has over a Participant's overall market activity in performing billing and settlement functions, may at any time request the FTR Participant provide additional information demonstrating that it is in fact eligible to make the representation in paragraph 3.a of the annual certification. If such additional information is not provided or does not, in PJMSettlement's judgment, demonstrate eligibility to make the representation in paragraph 3.a of the annual certification, PJMSettlement will require the FTR Participant to instead make the representations required in paragraph 3.b of the annual certification, including representing that it has submitted a copy of its current governing risk control policies, procedures and controls applicable to its FTR trading activities. If the FTR Participant cannot or does not make those representations as required in paragraph 3.b of the annual certification, then PJM will terminate the FTR Participant's rights to purchase FTRs in the FTR market and may terminate the FTR Participant's rights to sell FTRs in the PJM FTR market.

PJMSettlement shall also conduct a periodic compliance verification process to review and verify, as applicable, Participants' risk management policies, practices, and procedures pertaining to the Participants' activities in the PJM markets. Such review shall include verification that:

1. The risk management framework is documented in a risk policy addressing market, credit and liquidity risks.
2. The Participant maintains an organizational structure with clearly defined roles and responsibilities that clearly segregates trading and risk management functions.
3. There is clarity of authority specifying the types of transactions into which traders are allowed to enter.
4. The Participant has requirements that traders have adequate training relative to their authority in the systems and PJM markets in which they transact.
5. As appropriate, risk limits are in place to control risk exposures.
6. Reporting is in place to ensure that risks and exceptions are adequately communicated throughout the organization.
7. Processes are in place for qualified independent review of trading activities.
8. As appropriate, there is periodic valuation or mark-to-market of risk positions.

If principles or best practices relating to risk management in PJM-type markets are published, as may be modified from time to time, by a third-party industry association, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the sufficiency of the Participant's risk controls. PJMSettlement may select Participants for review on a random basis and/or based on identified risk factors such as, but not limited to, the PJM markets in which the Participant is transacting, the magnitude of the Participant's transactions in the PJM markets, or the volume of the Participant's open positions in the PJM markets. Those Participants notified by PJMSettlement that they have been selected for review shall, upon 14 calendar days notice, provide a copy of their current governing risk control policies, procedures and controls applicable to their PJM market activities and shall also provide such further information or documentation pertaining to the Participants' activities in the PJM markets as PJMSettlement may reasonably request. Participants selected for risk management verification through a random process and satisfactorily verified by PJMSettlement shall be excluded from such verification process based on a random selection for the subsequent two years. PJMSettlement shall annually randomly select for review no more than 20% of the Participants in each member sector.

Each selected Participant's continued eligibility to participate in the PJM markets is conditioned upon PJMSettlement notifying the Participant of successful completion of PJMSettlement's verification of the Participant's risk management policies, practices and procedures, as discussed

herein. However, if PJMSettlement notifies the Participant in writing that it could not successfully complete the verification process, PJMSettlement shall allow such Participant 14 calendar days to provide sufficient evidence for verification prior to declaring the Participant as ineligible to continue to participate in PJM's markets, which declaration shall be in writing with an explanation of why PJMSettlement could not complete the verification. If, prior to the expiration of such 14 calendar days, the Participant demonstrates to PJMSettlement that it has filed with the Federal Energy Regulatory Commission an appeal of PJMSettlement's risk management verification determination, then the Participant shall retain its transaction rights, pending the Commission's determination on the Participant's appeal. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph. PJMSettlement and any third party it may retain will treat as confidential the documentation provided by a Participant under this paragraph, consistent with the applicable provisions of the Operating Agreement. If PJMSettlement retains such outside expertise, a Participant may direct in writing that PJMSettlement perform the risk management review and verification for such Participant instead of utilizing a third party, provided however, that employees and contract employees of PJMSettlement and PJM shall not be considered to be such outside expertise or third parties.

Participants are solely responsible for the positions they take and the obligations they assume in PJM markets. PJMSettlement hereby disclaims any and all responsibility to any Participant or PJM Member associated with Participant's submitting or failure to submit its annual certification or PJMSettlement's review and verification of an FTR Participant's risk policies, procedures and controls. Such review and verification is limited to demonstrating basic compliance by an FTR Participant with the representation it makes under paragraph 3.b of its annual certification showing the existence of written policies, procedures and controls to limit its risk in PJM's FTR markets and does not constitute an endorsement of the efficacy of such policies, procedures or controls.

### **C. Capitalization**

In addition to the Annual Certification requirements in Appendix 1 to this Attachment Q, a Participant must demonstrate that it meets the minimum financial requirements appropriate for the PJM market(s) in which it transacts by satisfying either the Minimum Capitalization or the Provision of Collateral requirements listed below:

#### **1. Minimum Capitalization**

FTR Participants must demonstrate a tangible net worth in excess of \$1 million or tangible assets in excess of \$10 million. Other Participants must demonstrate a tangible net worth in excess of \$500,000 or tangible assets in excess of \$5 million.

- a. In either case, consideration of "tangible" assets and net worth shall exclude assets (net of any matching liabilities, assuming the result is a positive value) which PJMSettlement reasonably believes to be restricted, highly risky, or potentially unavailable to settle a claim in the event of default. Examples include, but are not

limited to, restricted assets and Affiliate assets, derivative assets, goodwill, and other intangible assets.

- b. Demonstration of “tangible” assets and net worth may be satisfied through presentation of an acceptable Corporate Guaranty, provided that both:
- (i) the guarantor is an affiliate company that satisfies the tangible net worth or tangible assets requirements herein, and;
  - (ii) the Corporate Guaranty is either unlimited or at least \$500,000.

If the Corporate Guaranty presented by the Participant to satisfy these Capitalization requirements is limited in value, then the Participant’s resulting Unsecured Credit Allowance shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this Credit Policy, or:
- (2) the face value of the Corporate Guaranty, reduced by \$500,000 and further reduced by 10%. (For example, a \$10.5 million Corporate Guaranty would be reduced first by \$500,000 to \$10 million and then further reduced 10% more to \$9 million. The resulting \$9 million would be the Participant’s Unsecured Credit Allowance available through the Corporate Guaranty).

In the event that a Participant provides collateral in addition to a limited Corporate Guaranty to increase its available credit, the value of such collateral shall be reduced by 10%. This reduced value shall be deemed Financial Security and available to satisfy the requirements of this Credit Policy.

Demonstrations of capitalization must be presented in the form of audited financial statements for the Participant’s most recent fiscal year.

## **2. Provision of Collateral**

If a Participant does not demonstrate compliance with its applicable Minimum Capitalization Requirements above, it may still qualify to participate in PJM’s markets by posting additional collateral, subject to the terms and conditions set forth herein.



Any collateral provided by a Participant unable to satisfy the Minimum Capitalization Requirements above will be restricted in the following manner:

- i. Collateral provided by FTR Participants shall be reduced by \$500,000 and then further reduced by 10%. This reduced amount shall be considered the Financial Security provided by the Participant and available to satisfy requirements of this Credit Policy.
- ii. Collateral provided by other Participants that engage in Virtual Transactions or Export Transactions shall be reduced by \$200,000 and then further reduced by 10%. This reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.
- iii. Collateral provided by other Participants that do not engage in Virtual Transactions or Export Transactions shall be reduced by 10%, and this reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.

In the event a Participant that satisfies the Minimum Participation Requirements through provision of collateral also provides a Corporate Guaranty to increase its available credit, then the Participant's resulting Unsecured Credit Allowance conveyed through such Guaranty shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this credit policy, or,
- (2) the face value of the Guaranty, reduced by 10%.

## **II. CREDIT ALLOWANCE AND WORKING CREDIT LIMIT**

PJMSettlement's credit evaluation process will include calculating a Credit Score for each Participant. The credit score will be utilized to determine a Participant's Unsecured Credit Allowance.

Participants who do not qualify for an Unsecured Credit Allowance will be required to provide Financial Security based on their Peak Market Activity, as provided below.

A corresponding Working Credit Limit will be established based on the Unsecured Credit Allowance and/or the Financial Security provided.

Where Participant of PJM are considered Affiliates, Unsecured Credit Allowances and Working Credit Limits will be established for each individual Participant, subject to an aggregate maximum amount for all Affiliates as provided for in §II.F of this policy.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

## A. Credit Score

For participants with credit ratings, a Credit Score will be assigned based on their senior unsecured credit rating and credit watch status as shown in the table below. If an explicit senior unsecured rating is not available, PJMSettlement may impute an equivalent rating from other ratings that are available. For Participants without a credit rating, but who wish to be considered for unsecured Credit, a Credit Score will be generated from PJMSettlement's review and analysis of various factors that are predictors of financial strength and creditworthiness. Key factors in the scoring process include, financial ratios, and years in business. PJMSettlement will consistently apply the measures it uses in determining Credit Scores. The credit scoring methodology details are included in a supplementary document available on OASIS.

### Rated Entities Credit Scores

Rating	Score	Score Modifier	
		Credit Watch Negative	Credit Watch Positive
AAA	100	-1.0	0.0
AA+	99	-1.0	0.0
AA	99	-1.0	0.0
AA-	98	-1.0	0.0
A+	97	-1.0	0.0
A	96	-2.0	0.0
A-	93	-3.0	1.0
BBB+	88	-4.0	2.0
BBB	78	-4.0	2.0
BBB-	65	-4.0	2.0
BB+ and below	0	0.0	0.0

## B. Unsecured Credit Allowance

PJMSettlement will determine a Participant's Unsecured Credit Allowance based on its Credit Score and the parameters in the table below. The maximum Unsecured Credit Allowance is the lower of:

- 1) A percentage of the Participant's Tangible Net Worth, as stated in the table below, with the percentage based on the Participant's credit score; and
- 2) A dollar cap based on the credit score, as stated in the table below:

<b>Credit Score</b>	<b>Tangible Net Worth Factor</b>	<b>Maximum Unsecured Credit Allowance</b>  <b>(\$ Million)</b>
91-100	2.125 – 2.50%	\$50
81-90	1.708 – 2.083%	\$42
71-80	1.292 – 1.667%	\$33
61-70	0.875 – 1.25%	\$7
51-60	0.458 – 0.833%	\$0-\$2
50 and Under	0%	\$0

If a Corporate Guaranty is utilized to establish an Unsecured Credit Allowance for a Participant, the value of a Corporate Guaranty will be the lesser of:

- The limit imposed in the Corporate Guaranty;
- The Unsecured Credit Allowance calculated for the Guarantor; and
- A portion of the Unsecured Credit Allowance calculated for the Guarantor in the case of Affiliated Participants.

PJMSettlement has the right at any time to modify any Unsecured Credit Allowance and/or require additional Financial Security as may be deemed reasonably necessary to support current market activity. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

PJMSettlement will maintain a posting of each Participant's unsecured Credit Allowance, along with certain other credit related parameters, on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

### **C. Seller Credit**

Participants that have maintained a Net Sell Position for each of the prior 12 months are eligible for Seller Credit, which is an additional form of Unsecured Credit. A Participant's Seller Credit will be equal to sixty percent of the Participant's thirteenth smallest weekly Net Sell Position invoiced in the past 52 weeks.

Each Participant receiving Seller Credit must maintain both its Seller Credit and its Total Net Sell Position equal to or greater than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided.

For Participants receiving Seller Credit, PJMSettlement may forecast the Participant's Total Net Sell Position considering the Participant's current Total Net Sell Position, recent trends in the Participant's Total Net Sell Position, and other information available to PJMSettlement, such as, but not limited to, known generator outages, changes in load responsibility, and bilateral

transactions impacting the Participant. If PJMSettlement's forecast ever indicates that the Participant's Total Net Sell Position may in the future be less than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided, then PJMSettlement may require Financial Security as needed to cover the difference. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

Any Financial Security required by PJMSettlement pursuant to these provisions for Seller Credit will be returned once the requirement for such Financial Security has ended. Seller Credit may not be conveyed to another entity through use of a guaranty. Seller Credit shall be subject to the cap on available Unsecured Credit set forth in Section II.F.

#### **D. Peak Market Activity and Financial Security Requirement**

A PJM Participant or Applicant that has an insufficient Unsecured Credit Allowance to satisfy its Peak Market Activity will be required to provide Financial Security such that its Unsecured Credit Allowance and Financial Security together are equal to its Peak Market Activity in order to secure its transactional activity in the PJM Market.

Peak Market Activity for Participants will be determined semi-annually beginning in the first complete billing week in the months of April and October. Peak Market Activity shall be the greater of the initial Peak Market Activity, as explained below, or the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two, or three week period, ending within a respective semi-annual period. However, Peak Market Activity shall not exceed the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two or three week period in the prior 52 weeks.

Peak Market Activity shall exclude FTR Net Activity, Virtual Transactions Net Activity, and Export Transactions Net Activity.

The initial Peak Market Activity for Applicants will be determined by PJMSettlement based on a review of an estimate of their transactional activity for all PJM markets and services over the next 52 weeks, which the Applicant shall provide to PJMSettlement.

The initial Peak Market Activity for Participants, calculated at the beginning of each respective semi-annual period, shall be the three-week average of all non-zero invoice totals over the previous 52 weeks. This calculation shall be performed and applied within three business days following the day the invoice is issued for the first full billing week in the current semi-annual period.

Prepayments shall not affect Peak Market Activity unless otherwise agreed to in writing pursuant to this Credit Policy.

All Peak Market Activity calculations shall take into account reductions of invoice values effectuated by early payments which are applied to reduce a Participant's Peak Market Activity

as contemplated by other terms of the Credit Policy; provided that the initial Peak Market Activity shall not be less than the average value calculated using the weeks for which no early payment was made.

A Participant may reduce its Financial Security Requirement by agreeing in writing (in a form acceptable to PJMSettlement) to make additional payments, including prepayments, as and when necessary to ensure that such Participant's Total Net Obligation at no time exceeds such reduced Financial Security Requirement.

PJMSettlement may, at its discretion, adjust a Participant's Financial Security Requirement if PJMSettlement determines that the Peak Market Activity is not representative of such Participant's expected activity, as a consequence of known, measurable, and sustained changes. Such changes may include the loss (without replacement) of short-term load contracts, when such contracts had terms of three months or more and were acquired through state-sponsored retail load programs, but shall not include short-term buying and selling activities.

PJMSettlement may waive the Financial Security Requirement for a Participant that agrees in writing that it shall not, after the date of such agreement, incur obligations under any of the Agreements. Such entity's access to all electronic transaction systems administered by PJM shall be terminated.

PJMSettlement will maintain a posting of each Participant's Financial Security Requirement on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

#### **E. Working Credit Limit**

PJMSettlement will establish a Working Credit Limit for each Participant against which its **Total Net Obligation** will be monitored. The Working Credit Limit is defined as 75% of the Financial Security provided to PJMSettlement and/or 75% of the Unsecured Credit Allowance determined by PJMSettlement based on a credit evaluation, as reduced by any applicable credit requirement determinants defined in this policy. A Participant's Total Net Obligation should not exceed its Working Credit Limit.

Example: After a credit evaluation by PJMSettlement, a Participant is deemed able to support an Unsecured Credit Allowance of \$10.0 million. The Participant will be assigned a Working Credit Limit of \$8.5 million. PJMSettlement will monitor the Participant's Total Net Obligations against the Working Credit Limit.

A Participant with an Unsecured Credit Allowance may choose to provide Financial Security in order to increase its Working Credit Limit. A Participant with no Unsecured Credit Allowance may also choose to increase its Working Credit Limit by providing Financial Security in an amount greater than its Peak Market Activity.

If a Participant's Total Net Obligation approaches its Working Credit Limit, PJMSettlement may require the Participant to make an advance payment or increase its Financial Security in order to maintain its Total Net Obligation below its Working Credit Limit. Except as explicitly provided

below, advance payments shall not serve to reduce the Participant's Peak Market Activity for the purpose of calculating credit requirements.

**Example:** After 10 days, and with 5 days remaining before the bill is due to be paid, a Participant approaches its \$4.0 million Working Credit Limit. PJMSettlement may require a prepayment of \$2.0 million in order that the Total Net Obligation will not exceed the Working Credit Limit.

If a Participant exceeds its Working Credit Limit or is required to make advance payments more than ten times during a 52-week period, PJMSettlement may require Financial Security in an amount as may be deemed reasonably necessary to support its Total Net Obligation.

A Participant receiving unsecured credit may make early payments up to ten times in a rolling 52-week period in order to reduce its Peak Market Activity for credit requirement purposes. Imputed Peak Market Activity reductions for credit purposes will be applied to the billing period for which the payment was received. Payments used as the basis for such reductions must be received prior to issuance or posting of the invoice for the relevant billing period. The imputed Peak Market Activity reduction attributed to any payment may not exceed the amount of Unsecured Credit for which the Participant is eligible.

#### **F. Credit Limit Setting For Affiliates**

If two or more Participants are Affiliates and each is being granted an Unsecured Credit Allowance and a corresponding Working Credit Limit, PJMSettlement will consider the overall creditworthiness of the Affiliated Participants when determining the Unsecured Credit Allowances and Working Credit Limits in order not to grant more Unsecured Credit than the overall corporation could support.

**Example:** Participants A and B each have a \$10.0 million Corporate Guaranty from their common parent, a holding company with an Unsecured Credit Allowance calculation of \$12.0 million. PJMSettlement may limit the Unsecured Credit Allowance for each Participant to \$6.0 million, so the total Unsecured Credit Allowance does not exceed the corporate total of \$12.0 million.

PJMSettlement will work with Affiliated Participants to allocate the total Unsecured Credit Allowance among the Affiliates while assuring that no individual Participant, nor common guarantor, exceeds the Unsecured Credit Allowance appropriate for its credit strength. The aggregate Unsecured Credit for a Participant, including Unsecured Credit Allowance granted based on its own creditworthiness and any Unsecured Credit Allowance conveyed through a Guaranty shall not exceed \$50 million. The aggregate Unsecured Credit for a group of Affiliates shall not exceed \$50 million. A group of Affiliates subject to this cap shall request PJMSettlement to allocate the maximum Unsecured Credit and Working Credit Limit amongst the group, assuring that no individual Participant or common guarantor, shall exceed the Unsecured Credit level appropriate for its credit strength and activity.

#### **G. Working Credit Limit Violations**

##### **1) Notification**

A Participant is subject to notification when its Total Net Obligation to PJMSettlement approaches the Participant's established Working Credit Limit.

## 2) Suspension

A Participant that exceeds its Working Credit Limit is subject to suspension from participation in the PJM markets and from scheduling any future Transmission Service unless and until Participant's credit standing is brought within acceptable limits. A Participant will have two Business Days from notification to remedy the situation in a manner deemed acceptable by PJMSettlement. Additionally, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. Failure to comply with this policy will be considered an event of default under this credit policy.

## H. PJM Administrative Charges

Financial Security held by PJMSettlement shall also secure obligations to PJM for PJM administrative charges.

## I. Pre-existing Financial Security

PJMSettlement's credit requirements are applicable as of the effective date of the filing on May 5, 2010 by PJM and PJMSettlement of amendments to Attachment Q. Financial Security held by PJM prior to the effective date of such amendments shall be held by PJM for the benefit of PJMSettlement.

## III. VIRTUAL TRANSACTION SCREENING

### A. Credit and Financial Security

PJMSettlement does not require a Market Participant to establish separate or additional credit for submitting Virtual Transactions. If a Market Participant chooses to establish additional Financial Security and/or Unsecured Credit Allowance in order to increase its Credit Available for Virtual Transactions, the Market Participant's Working Credit Limit for Virtual Transactions shall be increased in accordance with the definition thereof. The Financial Security and/or Unsecured Credit Allowance available to increase a Market Participant's Credit Available for Virtual Transactions shall be the amount of Financial Security and/or Unsecured Credit Allowance available after subtracting any credit required for Minimum Participation Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy, as applicable.

If a Market Participant chooses to provide additional Financial Security in order to increase its **Credit Available for Virtual Transactions PJMSettlement** may establish a reasonable timeframe, not to exceed three months, for which such Financial Security must be maintained. PJMSettlement will not impose such restriction on a deposit unless a Market Participant is

notified prior to making the deposit. Such restriction, if applied, shall be applied to all future deposits by all Market Participants engaging in Virtual Transactions.

A Market Participant wishing to increase its Credit Available for Virtual Transactions by providing additional Financial Security may make the appropriate arrangements with PJMSettlement. PJMSettlement will make a good faith effort to make new Financial Security available as Credit Available for Virtual Transactions as soon as practicable after confirmation of receipt. In any event, however, Financial Security received and confirmed by noon on a business day will be applied (as provided under this policy) to Credit Available for Virtual Transactions no later than 10:00 am on the following business day. Receipt and acceptance of wired funds for cash deposit shall mean actual receipt by PJMSettlement's bank, deposit into PJMSettlement's customer deposit account, and confirmation by PJMSettlement that such wire has been received and deposited. Receipt and acceptance of letters of credit shall mean receipt of the original letter of credit or amendment thereto, and confirmation from PJMSettlement's credit and legal staffs that such letter of credit or amendment thereto conforms to PJMSettlement's requirements, which confirmation shall be made in a reasonable and practicable timeframe. To facilitate this process, bidders wiring funds for the purpose of increasing their Credit Available for Virtual Transactions are advised to specifically notify PJMSettlement that a wire is being sent for such purpose.

#### **B. Virtual Transaction Screening Process**

All Virtual Transactions submitted to PJM shall be subject to a credit screen prior to acceptance in the Day-ahead Energy Market auction. The credit screen process will automatically reject Virtual Transactions submitted by the PJM market participant if the participant's Credit Available for Virtual Transactions is exceeded by the **Virtual Credit Exposure** that is calculated based on the participant's submitted Virtual Transactions as described below.

A Participant's Virtual Credit Exposure will be calculated on a daily basis for all Virtual Transactions submitted by the market participant for the next market day using the following equation:

Virtual Credit Exposure = INC and DEC Exposure + Up-to Congestion Exposure

Where:

- 1) INC and DEC Exposure is calculated as:

(a) ((the total MWh bid or offered, whichever is greater, hourly at each node) x the Nodal Reference Price x 1 day) summed over all nodes and all hours; plus (b) ((the difference between the total bid MWh cleared and total offered MWh cleared hourly at each node) x Nodal Reference Price) summed over all nodes and all hours for the previous cleared Day-ahead Energy Market.

- 2) Up-to Congestion Exposure is calculated as:



(a) Total MWh bid hourly for each Up-to Congestion Transaction  $x$  (price bid – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours; plus (b) Total MWh cleared hourly for each Up-to Congestion Transaction  $x$  (cleared price – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours for the previous cleared Day-ahead Energy Market, provided that hours for which the calculation for an Up-to Congestion Transaction is negative, it shall be deemed to have a zero contribution to the sum.

If a Market Participant's Virtual Transactions are rejected as a result of the credit screen process, the Market Participant will be notified via an eMKT error message. A Market Participant whose Virtual Transactions are rejected may alter its Virtual Transactions so that its Virtual Credit Exposure does not exceed its Credit Available for Virtual Transactions, and may resubmit them. Virtual Transactions may be submitted in one or more groups during a day. If one or more groups of Virtual Transactions is submitted and accepted, and a subsequent group of submitted Virtual Transactions causes the total submitted Virtual Transactions to exceed the Virtual Credit Exposure, then only that subsequent set of Virtual Transactions will be rejected. Previously accepted Virtual Transactions will not be affected, though the Market Participant may choose to withdraw them voluntarily.

#### **IV. RELIABILITY PRICING MODEL AUCTION AND PRICE RESPONSIVE DEMAND CREDIT REQUIREMENTS**

Settlement during any Delivery Year of cleared positions resulting or expected to result from any Reliability Pricing Model Auction shall be included as appropriate in Peak Market Activity, and the provisions of this Attachment Q shall apply to any such activity and obligations arising therefrom. In addition, the provisions of this section shall apply to any entity seeking to participate in any RPM Auction, to address credit risks unique to such auctions. The provisions of this section also shall apply under certain circumstances to PRD Providers that seek to commit Price Responsive Demand pursuant to the provisions of the Reliability Assurance Agreement.

##### **A. Applicability**

A Market Seller seeking to submit a Sell Offer in any Reliability Pricing Model Auction based on any Capacity Resource for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before submitting such Sell Offer. A PRD Provider seeking to commit Price Responsive Demand for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before it may commit the Price Responsive Demand. Credit must be maintained until such risk of non-performance is substantially eliminated, but may be reduced commensurate with the reduction in such risk, as set forth in Section IV.C.

For purposes of this provision, a resource for which there is a materially increased risk of non-performance shall mean: (i) a Planned Generation Capacity Resource; (ii) a Planned Demand Resource or an Energy Efficiency Resource; (iii) a Qualifying Transmission Upgrade; (iv) an existing or Planned Generation Capacity Resource located outside the PJM Region that at the time it is submitted in a Sell Offer has not secured firm transmission service to the border of the

PJM Region sufficient to satisfy the deliverability requirements of the Reliability Assurance Agreement; or (v) Price Responsive Demand to the extent the responsible PRD Provider has not registered PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

**B. Reliability Pricing Model Auction and Price Responsive Demand Credit Requirement**

Except as provided for Credit-Limited Offers below, for any resource specified in Section IV.A, other than Price Responsive Demand, the credit requirement shall be the RPM Auction Credit Rate, as provided in Section IV.D, times the megawatts to be offered for sale from such resource in a Reliability Pricing Model Auction. For Qualified Transmission Upgrades, the credit requirements shall be based on the Locational Deliverability Area in which such upgrade was to increase the Capacity Emergency Transfer Limit. The RPM Auction Credit Requirement for each Market Seller shall be the sum of the credit requirements for all such resources to be offered by such Market Seller in the auction or, as applicable, cleared by such Market Seller from the relevant auctions. For Price Responsive Demand specified in section IV.A, the credit requirement shall be based on the Nominal PRD Value (stated in Unforced Capacity terms) times the Price Responsive Demand Credit Rate as set forth in section IV.E.

Except for Credit-Limited Offers, the RPM Auction Credit Requirement for a Market Seller will be reduced for any Delivery Year to the extent less than all of such Market Seller's offers clear in the Base Residual Auction or any Incremental Auction for such Delivery Year. Such reduction shall be proportional to the quantity, in megawatts, that failed to clear in such Delivery Year.

A Sell Offer based on a Planned Generation Capacity Resource, Planned Demand Resource, or Energy Efficiency Resource may be submitted as a Credit-Limited Offer. A Market Seller electing this option shall specify a maximum amount of Unforced Capacity, in megawatts, and a maximum credit requirement, in dollars, applicable to the Sell Offer. A Credit-Limited Offer shall clear the RPM Auction in which it is submitted (to the extent it otherwise would clear based on the other offer parameters and the system's need for the offered capacity) only to the extent of the lesser of: (i) the quantity of Unforced Capacity that is the quotient of the division of the specified maximum credit requirement by the Auction Credit Rate resulting from section IV.D.b.; and (ii) the maximum amount of Unforced Capacity specified in the Sell Offer. For a Market Seller electing this alternative, the RPM Auction Credit Requirement applicable prior to the posting of results of the auction shall be the maximum credit requirement specified in its Credit-Limited Offer, and the RPM Auction Credit Requirement subsequent to posting of the results will be the Auction Credit Rate, as provided in Section IV.D.b, c. or d., as applicable, times the amount of Unforced Capacity from such Sell Offer that cleared in the auction. The availability and operational details of Credit-Limited Offers shall be as described in the PJM Manuals.

As set forth in Section IV.D, a Market Seller's Auction Credit Requirement shall be determined separately for each Delivery Year.

### **C. Reduction in Credit Requirement**

As specified in Section IV.D, the RPM Auction Credit Rate may be reduced under certain circumstances after the auction has closed.

The Price Responsive Demand credit requirement shall be reduced as and to the extent the PRD Provider registers PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

In addition, the RPM Auction Credit Requirement for a Participant for any given Delivery Year shall be reduced periodically, provided the Participant successfully meets progress milestones that reduce the risk of non-performance, as follows:

- a. For Planned Demand Resources and Energy Efficiency Resources, the RPM Auction Credit Requirement will be reduced in direct proportion to the megawatts of such Demand Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.
- b. For Existing Generation Capacity Resources located outside the PJM Region that have not secured sufficient firm transmission to the border of the PJM Region prior to the auction in which such resource is first offered, the RPM Credit Requirement shall be reduced in direct proportion to the megawatts of firm transmission service secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.
- c. For Planned Generation Capacity Resources, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of an Interconnection Service Agreement, and shall be reduced to zero on the date of commencement of Interconnection Service.
- d. For Planned Generation Capacity Resources located outside the PJM Region, the RPM Credit Requirement shall be reduced by 50% once the conditions in both b and c above are met, i.e., the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B when 1) the equivalent of an Interconnection Service Agreement becomes effective, and 2) 50% or more megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement. The RPM Credit Requirement for a Planned Generation Capacity Resource located outside the PJM Region shall be reduced to zero when 1) the resource commences Interconnection Service and 2) 100% of the megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.
- e. For Qualifying Transmission Upgrades, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of the latest associated Interconnection Service Agreement (or, when a project will have no such agreement, an Upgrade Construction Service Agreement), and shall be reduced to zero on the date the

Qualifying Transmission Upgrade is placed in service. In addition, a Qualifying Transmission Upgrade will be allowed a reduction in its RPM Credit Requirement equal to the amount of collateral currently posted with PJM for the facility construction when the Qualifying Transmission Upgrade meets the following requirements: the Upgrade Construction Service Agreement has been fully executed, the full estimated cost to complete as most recently determined or updated by PJM has been fully paid or collateralized, and all regulatory and other required approvals (except those that must await construction completion) have been obtained. Such reduction in RPM Credit Requirement may not be transferred across different projects.

#### **D. RPM Auction Credit Rate**

As set forth in the PJM Manuals, a separate Auction Credit Rate shall be calculated for each Delivery Year prior to each Reliability Pricing Model Auction for such Delivery Year, as follows:

- a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Auction Credit Rate shall be:
  - (i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year; and
  - (ii) For Capacity Performance Resources, the greater of ((A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year.
  
- b. Subsequent to the posting of the results from a Base Residual Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:
  - (i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year; and
  - (ii) For Capacity Performance Resources, the (greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational

Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

c. For any resource not previously committed for a Delivery Year that seeks to participate in an Incremental Auction, the Auction Credit Rate shall be:

(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) 0.24 times the Capacity Resource Clearing Price in the Base Residual Auction for such Delivery Year for the Locational Deliverability Area within which the resource is located or (C) \$20 per MW-day) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the (greater of (A) 0.5 times Net Cost of New Entry or (B) \$20/MW-day) times the number of days in such Delivery Year.

d. Subsequent to the posting of the results of an Incremental Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

(i) For Base Capacity Resources: (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year, but no greater than the Auction Credit Rate previously established for such resource's participation in such Incremental Auction pursuant to subsection (c) above) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

#### **E. Price Responsive Demand Credit Rate**

a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (i) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (ii) \$20 per MW-day) times the number of days in such Delivery Year;

b. Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand registered prior to such auction shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times

the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the PRD load is located) times the number of days in such Delivery Year times a final price uncertainty factor of 1.05;

c. For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be the same as the rate for Price Responsive Demand that had cleared in the Base Residual Auction;

d. Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand, shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Final Zonal Capacity Price for the Locational Deliverability Area within which the Price Responsive Demand is located) times the number of days in such Delivery Year, but no greater than the Price Responsive Demand Credit Rate previously established under subsections (a), (b), or (c) of this section for such Delivery Year.

#### **F. RPM Seller Credit - Additional Form of Unsecured Credit for RPM**

In addition to the forms of credit specified elsewhere in this Attachment Q, RPM Seller Credit shall be available to Market Sellers, but solely for purposes of satisfying RPM Auction Credit Requirements. If a supplier has a history of being a net seller into PJM markets, on average, over the past 12 months, then PJMSettlement will count as available Unsecured Credit twice the average of that participant's total net monthly PJMSettlement bills over the past 12 months. This RPM Seller Credit shall be subject to the cap on available Unsecured Credit as established in Section II.F.

#### **G. Credit Responsibility for Traded Planned RPM Capacity Resources**

PJMSettlement may require that credit and financial responsibility for planned RPM Capacity Resources that are traded remain with the original party (which for these purposes, means the party bearing credit responsibility for the planned RPM Capacity Resource immediately prior to trade) unless the receiving party independently establishes consistent with the PJM credit policy, that it has sufficient credit with PJMSettlement and agrees by providing written notice to PJMSettlement that it will fully assume the credit responsibility associated with the traded planned RPM Capacity Resource.

### **V. FINANCIAL TRANSMISSION RIGHT AUCTIONS**

#### **A. FTR Credit Limit.**

PJMSettlement will establish an FTR Credit Limit for each Participant. Participants must maintain their FTR Credit Limit at a level equal to or greater than their FTR Credit Requirement. FTR Credit Limits will be established only by a Participant providing Financial Security.

#### **B. FTR Credit Requirement.**

For each Participant with FTR activity, PJMSettlement shall calculate an FTR Credit Requirement based on FTR cost less a discounted historical value. FTR Credit Requirements shall be further adjusted by ARR credits available and by an amount based on portfolio diversification, if applicable. The requirement will be based on individual monthly exposures which are then used to derive a total requirement.

The FTR Credit Requirement shall be calculated by first adding for each month the FTR Monthly Credit Requirement Contribution for each submitted, accepted, and cleared FTR and then subtracting the prorated value of any ARRs held by the Participant for that month. The resulting twelve monthly subtotals represent the expected value of net payments between PJMSettlement and the Participant for FTR activity each month during the Planning Period. Subject to later adjustment by an amount based on portfolio diversification, if applicable, the FTR Credit Requirement shall be the sum of the individual positive monthly subtotals, representing months in which net payments to PJMSettlement are expected.

**C. Rejection of FTR Bids.**

Bids submitted into an auction will be rejected if the Participant's FTR Credit Requirement including such submitted bids would exceed the Participant's FTR Credit Limit, or if the Participant fails to establish additional credit as required pursuant to provisions related to portfolio diversification.

**D. FTR Credit Collateral Returns.**

A Market Participant may request from PJMSettlement the return of any collateral no longer required for the FTR auctions. PJMSettlement is permitted to limit the frequency of such requested collateral returns, provided that collateral returns shall be made by PJMSettlement at least once per calendar quarter, if requested by a Market Participant.

**E. Credit Responsibility for Traded FTRs.**

PJMSettlement may require that credit responsibility associated with an FTR traded within PJM's eFTR system remain with the original party (which for these purposes, means the party bearing credit responsibility for the FTR immediately prior to trade) unless and until the receiving party independently establishes, consistent with the PJM credit policy, sufficient credit with PJMSettlement and agrees through confirmation of the FTR trade within the eFTR system that it will meet in full the credit requirements associated with the traded FTR.

**F. Portfolio Diversification.**

Subsequent to calculating a tentative cleared solution for an FTR auction (or auction round), PJM shall both:

1. Determine the FTR Portfolio Auction Value, including the tentative cleared solution. Any Participants with such FTR Portfolio Auction Values that are negative shall be deemed FTR Flow Undiversified.
2. Measure the geographic concentration of the FTR Flow Undiversified portfolios by testing such portfolios using a simulation model including, one at a time, each planned transmission outage or other network change which would substantially affect the network for the specific auction period. A list of such planned outages or changes anticipated to be modeled shall be posted prior to commencement of the auction (or auction round). Any FTR Flow Undiversified portfolio that experiences a net reduction in calculated congestion credits as a result of any one or more of such modeled outages or changes shall be deemed FTR Geographically Undiversified.

For portfolios that are FTR Flow Undiversified but not FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to twice the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For Participants with portfolios that are both FTR Flow Undiversified and FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to three times the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For portfolios that are FTR Flow Undiversified in months subsequent to the current planning year, these incremental amounts, calculated on a monthly basis, shall be reduced (but not below zero) by an amount up to 25% of the monthly value of ARR credits that are held by a Participant. Subsequent to the ARR allocation process preceding an annual FTR auction, such ARR credits shall be reduced to zero for months associated with that ARR allocation process. PJMSettlement may recalculate such ARR credits at any time, but at a minimum shall do so subsequent to each annual FTR auction. If a reduction in such ARR credits at any time increases the amount of credit required for the Participant beyond its credit available for FTR activity, the Participant must increase its credit to eliminate the shortfall.

If the FTR Credit Requirement for any Participant exceeds its credit available for FTRs as a result of these diversification requirements for the tentatively cleared portfolio of FTRs, PJMSettlement shall immediately issue a demand for additional credit, and such demand must be fulfilled before 4:00 p.m. on the business day following the demand. If any Participant does not timely satisfy such demand, PJMSettlement, in coordination with PJM, shall cause the removal that Participant's entire set of bids for that FTR auction (or auction round) and a new cleared solution shall be calculated for the entire auction (or auction round).

If necessary, PJM shall repeat the auction clearing calculation. PJM shall repeat these portfolio diversification calculations subsequent to any such secondary clearing calculation, and PJMSettlement shall require affected Participants to establish additional credit.

#### **G. FTR Administrative Charge Credit Requirement**

In addition to any other credit requirements, PJMSettlement may apply a credit requirement to cover the maximum administrative fees that may be charged to a Participant for its bids and offers.



## **H. Long-Term FTR Credit Recalculation**

Long-term FTR Credit Requirement calculations shall be updated annually for known history, consistent with updating of historical values used for FTR Credit Requirement calculations in the annual auctions.

## **VI. EXPORT TRANSACTION SCREENING**

Export Transactions in the Real-time Energy Market shall be subject to Export Transaction Screening. Export Transaction Screening may be performed either for the duration of the entire Export Transaction, or separately for each time interval comprising an Export Transaction. PJM will deny or curtail all or a portion (based on the relevant time interval) of an Export Transaction if that Export Transaction, or portion thereof, would otherwise cause the Market Participant's Export Credit Exposure to exceed its Credit Available for Export Transactions. Export Transaction Screening shall be applied separately for each Operating Day and shall also be applied to each Export Transaction one or more times prior to the market clearing process for each relevant time interval. Export Transaction Screening shall not apply to transactions established directly by and between PJM and a neighboring Balancing Authority for the purpose of maintaining reliability.

A Market Participant's credit exposure for an individual Export Transaction shall be the MWh volume of the Export Transaction for each relevant time interval multiplied by each relevant Export Transaction Price Factor and summed over all relevant time intervals of the Export Transaction.

## **VII. FORMS OF FINANCIAL SECURITY**

Participants that provide Financial Security must provide the security in a PJMSettlement approved form and amount according to the guidelines below.

Financial Security which is no longer required to be maintained under provisions of the Agreements shall be returned at the request of a participant no later than two Business Days following determination by PJMSettlement within a commercially reasonable period of time that such collateral is not required.

Except when an event of default has occurred, a Participant may substitute an approved PJMSettlement form of Financial Security for another PJMSettlement approved form of Financial Security of equal value. The Participant must provide three (3) Business Days notice to PJMSettlement of its intent to substitute the Financial Security. PJMSettlement will release the replaced Financial Security with interest, if applicable, within (3) Business Days of receiving an approved form of substitute Financial Security.

### **A. Cash Deposit**

Cash provided by a Participant as Financial Security will be held in a depository account by PJMSettlement with interest earned at PJMSettlement's overnight bank rate, and accrued to the Participant. PJMSettlement also may establish an array of investment options among which a Participant may choose to invest its cash deposited as Financial Security. Such investment options shall be comprised of high quality debt instruments, as determined by PJMSettlement, and may include obligations issued by the federal government and/or federal government sponsored enterprises. These investment options will reside in accounts held in PJMSettlement's name in a banking or financial institution acceptable to PJMSettlement. Where practicable, PJMSettlement may establish a means for the Participant to communicate directly with the bank or financial institution to permit the Participant to direct certain activity in the PJMSettlement account in which its Financial Security is held. PJMSettlement will establish and publish procedural rules, identifying the investment options and respective discounts in collateral value that will be taken to reflect any liquidation, market and/or credit risk presented by such investments. PJMSettlement has the right to liquidate all or a portion of the account balances at its discretion to satisfy a Participant's Total Net Obligation to PJMSettlement in the event of default under this credit policy or one or more of the Agreements.

## **B. Letter Of Credit**

An unconditional, irrevocable standby letter of credit can be utilized to meet the Financial Security requirement. As stated below, the form, substance, and provider of the letter of credit must all be acceptable to PJMSettlement.

- The letter of credit will only be accepted from U.S.-based financial institutions or U.S. branches of foreign financial institutions ("financial institutions") that have a minimum corporate debt rating of "A" by Standard & Poor's or Fitch Ratings, or "A2" from Moody's Investors Service, or an equivalent short term rating from one of these agencies. PJMSettlement will consider the lowest applicable rating to be the rating of the financial institution. If the rating of a financial institution providing a letter of credit is lowered below A/A2 by any rating agency, then PJMSettlement may require the Participant to provide a letter of credit from another financial institution that is rated A/A2 or better, or to provide a cash deposit. If a letter of credit is provided from a U.S. branch of a foreign institution, the U.S. branch must itself comply with the terms of this credit policy, including having its own acceptable credit rating.
- The letter of credit shall state that it shall renew automatically for successive one-year periods, until terminated upon at least ninety (90) days prior written notice from the issuing financial institution. If PJM or PJMSettlement receives notice from the issuing financial institution that the current letter of credit is being cancelled, the Participant will be required to provide evidence, acceptable to PJMSettlement, that such letter of credit will be replaced with appropriate Financial Security, effective as of the cancellation date of the letter of credit, no later than thirty (30) days before the cancellation date of the letter of credit, and no later than ninety (90) days after the notice of cancellation. Failure to do so will constitute a default under this credit policy and one of more of the Agreements.

- The letter of credit must clearly state the full names of the "Issuer", "Account Party" and "Beneficiary" (PJMSettlement), the dollar amount available for drawings, and shall specify that funds will be disbursed upon presentation of the drawing certificate in accordance with the instructions stated in the letter of credit. The letter of credit should specify any statement that is required to be on the drawing certificate, and any other terms and conditions that apply to such drawings.
- The PJMSettlement Credit Application contains an acceptable form of a letter of credit that should be utilized by a Participant choosing to meet its Financial Security requirement with a letter of credit. If the letter of credit varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a letter of credit and meeting the policy provisions are the responsibility of the Participant
- PJMSettlement may accept a letter of credit from a Financial Institution that does not meet the credit standards of this policy provided that the letter of credit has third-party support, in a form acceptable to PJMSettlement, from a financial institution that does meet the credit standards of this policy.

### **VIII. POLICY BREACH AND EVENTS OF DEFAULT**

A Participant will have two Business Days from notification of Breach (including late payment notice) or notification of a Collateral Call to remedy the Breach or satisfy the Collateral Call in a manner deemed acceptable by PJMSettlement. Failure to remedy the Breach or satisfy such Collateral Call within such two Business Days will be considered an event of default. If a Participant fails to meet the requirements of this policy but then remedies the Breach or satisfies a Collateral Call within the two Business Day cure period, then the Participant shall be deemed to have complied with the policy. Any such two Business Day cure period will expire at 4:00 p.m. eastern prevailing time on the final day.

Only one cure period shall apply to a single event giving rise to a breach or default. Application of Financial Security towards a non-payment Breach shall not be considered a satisfactory cure of the Breach if the Participant fails to meet all requirements of this policy after such application.

Failure to comply with this policy (except for the responsibility of a Participant to notify PJMSettlement of a Material change) shall be considered an event of default. Pursuant to § 15.1.3(a) of the Operating Agreement of PJM Interconnection, L.L.C. and § I.7.3 of the PJM Open Access Transmission Tariff, non-compliance with the PJMSettlement credit policy is an event of default under those respective Agreements. In event of default under this credit policy or one or more of the Agreements, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. PJMSettlement has the right to liquidate all or a portion of a Participant's Financial Security at its discretion to satisfy Total Net Obligations to PJMSettlement in the event of default under this credit policy or one or more of the Agreements.

PJMSettlement may hold a defaulting Participant's Financial Security for as long as such party's positions exist and consistent with the PJM credit policy in this Attachment Q, in order to protect PJM's membership from default.

No payments shall be due to a Participant, nor shall any payments be made to a Participant, while the Participant is in default or has been declared in Breach of this policy or the Agreements, or while a Collateral Call is outstanding. PJMSettlement may apply towards an ongoing default any amounts that are held or later become available or due to the defaulting Participant through PJM's markets and systems.

In order to cover Obligations, PJMSettlement may hold a Participant's Financial Security through the end of the billing period which includes the 90th day following the last day a Participant had activity, open positions, or accruing obligations (other than reconciliations and true-ups), and until such Participant has satisfactorily paid any obligations invoiced through such period. Obligations incurred or accrued through such period shall survive any withdrawal from PJM. In event of non-payment, PJMSettlement may apply such Financial Security to such Participant's Obligations, even if Participant had previously announced and effected its withdrawal from PJM.

## **IX. DEFINITIONS:**

All capitalized terms in this Attachment Q that are not otherwise defined herein shall have the same meaning as they are defined in the Agreements.

### **Affiliate**

Affiliate is defined in the PJM Operating Agreement, §1.2.

### **Agreements**

Agreements are the Operating Agreement of PJM Interconnection, L.L.C., the PJM Open Access Transmission Tariff, the Reliability Assurance Agreement, the Reliability Assurance Agreement – West, and/or other agreements between PJM Interconnection, L.L.C. and its Members.

### **Applicant**

Applicant is an entity desiring to become a PJM Member, or to take Transmission Service that has submitted the PJMSettlement Credit Application, PJMSettlement Credit Agreement and other required submittals as set forth in this policy.

### **Breach**

Breach is the status of a Participant that does not currently meet the requirements of this policy or other provisions of the Agreements.

### **Business Day**

A Business Day is a day in which the Federal Reserve System is open for business and is not a scheduled PJM holiday.

### **Canadian Guaranty**

Canadian Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in Canada, and meets all of the provisions of this credit policy.

**Capacity**

Capacity is the installed capacity requirement of the Reliability Assurance Agreement or similar such requirements as may be established.

**Collateral Call**

Collateral Call is a notice to a Participant that additional Financial Security, or possibly early payment, is required in order to remain in, or to regain, compliance with this policy.

**Corporate Guaranty**

Corporate Guaranty is a legal document used by one entity to guaranty the obligations of another entity.

**Credit Available for Export Transactions**

Credit Available for Export Transactions is a set-aside of credit to be used for Export Transactions that is allocated by each Market Participant from its Credit Available for Virtual Transactions, and which reduces the Market Participant's Credit Available for Virtual Transactions accordingly.

**Credit Available for Virtual Transactions**

A Market Participant's Credit Available for Virtual Transactions is the Market Participant's Working Credit Limit for Virtual Transactions calculated on its credit provided in compliance with its Peak Market Activity requirement plus available credit submitted above that amount, less any unpaid billed and unbilled amounts owed to PJMSettlement, plus any unpaid unbilled amounts owed by PJMSettlement to the Market Participant, less any applicable credit required for Minimum Participation Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy.

**Credit-Limited Offer**

Credit-Limited Offer shall mean a Sell Offer that is submitted by a Market Seller in an RPM Auction subject to a maximum credit requirement specified by such Market Seller.

**Credit Score**

Credit Score is a composite numerical score scaled from 0-100 as calculated by PJMSettlement that incorporates various predictors of creditworthiness.

**Export Credit Exposure**

Export Credit Exposure is determined for each Market Participant for a given Operating Day, and is the sum of credit exposures for the Market Participant's Export Transactions for that Operating Day and for the preceding Operating Day.

**Export Nodal Reference Price**

The Export Nodal Reference Price at each location is the 97th percentile real-time hourly integrated price experienced over the corresponding two-month period in the preceding calendar

year, calculated separately for peak and off-peak time periods. The two-month time periods used in this calculation shall be January and February, March and April, May and June, July and August, September and October, and November and December.

### **Export Transaction**

An Export Transaction is a transaction by a Market Participant that results in the transfer of energy from within the PJM Control Area to outside the PJM Control Area. Coordinated External Transactions that result in the transfer of energy from the PJM Control Area to an adjacent Control Area are one form of Export Transaction.

### **Export Transactions Net Activity**

Export Transactions Net Activity shall mean the aggregate net total, resulting from Export Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Export Transactions Net Activity may be positive or negative.

### **Export Transaction Price Factor**

The Export Transaction Price Factor for a prospective time interval shall be the greater of (i) PJM's forecast price for the time interval, if available, or (ii) the Export Nodal Reference Price, but shall not exceed the Export Transaction's dispatch ceiling price cap, if any, for that time interval. The Export Transaction Price Factor for a past time interval shall be calculated in the same manner as for a prospective time interval, except that the Export Transaction Price Factor may use a tentative or final settlement price, as available. If an Export Nodal Reference Price is not available for a particular time interval, PJM may use an Export Transaction Price Factor for that time interval based on an appropriate alternate reference price.

### **Export Transaction Screening**

Export Transaction Screening is the process PJM uses to review the Export Credit Exposure of Export Transactions against the Credit Available for Export Transactions, and deny or curtail all or a portion of an Export Transaction, if the credit required for such transactions is greater than the credit available for the transactions.

### **Financial Security**

Financial Security is a cash deposit or letter of credit in an amount and form determined by and acceptable to PJMSettlement, provided by a Participant to PJMSettlement as security in order to participate in the PJM Markets or take Transmission Service.

### **Foreign Guaranty**

Foreign Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in a foreign country, and meets all of the provisions of this credit policy.

### **FTR Credit Limit**

FTR Credit Limit will be equal to the amount of credit established with PJMSettlement that a Participant has specifically designated to PJMSettlement to be set aside and used for FTR activity. Any such credit so set aside shall not be considered available to satisfy any other credit requirement the Participant may have with PJMSettlement.

**FTR Credit Requirement**

FTR Credit Requirement is the amount of credit that a Participant must provide in order to support the FTR positions that it holds and/or is bidding for. The FTR Credit Requirement shall not include months for which the invoicing has already been completed, provided that PJMSettlement shall have up to two Business Days following the date of the invoice completion to make such adjustments in its credit systems.

**FTR Flow Undiversified**

FTR Flow Undiversified shall have the meaning established in section V.G of this Attachment Q.

**FTR Geographically Undiversified**

FTR Geographically Undiversified shall have the meaning established in section V.G of this Attachment Q.

**FTR Historical Value**

FTR Historical Value – For each FTR for each month, this is the historical weighted average value over three years for the FTR path using the following weightings: 50% - most recent year; 30% - second year; 20% - third year. FTR Historical Values shall be calculated separately for on-peak, off-peak, and 24-hour FTRs for each month of the year. FTR Historical Values shall be adjusted by plus or minus ten percent (10%) for cleared counterflow or normal flow FTRs, respectively, in order to mitigate exposure due to uncertainty and fluctuations in actual FTR value.

**FTR Monthly Credit Requirement Contribution**

FTR Monthly Credit Requirement Contribution - For each FTR for each month, this is the total FTR cost for the month, prorated on a daily basis, less the FTR Historical Value for the month. For cleared FTRs, this contribution may be negative; prior to clearing, FTRs with negative contribution shall be deemed to have zero contribution.

**FTR Net Activity**

FTR Net Activity shall mean the aggregate net value of the billing line items for auction revenue rights credits, FTR auction charges, FTR auction credits, and FTR congestion credits, and shall also include day-ahead and balancing/real-time congestion charges up to a maximum net value of the sum of the foregoing auction revenue rights credits, FTR auction charges, FTR auction credits and FTR congestion credits.

**FTR Participant**

FTR Participant shall mean any Market Participant that is required to provide Financial Security in order to participate in PJM's FTR auctions.

**FTR Portfolio Auction Value**

FTR Portfolio Auction Value shall mean for each Participant (or Participant account), the sum, calculated on a monthly basis, across all FTRs, of the FTR price times the FTR volume in MW.

**Market Participant**

Market Participant shall have the meaning provided in the Operating Agreement.

**Material**

For these purposes, material is defined in §I.B.3, Material Changes. For the purposes herein, the use of the term "material" is not necessarily synonymous with use of the term by governmental agencies and regulatory bodies.

**Member**

Member shall have the meaning provided in the Operating Agreement.

**Minimum Participation Requirements**

A set of minimum training, risk management, communication and capital or collateral requirements required for Participants in the PJM markets, as set forth herein and in the Form of Annual Certification set forth as Appendix 1 to this Attachment Q. Participants transacting in FTRs in certain circumstances will be required to demonstrate additional risk management procedures and controls as further set forth in the Annual Certification found in Appendix 1 to this Attachment Q.

**Net Obligation**

Net Obligation is the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

**Net Sell Position**

Net Sell Position is the amount of Net Obligation when Net Obligation is negative.

**Nodal Reference Price**

The Nodal Reference Price at each location is the 97th percentile price differential between hourly day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. In order to capture seasonality effects and maintain a two-month reference period, reference months will be grouped by two, starting with January (e.g., Jan-Feb, Mar-Apr, ... , Jul-Aug, ... Nov-Dec). For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

**Obligation**

Obligation is all amounts owed to PJMSettlement for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services or obligations pursuant to the Agreements. In addition, aggregate amounts that will be owed to PJMSettlement in the future for Capacity purchases within the PJM Capacity markets will be added to this figure. Should other markets be formed such that Participants may incur future



Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

**Operating Agreement of PJM Interconnection, L.L.C., (“Operating Agreement”)**

The Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., dated as of June 2, 1997, on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Participant**

A Participant is a Market Participant and/or Transmission Customer and/or Applicant requesting to be an active Market Participant and/or Transmission Customer.

**Peak Market Activity**

Peak Market Activity is a measure of exposure for which credit is required, involving peak exposures in rolling three-week periods over a year timeframe, with two semi-annual reset points, pursuant to provisions of section II.D of this Credit Policy.

**PJM Markets**

The PJM Markets are the PJM Interchange Energy Market and the PJM Capacity markets as established by the Operating Agreement. Also any other markets that exist or may be established in the future wherein Participants may incur Obligations to PJMSettlement.

**PJM Open Access Transmission Tariff (“O.A.T.T.”)**

The Open Access Transmission Tariff of PJM Interconnection, L.L.C., on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Reliability Assurance Agreement (“R.A.A.”)**

See the definition of the Reliability Assurance Agreement (“R.A.A.”) in the Operating Agreement.

**RPM Seller Credit**

RPM Seller Credit is an additional form of Unsecured Credit defined in section IV of this document.

**Seller Credit**

A Seller Credit is a form of Unsecured Credit extended to Participants that have a consistent long-term history of selling into PJM Markets, as defined in this document.

**Tangible Net Worth**

Tangible Net Worth is all assets (not including any intangible assets such as goodwill) less all liabilities. Any such calculation may be reduced by PJMSettlement upon review of the available financial information.

**Total Net Obligation**

Total Net Obligation is all unpaid billed Net Obligations plus any unbilled Net Obligation incurred to date, as determined by PJMSettlement on a daily basis, plus any other Obligations owed to PJMSettlement at the time.

**Total Net Sell Position**

Total Net Sell Position is all unpaid billed Net Sell Positions plus any unbilled Net Sell Positions accrued to date, as determined by PJMSettlement on a daily basis.

**Transmission Customer**

Transmission Customer is a Transmission Customer is an entity taking service under Part II or Part III of the O.A.T.T.

**Transmission Service**

Transmission Service is any or all of the transmission services provided by PJM pursuant to Part II or Part III of the O.A.T.T.

**Uncleared Bid Exposure**

Uncleared Bid Exposure is a measure of exposure from Increment Offers and Decrement Bids activity relative to a Participant's established credit as defined in this policy. It is used only as a pre-screen to determine whether a Participant's Increment Offers and Decrement Bids should be subject to Increment Offer and Decrement Bid Screening.

**Unsecured Credit**

Unsecured Credit is any credit granted by PJMSettlement to a Participant that is not secured by a form of Financial Security.

**Unsecured Credit Allowance**

Unsecured Credit Allowance is Unsecured Credit extended by PJMSettlement in an amount determined by PJMSettlement's evaluation of the creditworthiness of a Participant. This is also defined as the amount of credit that a Participant qualifies for based on the strength of its own financial condition without having to provide Financial Security. See also: "Working Credit Limit."

**Up-to Congestion Counterflow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Counterflow Transaction if the following value is negative: (a) when bidding, the lower of the bid price and the prior Up-to Congestion Historical Month's average real-time value for the transaction; or (b) for cleared Virtual Transactions, the cleared day-ahead price of the Virtual Transactions.

**Up-to Congestion Historical Month**

An Up-to Congestion Historical Month is a consistently-defined historical period nominally one month long that is as close to a calendar month as PJM determines is practical.

**Up-to Congestion Prevailing Flow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Prevailing Flow Transaction if it is not an Up-to Congestion Counterflow Transaction.

**Up-to Congestion Reference Price**

The Up-to Congestion Reference Price for an Up-to Congestion Transaction is the specified percentile price differential between source and sink (defined as sink price minus source price) for hourly real-time prices experienced over the prior Up-to Congestion Historical Month, averaged with the same percentile value calculated for the second prior Up-to Congestion Historical Month. Up-to Congestion Reference Prices shall be calculated using the following historical percentiles:

- For Up-to Congestion Prevailing Flow Transactions: 30<sup>th</sup> percentile
- For Up-to Congestion Counterflow Transactions when bid: 20<sup>th</sup> percentile
- For Up-to Congestion Counterflow Transactions when cleared: 5<sup>th</sup> percentile

**Virtual Credit Exposure**

Virtual Credit Exposure is the amount of potential credit exposure created by a market participant's bid submitted into the Day-ahead market, as defined in this policy.

**Virtual Transaction Screening**

Virtual Transaction Screening is the process of reviewing the Virtual Credit Exposure of submitted Virtual Transactions against the Credit Available for Virtual Transactions. If the credit required is greater than credit available, then the Virtual Transactions will not be accepted.

**Virtual Transactions Net Activity**

Virtual Transactions Net Activity shall mean the aggregate net total, resulting from Virtual Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Virtual Transactions Net Activity may be positive or negative.

**Working Credit Limit**

Working Credit Limit amount is 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement. The Working Credit Limit establishes the maximum amount of Total Net Obligation that a Market Participant may have outstanding at any time. The calculation of Working Credit Limit shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.

**Working Credit Limit for Virtual Transactions**

The Working Credit Limit for Virtual Transactions shall be calculated as 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement when the Market Participant is at or below its Peak Market Activity credit requirements as specified in section II.D of this Credit Policy. When the Market Participant provides additional Unsecured Credit Allowance and/or Financial Security in excess of its Peak Market Activity credit requirements, such additional Unsecured Credit Allowance and/or Financial Security shall not be discounted by 25% when calculating the Working Credit Limit for Virtual Transactions. The Working Credit Limit for Virtual Transactions is a component in the calculation of Credit Available for Virtual Transactions. The calculation of Working Credit Limit for Virtual Transactions shall take into account applicable reductions for

Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.

**Appendix 1 to Attachment Q**

**PJM MINIMUM PARTICIPATION CRITERIA  
OFFICER CERTIFICATION FORM**

Participant Name: \_\_\_\_\_ ("Participant")

I, \_\_\_\_\_, a duly authorized officer of Participant, understanding that PJM Interconnection, L.L.C. and PJM Settlement, Inc. ("PJMSettlement") are relying on this certification as evidence that Participant meets the minimum requirements set forth in Attachment Q to the PJM Open Access Transmission Tariff ("PJM Tariff"), hereby certify that I have full authority to represent on behalf of Participant and further represent as follows, as evidenced by my initialing each representation in the space provided below:

1. All employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Amended and Restated Operating Agreement ("PJM Operating Agreement") on behalf of the Participant have received appropriate<sup>1</sup> training and are authorized to transact on behalf of Participant. \_\_\_\_\_
2. Participant has written risk management policies, procedures, and controls, approved by Participant's independent risk management function<sup>2</sup> and applicable to transactions in the PJM markets in which it participates and for which employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Operating Agreement have been trained, that provide an appropriate, comprehensive risk management framework that, at a minimum, clearly identifies and documents the range of risks to which Participant is exposed, including, but not limited to credit risks, liquidity risks and market risks. \_\_\_\_\_
3. An FTR Participant (as defined in Attachment Q to the PJM Tariff) must make either the following 3.a. or 3.b. additional representations, evidenced by the undersigned officer initialing either the one 3.a. representation or the six 3.b. representations in the spaces provided below:
  - 3.a. Participant transacts in PJM's FTR markets with the sole intent to hedge congestion risk in connection with either obligations Participant has to serve load or rights Participant has to generate electricity in the PJM Region ("physical

<sup>1</sup> As used in this representation, the term "appropriate" as used with respect to training means training that is (i) comparable to generally accepted practices in the energy trading industry, and (ii) commensurate and proportional in sophistication, scope and frequency to the volume of transactions and the nature and extent of the risk taken by the participant.

<sup>2</sup> As used in this representation, a Participant's "independent risk management function" can include appropriate corporate persons or bodies that are independent of the Participant's trading functions, such as a risk management committee, a risk officer, a Participant's board or board committee, or a board or committee of the Participant's parent company.

transactions”) and monitors all of the Participant’s FTR market activity to endeavor to ensure that its FTR positions, considering both the size and pathways of the positions, are either generally proportionate to or generally do not exceed the Participant’s physical transactions, and remain generally consistent with the Participant’s intention to hedge its physical transactions. \_\_\_\_\_

- 3.b. On no less than a weekly basis, Participant values its FTR positions and engages in a probabilistic assessment of the hypothetical risk of such positions using analytically based methodologies, predicated on the use of industry accepted valuation methodologies. \_\_\_\_\_

Such valuation and risk assessment functions are performed either by persons within Participant’s organization independent from those trading in PJM’s FTR markets or by an outside firm qualified and with expertise in this area of risk management. \_\_\_\_\_

Having valued its FTR positions and quantified their hypothetical risks, Participant applies its written policies, procedures and controls to limit its risks using industry recognized practices, such as value-at-risk limitations, concentration limits, or other controls designed to prevent Participant from purposefully or unintentionally taking on risk that is not commensurate or proportional to Participant’s financial capability to manage such risk. \_\_\_\_\_

Exceptions to Participant’s written risk policies, procedures and controls applicable to Participant’s FTR positions are documented and explain a reasoned basis for the granting of any exception. \_\_\_\_\_

Participant has provided to PJMSettlement, in accordance with Section I A. of Attachment Q to the PJM Tariff, a copy of its current governing risk management policies, procedures and controls applicable to its FTR trading activities. \_\_\_\_\_

If the risk management policies, procedures and controls applicable to Participant’s FTR trading activities submitted to PJMSettlement were submitted prior to the current certification, Participant certifies that no substantive changes have been made to such policies, procedures and controls applicable to its FTR trading activities since such submission. \_\_\_\_\_

4. Participant has appropriate personnel resources, operating procedures and technical abilities to promptly and effectively respond to all PJM communications and directions. \_\_\_\_\_
5. Participant has demonstrated compliance with the Minimum Capitalization criteria set forth in Attachment Q of the PJM Open Access Transmission Tariff that are applicable to the PJM market(s) in which Participant transacts, and is not aware of any change having occurred or being imminent that would invalidate such compliance. \_\_\_\_\_

6. All Participants must certify and initial in at least one of the four sections below:

- a. I certify that Participant qualifies as an “appropriate person” as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act or an “eligible contract participant” as that term is defined under Section 1a(18), or successor provision, of the Commodity Exchange Act. I certify that Participant will cease transacting in PJM’s Markets and notify PJMSettlement immediately if Participant no longer qualifies as an “appropriate person” or “eligible contract participant.” \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “appropriate person:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$5 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “eligible contract participant:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$10 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

- b. I certify that Participant has provided an unlimited Corporate Guaranty in a form acceptable to PJM as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant per Participant for which the issuer has issued an unlimited Corporate Guaranty. I certify that Participant will cease transacting PJM’s Markets and notify PJMSettlement immediately if issuer of the unlimited Corporate Guaranty for Participant no longer has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. \_\_\_\_\_



I certify that the issuer of the unlimited Corporate Guaranty to Participant continues to have at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. I acknowledge that PJM and PJMSettlement are relying upon my certifications to maintain compliance with federal regulatory requirements. \_\_\_\_\_

c. I certify that Participant fulfills the eligibility requirements of the Commodity Futures Trading Commission exemption order (78 F.R. 19880 – April 2, 2013) by being in the business of at least one of the following in the PJM Region as indicated below (initial those applicable):

1. Generating electric energy, including Participants that resell physical energy acquired from an entity generating electric energy: \_\_\_\_\_
2. Transmitting electric energy: \_\_\_\_\_
3. Distributing electric energy delivered under Point-to-Point or Network Integration Transmission Service, including scheduled import, export and wheel through transactions: \_\_\_\_\_
4. Other electric energy services that are necessary to support the reliable operation of the transmission system: \_\_\_\_\_

Description only if c(4) is initialed:

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Further, I certify that Participant will cease transacting in PJM's Markets and notify PJMSettlement immediately if Participant no longer performs at least one of the functions noted above in the PJM Region. I acknowledge that PJM and PJMSettlement are relying on my certification to maintain compliance with federal energy regulatory requirements. \_\_\_\_\_

- d. I certify that Participant has provided a letter of credit of \$5 million or more to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Participant acknowledges cannot be utilized to meet its credit requirements to PJMSettlement. I acknowledge that PJM and PJMSettlement are relying on the provision of this letter of credit and my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_
7. I acknowledge that I have read and understood the provisions of Attachment Q of the PJM Tariff applicable to Participant's business in the PJM markets, including those provisions describing PJM's minimum participation requirements and the enforcement actions available to PJMSettlement of a Participant not satisfying those requirements. I acknowledge that the information provided herein is true and accurate to the best of my belief and knowledge after due investigation. In addition, by signing this Certification, I

acknowledge the potential consequences of making incomplete or false statements in this Certification. \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

## **2. DEFINITIONS**

Definitions specific to this Attachment are set forth below. In addition, any capitalized terms used in this Attachment not defined herein shall have the meaning given to such terms elsewhere in this Tariff or in the Operating Agreement or RAA. References to section numbers in this Attachment DD refer to sections of this attachment, unless otherwise specified.

### **2.1 Annual Demand Resource**

“Annual Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.1A Annual Energy Efficiency Resource**

“Annual Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.1B Annual Resource**

“Annual Resource” shall mean a Generation Capacity Resource, an Annual Energy Efficiency Resource or an Annual Demand Resource.

#### **2.1C Annual Resource Price Adder**

“Annual Resource Price Adder” shall mean, for Delivery Years starting June 1, 2014 and ending May 31, 2017, an addition to the marginal value of Unforced Capacity and the Extended Summer Resource Price Adder as necessary to reflect the price of Annual Resources required to meet the applicable Minimum Annual Resource Requirement.

#### **2.1D Annual Revenue Rate**

“Annual Revenue Rate” shall mean the rate employed to assess a compliance penalty charge on a Curtailment Service Provider under section 11.

## **2.2 Avoidable Cost Rate**

“Avoidable Cost Rate” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.2A Base Capacity Demand Resource**

“Base Capacity Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.2B Base Capacity Demand Resource Constraint**

“Base Capacity Demand Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the Base Capacity Demand Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year in question and calculates the LOLE at each DR and EE level. The Base Capacity Demand Resource Constraint is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE, compared to the reference value. The Base Capacity Demand Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## **2.2C Base Capacity Demand Resource Price Decrement**

“Base Capacity Demand Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for Base Capacity Resources and Capacity Performance Resources, representing the cost to procure additional Base Capacity Resources or Capacity Performance Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.

## **2.2D Base Capacity Energy Efficiency Resource**

“Base Capacity Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.2E Base Capacity Resource**

“Base Capacity Resource” shall mean a Capacity Resource as described in section 5.5A(b).

## **2.2F Base Capacity Resource Constraint**

“Base Capacity Resource Reliability Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the above Base Capacity Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses the weekly load distribution from the Installed Reserve Margin study for the Delivery Year in question (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a weekly load distribution (based on the Installed Reserve Margin study and the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question. Additionally, for the PJM Region and relevant LDA calculation, the weekly capacity distributions are adjusted to reflect winter ratings.

For both the PJM Region and LDA analyses, PJM models the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed generation). PJM then models the commitment of varying amounts of Base Capacity Resources (displacing otherwise committed generation) as unavailable during the peak week of winter and available the rest of the Delivery Year in question and calculates the LOLE at each Base Capacity Resource level. The Base Capacity Resource Constraint is the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Base Capacity Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the

clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

### **2.2G Base Capacity Resource Price Decrement**

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

### **2.3 Base Load Generation Resource**

“Base Load Generation Resource” shall mean a Generation Capacity Resource that operates at least 90 percent of the hours that it is available to operate, as determined by the Office of the Interconnection in accordance with the PJM Manuals.

### **2.4 Base Offer Segment**

“Base Offer Segment” shall mean a component of a Sell Offer based on an existing Generation Capacity Resource, equal to the Unforced Capacity of such resource, as determined in accordance with the PJM Manuals. If the Sell Offers of multiple Market Sellers are based on a single Existing Generation Capacity Resource, the Base Offer Segments of such Market Sellers shall be determined pro rata based on their entitlements to Unforced Capacity from such resource.

### **2.5 Base Residual Auction**

“Base Residual Auction” shall mean the auction conducted three years prior to the start of the Delivery Year to secure commitments from Capacity Resources as necessary to satisfy any portion of the Unforced Capacity Obligation of the PJM Region not satisfied through Self-Supply.

### **2.6 Buy Bid**

“Buy Bid” shall mean a bid to buy Capacity Resources in any Incremental Auction.

### **2.6A Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall mean a geographic area of Zones or sub-Zones that are electrically-contiguous and experience for the relevant Delivery Year, based on Resource Clearing Prices of, for Delivery Years through May 31, 2018, Annual Resources and for the 2018/2019 Delivery Year and subsequent Delivery Years, Capacity Performance Resources, the same locational price separation in the Base Residual Auction, the same locational price

separation in the First Incremental Auction, the same locational price separation in the Second Incremental Auction, or the same locational price separation in the Third Incremental Auction.

## **2.7 Capacity Credit**

“Capacity Credit” shall have the meaning specified in Schedule 11 of the Operating Agreement, including Capacity Credits obtained prior to the termination of such Schedule applicable to periods after the termination of such Schedule.

## **2.8 Capacity Emergency Transfer Limit**

“Capacity Emergency Transfer Limit” or “CETL” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.9 Capacity Emergency Transfer Objective**

“Capacity Emergency Transfer Objective” or “CETO” shall have the meaning provided in the Reliability Assurance Agreement.

### **2.9A Capacity Export Transmission Customer**

“Capacity Export Transmission Customer” shall mean a customer taking point to point transmission service under Part II of this Tariff to export capacity from a generation resource located in the PJM Region that has qualified for an exception to the RPM must-offer requirement as described in section 6.6(g).

### **2.9B Capacity Import Limit**

“Capacity Import Limit” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.10 Capacity Market Buyer**

“Capacity Market Buyer” shall mean a Member that submits bids to buy Capacity Resources in any Incremental Auction.

## **2.11 Capacity Market Seller**

“Capacity Market Seller” shall mean a Member that owns, or has the contractual authority to control the output or load reduction capability of, a Capacity Resource, that has not transferred such authority to another entity, and that offers such resource in the Base Residual Auction or an Incremental Auction.

### **2.11A Capacity Performance Resource**

“Capacity Performance Resource” shall mean a Capacity Resource as described in section 5.5A(a).

### **2.11B Capacity Performance Transition Incremental Auction**

“Capacity Performance Transition Incremental Auction” shall have the meaning specified in section 5.14D.

### **2.12 Capacity Resource**

“Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.13 Capacity Resource Clearing Price**

“Capacity Resource Clearing Price” shall mean the price calculated for a Capacity Resource that offered and cleared in a Base Residual Auction or Incremental Auction, in accordance with Section 5.

### **2.13A Capacity Storage Resource**

“Capacity Storage Resource” shall mean any hydroelectric power plant, flywheel, battery storage, or other such facility solely used for short term storage and injection of energy at a later time to participate in the PJM energy and/or Ancillary Services markets and which participates in the Reliability Pricing Model.

### **2.14 Capacity Transfer Right**

“Capacity Transfer Right” shall mean a right, allocated to LSEs serving load in a Locational Deliverability Area, to receive payments, based on the transmission import capability into such Locational Deliverability Area, that offset, in whole or in part, the charges attributable to the Locational Price Adder, if any, included in the Zonal Capacity Price calculated for a Locational Delivery Area.

### **2.14A Conditional Incremental Auction**

“Conditional Incremental Auction” shall mean an Incremental Auction conducted for a Delivery Year if and when necessary to secure commitments of additional capacity to address reliability criteria violations arising from the delay in a Backbone Transmission upgrade that was modeled in the Base Residual Auction for such Delivery Year.

### **2.15 CONE Area**

“CONE Area” shall mean the areas listed in section 5.10(a)(iv)(A) and any LDAs established as CONE Areas pursuant to section 5.10(a)(iv)(B).

### **2.16 Cost of New Entry**



“Cost of New Entry” or “CONE” shall mean the nominal levelized cost of a Reference Resource, as determined in accordance with section 5.

#### **2.16A Credit-Limited Offer**

“Credit-Limited Offer” shall have the meaning provided in Attachment Q to this Tariff.

#### **2.17 Daily Deficiency Rate**

“Daily Deficiency Rate” shall mean the rate employed to assess certain deficiency charges under sections 7, 8, 9, or 13.

#### **2.18 Daily Unforced Capacity Obligation**

“Daily Unforced Capacity Obligation” shall mean the capacity obligation of a Load Serving Entity during the Delivery Year, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

#### **2.19 Delivery Year**

Delivery Year shall mean the Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Section 5.

#### **2.20 Demand Resource**

“Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.21 Demand Resource Factor or DR Factor**

“Demand Resource Factor” or “DR Factor” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.22 [Reserved for Future Use]**

#### **2.23 EFORD**

“EFORD” shall have the meaning specified in the PJM Reliability Assurance Agreement.

#### **2.23A Emergency Action**

“Emergency Action” shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action including, but not limited to, a Voltage Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

**2.24 Energy Efficiency Resource**

“Energy Efficiency Resource” shall have the meaning specified in the PJM Reliability Assurance Agreement.

**2.24A Extended Summer Demand Resource**

“Extended Summer Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

**2.24B Extended Summer Resource Price Adder**

“Extended Summer Resource Price Adder” shall mean, for Delivery Years through May 31, 2018, an addition to the marginal value of Unforced Capacity as necessary to reflect the price of Annual Resources and Extended Summer Demand Resources required to meet the applicable Minimum Extended Summer Resource Requirement.

**2.24C Sub-Annual Resource Reliability Target**

“Sub-Annual Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of the combination of Extended Summer Demand Resources and Limited Demand Resources in Unforced Capacity determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity, that shall be used to calculate the Minimum Annual Resource Requirement for Delivery Years through May 31, 2017 and the Sub-Annual Resource Constraint for the 2017/2018 Delivery Year. As more fully set forth in the PJM Manuals, PJM calculates the Sub-Annual Resource Reliability Target, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Demand Resources. The calculation for the unconstrained portion of the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Capacity Emergency Transfer Objective study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of DR (displacing otherwise committed generation) as interruptible from May 1 through October 31 and unavailable from November 1 through April 30 and calculates the LOLE at each DR level. The Extended Summer DR Reliability Target is the DR amount, stated as a percentage of the unrestricted peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Sub-Annual Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is

converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## **2.25 Sub-Annual Resource Constraint**

“Sub-Annual Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region or for each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources and Extended Summer Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Sub-Annual Resource Reliability Target for the PJM Region or for such LDA, respectively, minus the Short-Term Resource Procurement Target for the PJM Region or for such LDA, respectively.

## **2.26 Final RTO Unforced Capacity Obligation**

“Final RTO Unforced Capacity Obligation” shall mean the capacity obligation for the PJM Region, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

### **2.26A [Reserved]**

## **2.27 First Incremental Auction**

“First Incremental Auction” shall mean an Incremental Auction conducted 20 months prior to the start of the Delivery Year to which it relates.

## **2.28 Forecast Pool Requirement**

“Forecast Pool Requirement” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.29 [Reserved]**

### **2.30 [Reserved]**

## **2.31 Generation Capacity Resource**

“Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.32 Generator Forced Outage**

“Generator Forced Outage” shall have the meaning specified in the Operating Agreement.

## **2.33 Generator Maintenance Outage**

“Generator Maintenance Outage” shall have the meaning specified in the Operating Agreement.

### **2.33A Generator Planned Outage**

“Generator Planned Outage” shall have the meaning specified in the Operating Agreement.

### **2.34 Incremental Auction**

“Incremental Auction” shall mean any of several auctions conducted for a Delivery Year after the Base Residual Auction for such Delivery Year and before the first day of such Delivery Year, including the First Incremental Auction, Second Incremental Auction, Third Incremental Auction or Conditional Incremental Auction. Incremental Auctions (other than the Conditional Incremental Auction), shall be held for the purposes of:

(i) allowing Market Sellers that committed Capacity Resources in the Base Residual Auction for a Delivery Year, which subsequently are determined to be unavailable to deliver the committed Unforced Capacity in such Delivery Year (due to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences) to submit Buy Bids for replacement Capacity Resources; and

(ii) allowing the Office of the Interconnection to reduce or increase the amount of committed capacity secured in prior auctions for such Delivery Year if, as a result of changed circumstances or expectations since the prior auction(s), there is, respectively, a significant excess or significant deficit of committed capacity for such Delivery Year, for the PJM Region or for an LDA.

### **2.35 Incremental Capacity Transfer Right**

“Incremental Capacity Transfer Right” shall mean a Capacity Transfer Right allocated to a Generation Interconnection Customer or Transmission Interconnection Customer obligated to fund a transmission facility or upgrade, to the extent such upgrade or facility increases the transmission import capability into a Locational Deliverability Area, or a Capacity Transfer Right allocated to a Responsible Customer in accordance with Schedule 12A of the Tariff.

### **2.36 Intermittent Resource**

“Intermittent Resource” shall mean a Generation Capacity Resource with output that can vary as a function of its energy source, such as wind, solar, run of river hydroelectric power and other renewable resources.

### **2.36A Limited Demand Resource**

“Limited Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.36B Limited Demand Resource Reliability Target**

“Limited Demand Resource Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 Delivery Year for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g., the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

### **2.36C Limited Resource Constraint**

“Limited Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region

or each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

### **2.36D Limited Resource Price Decrement**

“Limited Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

### **2.37 Load Serving Entity (LSE)**

“Load Serving Entity” or “LSE” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.38 Locational Deliverability Area (LDA)**

“Locational Deliverability Area” or “LDA” shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area’s reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Schedule 10.1 of the Reliability Assurance Agreement.

### **2.39 Locational Deliverability Area Reliability Requirement**

“Locational Deliverability Area Reliability Requirement” shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

### **2.40 Locational Price Adder**

“Locational Price Adder” shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

### **2.41 Locational Reliability Charge**

“Locational Reliability Charge” shall have the meaning specified in the Reliability Assurance Agreement.

**2.41A Locational UCAP**

“Locational UCAP” shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

**2.41B Locational UCAP Seller**

“Locational UCAP Seller” shall mean a Member that sells Locational UCAP.

**2.41C Market Seller Offer Cap**

“Market Seller Offer Cap” shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with section 6 of Attachment DD and section II.E of Attachment M - Appendix.

**2.41D Minimum Annual Resource Requirement**

“Minimum Annual Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

**2.41E Minimum Extended Summer Resource Requirement**

“Minimum Extended Summer Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

**2.42 Net Cost of New Entry**

“Net Cost of New Entry” shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset, as defined in Section 5.

**2.43 Nominated Demand Resource Value**

“Nominated Demand Resource Value” shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

**2.43A Nominated Energy Efficiency Value**

“Nominated Energy Efficiency Value” shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

**2.44 [Reserved]****2.45 Opportunity Cost**

“Opportunity Cost” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

**2.46 Peak-Hour Dispatch**

“Peak-Hour Dispatch” shall mean, for purposes of calculating the Energy and Ancillary Services Revenue Offset under section 5 of this Attachment, an assumption, as more fully set forth in the PJM Manuals, that the Reference Resource is committed in the Day-Ahead Energy Market in four distinct blocks of four hours of continuous output for each block from the peak-hour period beginning with the hour ending 0800 EPT through to the hour ending 2300 EPT for any day when the average day-ahead LMP for the area for which the Net Cost of New Entry is being determined is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle) for at least two hours during each four-hour block, where such blocks shall be assumed to be committed independently; provided that, if there are not at least two economic hours in any given four-hour block, then the Reference Resource shall be assumed not to be committed for such block; and to the extent not committed in any such block in the Day-Ahead Energy Market under the above conditions based on Day-Ahead LMPs, is dispatched in the Real-Time Energy Market for such block if the Real-Time LMP is greater than or equal to the cost to generate under the same conditions as described above for the Day-Ahead Energy Market.

**2.47 Peak Season**



“Peak Season” shall mean the weeks containing the 24th through 36th Wednesdays of the calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

#### **2.48 Percentage Internal Resources Required**

“Percentage Internal Resources Required” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.48A Performance Assessment Hour**

“Performance Assessment Hour” shall mean each whole or partial clock-hour for which an Emergency Action has been declared by the Office of the Interconnection, provided, however, that Performance Assessment Hours for a Base Capacity Resource shall not include any hours outside the calendar months of June through September.

#### **2.49 Planned Demand Resource**

“Planned Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50 Planned External Generation Capacity Resource**

“Planned External Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50A Planned Generation Capacity Resource**

“Planned Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.51 Planning Period**

“Planning Period” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.52 PJM Region**

“PJM Region” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.53 PJM Region Installed Reserve Margin**

“PJM Region Installed Reserve Margin” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.54 PJM Region Peak Load Forecast**

“PJM Region Peak Load Forecast” shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in section 5.

### **2.55 PJM Region Reliability Requirement**

“PJM Region Reliability Requirement” shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

### **2.56 Projected PJM Market Revenues**

“Projected PJM Market Revenues” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.57 Qualifying Transmission Upgrade**

“Qualifying Transmission Upgrade” shall mean a proposed enhancement or addition to the Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

### **2.58 Reference Resource**

“Reference Resource” shall mean a combustion turbine generating station, configured with two General Electric Frame 7FA turbines with inlet air cooling to 50 degrees, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 10.096 Mmbtu/MWh.

### **2.59 Reliability Assurance Agreement**

“Reliability Assurance Agreement” shall mean that certain “Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region,” on file with FERC as PJM Interconnection, L.L.C. Rate Schedule FERC No.44.

### **2.60 Reliability Pricing Model Auction**

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

### **2.60A Repowered / Repowering**

“Repowering” or “Repowered” shall refer to a partial or total replacement of existing steam production equipment with new technology or a partial or total replacement of steam production process and power generation equipment, or an addition of steam production and/or power generation equipment, or a change in the primary fuel being used at the plant. A resource can be considered Repowered whether or not such aforementioned replacement, addition, or fuel change provides an increase in installed capacity, and whether or not the pre-existing plant capability is formally deactivated or retired.

### **2.61 Resource Substitution Charge**

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

### **2.61A Scheduled Incremental Auctions**

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

### **2.62 Second Incremental Auction**

“Second Incremental Auction” shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

### **2.63 Sell Offer**

“Sell Offer” shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

### **2.64 [Reserved for Future Use]**

### **2.65 Self-Supply**

“Self-Supply” shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller’s intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity's Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed “Self-Supply,” unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

### **2.65A Short-Term Resource Procurement Target**

“Short-Term Resource Procurement Target” shall mean, for Delivery Years through May 31, 2018, as to the PJM Region, for purposes of the Base Residual Auction, 2.5% of the PJM Region Reliability Requirement determined for such Base Residual Auction, for purposes of the First Incremental Auction, 2% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, for purposes of the Second Incremental Auction, 1.5% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, as to any Zone, an allocation of the PJM Region Short-Term Resource Procurement Target based on the Preliminary Zonal Forecast Peak Load, reduced by the amount of load served under the FRR Alternative. For any LDA, the LDA Short-Term Resource Procurement Target shall be the sum of the Short-Term Resource Procurement Targets of all Zones in the LDA.

### **2.65B Short-Term Resource Procurement Target Applicable Share**

“Short-Term Resource Procurement Target Applicable Share” shall mean, for Delivery Years through May 31, 2018: (i) for the PJM Region, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction and, as to the Third Incremental Auction for the PJM Region, 0.6 times such target; and (ii) for an LDA, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction for such LDA and, as to the Third Incremental Auction, 0.6 times such target.

#### **2.65B.01 Small Commercial Customer**

“Small Commercial Customer,” as used in Schedule 6 of the RAA and Attachment DD-1 of the Tariff, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

### **2.65C Sub-Annual Resource Price Decrement**

“Sub-Annual Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Extended Summer Demand Resources and the clearing price for Annual Resources, representing the cost to procure additional Annual Resources out of merit order when the Sub-Annual Resource Constraint is binding.

### **2.66 Third Incremental Auction**

“Third Incremental Auction” shall mean an Incremental Auction conducted three months before the Delivery Year to which it relates.

**2.67 [Reserved for Future Use]****2.68 Unconstrained LDA Group**

“Unconstrained LDA Group” shall mean a combined group of LDAs that form an electrically contiguous area and for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD. Any LDA for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD shall be combined with all other such LDAs that form an electrically contiguous area.

**2.69 Unforced Capacity**

“Unforced Capacity” shall have the meaning specified in the Reliability Assurance Agreement.

**2.69A Updated VRR Curve**

“Updated VRR Curve” shall mean the Variable Resource Requirement Curve as defined in section 5.10(a) of this Attachment for use in the Base Residual Auction of the relevant Delivery Year, updated to reflect any change in the Reliability Requirement from the Base Residual Auction to such Incremental Auction, and for Delivery Years through May 31, 2018, the Short-term Resource Procurement Target applicable to the relevant Incremental Auction.

**2.69B Updated VRR Curve Increment**

“Updated VRR Curve Increment” shall mean the portion of the Updated VRR Curve to the right of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this Attachment DD.*

**2.69C Updated VRR Curve Decrement**

“Updated VRR Curve Decrement” shall mean the portion of the Updated VRR Curve to the left of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this attachment DD.*

**2.70 Variable Resource Requirement Curve**

“Variable Resource Requirement Curve” shall mean a series of maximum prices that can be cleared in a Base Residual Auction for Unforced Capacity, corresponding to a series of varying resource requirements based on varying installed reserve margins, as determined by the Office of the Interconnection for the PJM Region and for certain Locational Deliverability Areas in accordance with the methodology provided in Section 5.

## **2.71 Zonal Capacity Price**

“Zonal Capacity Price” shall mean the clearing price required in each Zone to meet the demand for Unforced Capacity and satisfy Locational Deliverability Requirements for the LDA or LDAs associated with such Zone. If the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA.

### **3. RESPONSIBILITIES OF THE OFFICE OF THE INTERCONNECTION**

#### **3.1 Support for Self-Supply and Bilateral Transactions**

The Office of the Interconnection shall:

(a) support electronic tools to facilitate communication by Market Sellers and Market Buyers of information to the Office of the Interconnection concerning Self-Supply arrangements;

(b) support an electronic bulletin board providing a forum for prospective buyers and sellers to transact Capacity Resources outside the Reliability Pricing Model Auctions, including Locational UCAP transactions (including mechanisms to allow prospective Sellers with partial-year resources to explore voluntary opportunities to combine their resources such that they can be offered together for a full Delivery Year) and support electronic tools to report bilateral capacity transactions between Market Participants to the Office of the Interconnection, in accordance with procedures set forth in the PJM Manuals; and

(c) define one or more capacity trading hubs and determine and publicize values for such hubs based on the capacity prices determined for one or more Locational Deliverability Areas, in accordance with the PJM Manuals.

#### **3.2 Administration of the Base Residual Auction and Incremental Auctions**

The Office of the Interconnection shall conduct and administer the Base Residual Auction and Incremental Auctions in accordance with this Attachment, the Operating Agreement, and the Reliability Assurance Agreement. Administration of the Base Residual Auction and Incremental Auctions shall include, but not be limited to, the following:

a) Determining the qualification of entities to become Capacity Market Sellers and Capacity Market Buyers;

b) Determining PJM Region Peak Load Forecasts and Locational Deliverability Area Reliability Requirements;

c) Determining the Minimum Annual Resource Requirements and the Minimum Extended Summer Resource Requirements for the PJM Region and applicable LDAs for Delivery Years starting June 1, 2014 and ending May 31, 2017;

d) Determining Limited Resource Constraints and Sub-Annual Resource Constraints for the 2017/2018 Delivery Year;

e) Determining Base Capacity Demand Resource Constraints and Base Capacity Resource Constraints for the 2018/2019 and 2019/2020 Delivery Years;

- f) Determining the need, if any, for a Conditional Incremental Auction and providing appropriate prior notice of any such auction
- g) Calculating the EFORD for each Generation Capacity Resource in the PJM Region to be used in the Third Incremental Auction;
- h) Receiving Buy Bids and Sell Offers, determining Locational Deliverability Requirements and Variable Resource Requirement Curves, and determining the clearing price that reflects all such inputs;
- i) Conducting settlements for auction transactions, including but not limited to rendering bills to, receiving payments from, and disbursing payments to, participants in Base Residual Auctions and Incremental Auctions.
- j) Maintaining such records of Sell Offers and Buy Bids, clearing price determinations, and other aspects of auction transactions, as may be appropriate to the administration of Base Residual Auctions and Incremental Auctions; and
- k) Posting of selected non-confidential data used in Reliability Pricing Model Auctions to calculate clearing prices and other auction results, as appropriate to inform market participants of auction conditions.

### **3.3 Records and Reports**

The Office of the Interconnection shall prepare and maintain such records as are required for the administration of the Base Residual Auction and Incremental Auctions. For each auction conducted, the Office of the Interconnection shall, consistent with section 18.17 of the Operating Agreement, publish the following: (i) Zonal Capacity Prices for each LDA; (ii) Capacity Resource Clearing Prices for each LDA; (iii) Locational Price Adders; (iv) the total megawatts of Unforced Capacity that cleared; and (v) such other auction data as may be appropriate to the efficient and competitive conduct of the Base Residual Auction and Incremental Auctions. Such information shall be available on the PJM internet site through the end of the Delivery Year to which such auctions apply.

### **3.4 Counterparty**

(a) PJMSettlement shall be the Counterparty to the transactions arising from the cleared Base Residual Auctions and Incremental Auctions; provided, however, PJMSettlement shall not be a contracting party to (i) any bilateral transactions between Market Participants, or (ii) with respect to Self-Supply for which designation of Self-Supply has been reported to the Office of the Interconnection.

(b) Charges. PJMSettlement shall be the Counterparty with respect to the obligations to pay, and the payment of, charges pursuant to this Attachment DD.



## **4. GENERAL PROVISIONS**

### **4.1 Capacity Market Sellers**

Only Capacity Market Sellers shall be eligible to submit Sell Offers into the Base Residual Auction and Incremental Auctions. Capacity Market Sellers shall comply with the terms and conditions of all Sell Offers, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.2 Capacity Market Buyers**

Only Capacity Market Buyers shall be eligible to submit Buy Bids into an Incremental Auction. Capacity Market Buyers shall comply with the terms and conditions of all Buy Bids, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.3 Agents**

A Capacity Market Seller may participate in a Base Residual Auction or Incremental Auction through an Agent, provided that the Capacity Market Seller informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer may participate in an Incremental Auction through an Agent, provided that the Capacity Market Buyer informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer or Capacity Market Seller participating in such an auction through an Agent shall be bound by all of the acts or representations of such Agent with respect to transactions in such auction. Any written instrument establishing the authority of such Agent shall provide that any such Agent shall comply with the requirements of this Attachment and the Operating Agreement.

### **4.4 General Obligations of Capacity Market Buyers and Capacity Market Sellers**

Each Capacity Market Buyer and Capacity Market Seller shall comply with all laws and regulations applicable to the operation of the Base Residual and Incremental Auctions and the use of these auctions shall comply with all applicable provisions of this Attachment, Attachment M, Attachment M - Appendix, the Operating Agreement, and the Reliability Assurance Agreement, and all procedures and requirements for the conduct of the Base Residual and Incremental Auctions and the PJM Region established by the Office of the Interconnection in accordance with the foregoing.

### **4.5 Confidentiality**

The following information submitted to the Office of the Interconnection in connection with any Base Residual Auction, Incremental Auction, Reliability Backstop Auction, or Capacity Performance Transition Incremental Auction shall be deemed confidential information for purposes of Section 18.17 of the Operating Agreement, Attachment M and Attachment M -

Appendix: (i) the terms and conditions of the Sell Offers and Buy Bids; and (ii) the terms and conditions of any bilateral transactions for Capacity Resources.

#### **4.6 Bilateral Capacity Transactions**

(a) Unit-Specific Internal Capacity Bilateral Transaction Transferring All Rights and Obligations (“Section 4.6(a) Bilateral”).

(i) Market Participants may enter into unit-specific internal bilateral capacity contracts for the purchase and sale of title and rights to a specified amount of installed capacity from a specific generating unit or units. Such bilateral capacity contracts shall be for the transfer of rights to capacity to and from a Market Participant and shall be reported to the Office of the Interconnection in accordance with this Attachment DD and the Office of the Interconnection’s rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Section 4.6(a) Bilateral transactions, the rights to, and obligations regarding, the capacity that is the subject of the transaction shall pass to the buyer under the contract at the location of the unit and further transactions and rights and obligations associated with such capacity shall be the responsibility of the buyer under the contract. Such obligations include any charges, including penalty charges, relating to the capacity under this Attachment DD. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(a) Bilateral constitute a transaction with the Office of the Interconnection or PJMSettlement or a transaction in any auction under this Attachment DD.

(iii) All payments and related charges associated with a Section 4.6(a) Bilateral shall be arranged between the parties to the transaction and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(a) Bilateral reported to the Office of the Interconnection under this Attachment DD.

(iv) With respect to capacity that is the subject of a Section 4.6(a) Bilateral that has cleared an auction under this Attachment DD prior to a transfer, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction.

(v) A buyer under a Section 4.6(a) Bilateral contract shall pay any penalties or charges associated with the capacity transferred under the contract. To the extent the capacity that is the subject of a Section 4.6(a) Bilateral contract has cleared an auction under this Attachment DD prior to a transfer, then the seller under the contract also shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer’s obligation to pay any penalties or charges associated with the capacity and for which payment is not made to PJMSettlement by the buyer as determined by the Office of the Interconnection. All claims regarding a default of a buyer to a seller under a Section 4.6(a) Bilateral contract shall be resolved solely between the buyer and the seller.

(vi) To the extent the capacity that is the subject of the Section 4.6(a) Bilateral transaction already has cleared an auction under this Attachment DD, such bilateral capacity transactions shall be subject to the prior consent of the Office of the Interconnection and its determination that sufficient credit is in place for the buyer with respect to the credit exposure associated with such obligations.

(b) Bilateral Capacity Transaction Transferring Title to Capacity But Not Transferring Performance Obligations (“Section 4.6(b) Bilateral”).

(i) Market Participants may enter into bilateral capacity transactions for the purchase and sale of a specified megawatt quantity of capacity that has cleared an auction pursuant to this Attachment DD. The parties to a Section 4.6(b) Bilateral transaction shall identify (1) each unit from which the transferred megawatts are being sold, and (2) the auction in which the transferred megawatts cleared. Such bilateral capacity transactions shall transfer title and all rights with respect to capacity and shall be reported to the Office of the Interconnection on an annual basis prior to each Delivery Year in accordance with this Attachment DD and pursuant to the Office of the Interconnection’s rules related to its eRPM tools. Reported transactions with respect to a unit will be accepted by the Office of the Interconnection only to the extent that the total of all bilateral sales from the reported unit (including Section 4.6(a) Bilaterals, Section 4.6(b) Bilaterals, and Locational UCAP bilaterals) do not exceed the unit’s cleared unforced capacity.

(ii) For purposes of clarity, with respect to all Section 4.6(b) Bilateral transactions, the rights to the capacity shall pass to the buyer at the location of the unit(s) specified in the reported transaction. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(b) Bilateral constitute a transaction with PJMSettlement or the Office of the Interconnection or a transaction in any auction under this Attachment DD.

(iii) With respect to a Section 4.6(b) Bilateral, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction; provided, however, with respect to all Section 4.6(b) Bilateral transactions, such transactions do not effect a novation of the seller’s obligations to make RPM capacity available to PJM pursuant to the terms and conditions originally agreed to by the seller; provided further, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller under a Section 4.6(b) Bilateral to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity.

(iv) All payments and related charges associated with a Section 4.6(b) Bilateral shall be arranged between the parties to the contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(b) Bilateral capacity contract reported to the Office of the Interconnection under this Attachment DD.

(v) All claims regarding a default of a buyer to a seller under a Section 4.6(b) Bilateral shall be resolved solely between the buyer and the seller.

(c) Locational UCAP Bilateral Transactions Between Capacity Sellers.

(i) Market Participants may enter into Locational UCAP bilateral transactions as defined in, and pursuant to the rules set forth in, section 5.3A of this Attachment DD, which shall be reported to the Office of the Interconnection in accordance with this Attachment DD and the LLC's rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Locational UCAP bilateral transactions, the rights to the Locational UCAP that are the subject of the Locational UCAP bilateral transaction shall pass to the buyer under the Locational UCAP bilateral contract subject to the provisions of section 5.3A. In no event, shall the purchase and sale of Locational UCAP pursuant to a Locational UCAP bilateral transaction constitute a transaction with the Office of the Interconnection or PJMSettlement, or a transaction in any auction under this Attachment DD.

(iii) A Locational UCAP Seller shall have the obligation to make the capacity available to PJM in the same manner as capacity that has cleared an auction under this Attachment DD and the Locational UCAP Seller shall have all obligations for charges and penalties associated with the capacity that is the subject of the Locational UCAP bilateral contract; provided, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity. All claims regarding a default of a buyer to a seller under a Locational UCAP bilateral contract shall be resolved solely between the buyer and the seller.

(iv) All payments and related charges for the Locational UCAP associated with a Locational UCAP bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The LLC, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Locational UCAP bilateral contract reported to the Office of the Interconnection under this Attachment DD.

(d) The bilateral transactions provided for in this section 4.6 shall be for the physical transfer of capacity to or from a Market Participant and shall be reported to and coordinated with the Office of the Interconnection in accordance with this Attachment DD and pursuant to the Office of the Interconnection's rules relating to its eRPM tools. Bilateral transactions that do not contemplate the physical transfer of capacity to and from a Market Participant are not subject to this Attachment DD and shall not be reported to and coordinated with the Office of the Interconnection.

### **5.3A Locational UCAP Bilateral Transactions**

A Member that has committed capacity through an RPM Auction for a Delivery Year may purchase Locational UCAP as replacement capacity from a Member with available uncommitted capacity for such Delivery Year in accordance with the terms of this section and the PJM Manuals. Locational UCAP may not be sold or purchased prior to the date that the final EFORD is established for such Delivery Year, and if designated to PJM by the Locational UCAP Seller as sold prior to the Third Incremental Auction for a Delivery Year must be confirmed by the buyer prior to such Third Incremental Auction as purchased for replacement capacity, or such transaction shall be rejected. In accordance with procedures specified in the PJM Manuals, the parties to a Locational UCAP transaction must notify PJM of such transaction, which notification must specify: i) the buyer, ii) the Locational UCAP Seller, iii) the start and end dates of the transaction (which may not be retroactive), iv) the Locational UCAP amount (no less than 0.1 megawatts), v) the demand or generation resource with available uncommitted capacity that is the basis for the sale, and vi) the Locational Delivery Area in which the resource is located. The Locational UCAP Seller shall be responsible for any charges imposed under sections 7, 8, 9, 10, 10A, 11, or 13, as applicable, for such Delivery Year, with respect to the increment of capacity sold as Locational UCAP; any other settlement of charges under the Locational UCAP transaction shall be between the parties. A purchaser of Locational UCAP may not offer such capacity into an RPM Auction.

## 5.4 Reliability Pricing Model Auctions

The Office of the Interconnection shall conduct the following Reliability Pricing Model Auctions:

a) Base Residual Auction.

PJM shall conduct for each Delivery Year a Base Residual Auction to secure commitments of Capacity Resources as needed to satisfy the portion of the RTO Unforced Capacity Obligation not satisfied through Self-Supply of Capacity Resources for such Delivery Year. All Self-Supply Capacity Resources must be offered in the Base Residual Auction. As set forth in section 6.6, all other Capacity Resources, and certain other existing generation resources, must be offered in the Base Residual Auction. The Base Residual Auction shall be conducted in the month of May that is three years prior to the start of such Delivery Year. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Load Serving Entities through the Locational Reliability Charge during such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and the payments, by Load Serving Entities; provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

b) Scheduled Incremental Auctions.

PJM shall conduct for each Delivery Year a First, a Second, and a Third Incremental Auction for the purposes set forth in section 2.34. The First Incremental Auction shall be conducted in the month of September that is twenty months prior to the start of the Delivery Year; the Second Incremental Auction shall be conducted in the month of July that is ten months prior to the start of the Delivery Year; and the Third Incremental Auction shall be conducted in the month of February that is three months prior to the start of the Delivery Year.

c) Adjustment through Scheduled Incremental Auctions of Capacity Previously Committed.

The Office of the Interconnection shall recalculate the PJM Region Reliability Requirement and each LDA Reliability Requirement prior to each Scheduled Incremental Auction, based on an updated peak load forecast, updated Installed Reserve Margin and an updated Capacity Emergency Transfer Objective; shall update such reliability requirements for the Third Incremental Auction to reflect any change from such recalculation; and shall update such reliability requirements for the First Incremental Auction or Second Incremental Auction only if the change is greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement. Based on such update, the Office of the Interconnection shall, under certain conditions, seek through the Scheduled Incremental Auction to secure additional commitments of capacity or release sellers from prior capacity commitments. Specifically, the Office of the Interconnection shall:

1) seek additional capacity commitments to serve the PJM Region or an LDA if the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) is less than, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such additional capacity commitments only if such shortfall is in an amount greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement;

2) seek additional capacity commitments to serve the PJM Region or an LDA if:

i) the updated PJM Region Reliability Requirement less, for Delivery Years through May 31, 2018, the PJM Region Short-Term Resource Procurement Target utilized in the most recent auction conducted for the Delivery Year, or if the LDA Reliability Requirement less, for Delivery Years through May 31, 2018, the LDA Short Term Resource Procurement Target applicable to such auction, exceeds the total capacity committed in all prior auctions in such region or area, respectively, for such Delivery Year by an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM conducts a Conditional Incremental Auction for such Delivery Year and does not obtain all additional commitments of Capacity Resources sought in such Conditional Incremental Auction, in which case, PJM shall seek in the Incremental Auction the commitments that were sought in the Conditional Incremental Auction but not obtained.

3) seek agreements to release prior capacity commitments to the PJM Region or to an LDA if:

i) the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) exceeds, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such agreements only if such excess is in an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM obtains additional commitments of Capacity Resources in a Conditional Incremental Auction, in which case PJM shall seek release of an equal number of megawatts (comparing the total purchase amount for all LDAs and the PJM Region related to the delay in Backbone Transmission with the total sell amount for all LDAs and the PJM Region related to the delay in Backbone Transmission) of prior committed capacity that would not have been committed had the delayed Backbone Transmission upgrade that prompted the Conditional Incremental Auction not been assumed, at the time of the Base Residual Auction, to be in service for the relevant Delivery Year; and if PJM obtains additional commitments of capacity in an incremental auction pursuant to subsection c.2.ii above, PJM shall seek in such Incremental Auction to release an equal amount of capacity (in total for all LDAs and the PJM Region related to the delay in Backbone Transmission) previously committed that would not have been committed absent the Backbone Transmission upgrade.

4) The cost of payments to Market Sellers for additional Capacity Resources cleared in such auctions, and the credits from payments from Market Sellers for the release of previously committed Capacity Resources, shall be apportioned to Load Serving Entities in the PJM Region or LDA, as applicable, through adjustments to the Locational Reliability Charge for such Delivery Year.

5) PJMSettlement shall be the Counterparty to the sales (including releases) of Capacity Resources that clear in such auctions and to the obligations to pay, and the payments, by Load Serving Entities, provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

d) Commitment of Replacement Capacity through Scheduled Incremental Auctions.

Each Scheduled Incremental Auction for each Delivery Year shall allow Capacity Market Sellers that committed Capacity Resources in any prior Reliability Pricing Model Auction for such Delivery Year to submit Buy Bids for replacement Capacity Resources. Capacity Market Sellers that submit Buy Bids into an Incremental Auction must specify the type of Unforced Capacity desired, i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource. The need to purchase replacement Capacity Resources may arise for any reason, including but not limited to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Capacity Market Buyers that purchase replacement Capacity Resources in such auction. PJMSettlement shall be the Counterparty to the sales and purchases that clear in such auction, provided, however, PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.



## e) Conditional Incremental Auction.

PJM shall conduct for any Delivery Year a Conditional Incremental Auction if the in service date of a Backbone Transmission Upgrade that was modeled in the Base Residual Auction is announced as delayed by the Office of the Interconnection beyond July 1 of the Delivery Year for which it was modeled and if such delay causes a reliability criteria violation. If conducted, the Conditional Incremental Auction shall be for the purpose of securing commitments of additional capacity for the PJM Region or for any LDA to address the identified reliability criteria violation. If PJM determines to conduct a Conditional Incremental Auction, PJM shall post on its website the date and parameters for such auction (including whether such auction is for the PJM Region or for an LDA, and the type of Capacity Resources required) at least one month prior to the start of such auction. The cost of payments to Market Sellers for Capacity Resources cleared in such auction shall be collected by PJMSettlement from Load Serving Entities in the PJM Region or LDA, as applicable, through an adjustment to the Locational Reliability Charge for such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and payments, by Load Serving Entities, provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

## **5.5 Eligibility for Participation in RPM Auctions**

A Capacity Market Seller may submit a Sell Offer for a Capacity Resource in a Base Residual Auction, Incremental Auction, or Capacity Performance Transition Incremental Auction only if such seller owns or has the contractual authority to control the output or load reduction capability of such resource and has not transferred such authority to another entity prior to submitting such Sell Offer. Capacity Resources must satisfy the capability and deliverability requirements of Schedules 9 and 10 of the PJM Reliability Assurance Agreement, the requirements for Demand Resources or Energy Efficiency Resources in Attachment DD-1 and Schedule 6 of the Reliability Assurance Agreement, as applicable, and, for the 2018/2019 Delivery Year and subsequent Delivery Years, the criteria in section 5.5A.

## **5.5A Capacity Resource Types**

### **a) Capacity Performance Resources**

Capacity Performance Resources are Capacity Resources which, to the extent such resources cleared in a Reliability Pricing Model Auction or are otherwise committed as a Capacity Resource, are obligated to deliver energy during the relevant Delivery Year as scheduled and/or dispatched by the Office of Interconnection during the Performance Assessment Hours. As further detailed in Section 10A of this Attachment, Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this Attachment. Subject to 5.5A(a)(i)-(ii), the following types of Capacity Resources are eligible to submit a Sell Offer as a Capacity Performance Resource: internal or external Generation Capacity Resources; Annual Demand Resources; Capacity Storage Resources; Annual Energy Efficiency Resources; and Qualifying Transmission Upgrades.

#### **i). Capacity Performance Resource Sell Offer Representations**

In submitting a Sell Offer for a Capacity Performance Resource in an RPM Auction for a Delivery Year, a Capacity Market Seller is representing that it:

- A. has made, or is capable of demonstrating that it will make, the necessary investment to ensure the Capacity Resource has the capability for the entire such Delivery Year to provide energy at any time when called upon by the Office of the Interconnection;
- B. shall be capable of complying with the performance obligations specified in this Attachment DD and in Schedule 1 of the Operating Agreement by the relevant Delivery Year;
- C. meets the criteria for obtaining an exception to the Capacity Import Limit as contained in section 1.7A of the Reliability Assurance Agreement, to the extent the underlying Capacity Resource is an external Generation Capacity Resource; and

D. contemplates the physical delivery of the Capacity Performance Resource underlying such Sell Offer by no later than the commencement of the applicable Delivery Year. A Sell Offer shall not meet the standard of physical delivery, for purposes of this section, if at the time it is submitted in an RPM Auction, the Capacity Market Seller intends to satisfy its obligation for the applicable Delivery Year by subsequently securing a replacement Capacity Performance Resource through either an Incremental Auction or bilateral transaction(s). Capacity Market Sellers acknowledge and agree that the Office of the Interconnection will rely on this representation to meet the physical capacity resource adequacy objectives upon which RPM is based. A Capacity Market Seller that is unable to make such representation shall not submit a Sell Offer for that resource into an RPM Auction. Capacity Market Sellers are cautioned that representations made hereunder that are knowingly false or otherwise inconsistent with the requirements of this section may constitute a violation of, and may subject the Capacity Market Seller to penalties under, the PJM Market Rules and the FERC Market Rules.

**ii). Process for Support and Review of Capacity Performance Resource Offers**

- A. The Capacity Market Seller shall provide to the Office of the Interconnection and the Market Monitoring Unit, upon their request, all supporting data and information requested by either the Office of the Interconnection or the Market Monitoring Unit to evaluate whether the underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes.
- B. The Office of the Interconnection and the Market Monitoring Unit shall review any requested supporting data and information, and the Office of the Interconnection, considering advice and recommendation from the Market Monitoring Unit, shall reject a request for a resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate to the satisfaction of the Office of the Interconnection that the resource meets the necessary requirements. The Office of Interconnection shall provide its determination to reject eligibility of the resource as a Capacity Performance Resource, and notify the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. A Capacity Market

Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

**b) Base Capacity Resources**

For the 2018/2019 and 2019/2020 Delivery Years, following types of Capacity Resources eligible to submit a Sell Offer as a Base Capacity Resource: Generation Capacity Resources, Capacity Storage Resources, Annual Demand Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources. Each resource that clears a RPM Auction as a Base Capacity Resource must provide energy output to PJM if called during Performance Assessment Hours occurring in the calendar months of June through September, including any necessary recall of such capacity and energy from service to areas outside the PJM Region. As further detailed in Section 10A of this Attachment, Base Capacity Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this section.

## 5.6 Sell Offers

Sell Offers shall be submitted or withdrawn via the internet site designated by the Office of the Interconnection, under the procedures and time schedule set forth in the PJM Manuals.

### 5.6.1 Specifications

A Sell Offer shall state quantities in increments of 0.1 megawatts and shall specify, as appropriate:

a) Identification of the Generation Capacity Resource, Demand Resource, Capacity Storage Resource or Energy Efficiency Resource on which such Sell Offer is based;

b) Minimum and maximum megawatt quantity of installed capacity that the Capacity Market Seller is willing to offer (notwithstanding such specification, the product offered shall be Unforced Capacity), or designate as Self-Supply, from a Generation Capacity Resource;

i) Price, in dollars and cents per megawatt-day, that will be accepted by the Capacity Market Seller for the megawatt quantity of Unforced Capacity offered from such Generation Capacity Resource.

ii) The Sell Offer may take the form of offer segments with varying price-quantity pairs for varying output levels from the underlying resource, but may not take the form of an offer curve with nonzero slope.

c) EFORd of each Generation Capacity Resource offered.

i) If a Capacity Market Seller is offering such resource in a Base Residual Auction, First Incremental Auction, Second Incremental Auction, or Conditional Incremental Auction occurring before the Third Incremental Auction, the Capacity Market Seller shall specify the EFORd to apply to the offer.

ii) If a Capacity Market Seller is committing the resource as Self-Supply, the Capacity Market Seller shall specify the EFORd to apply to the commitment.

iii) The EFORd applied to the Third Incremental Auction will be the final EFORd established by the Office of the Interconnection six (6) months prior to the Delivery Year, based on the actual EFORd in the PJM Region during the 12-month period ending September 30 that last precedes such Delivery Year.

d) The Nominated Demand Resource Value for each Demand Resource offered and the Nominated Energy Efficiency Value for each Energy Efficiency Resource offered. The Office of the Interconnection shall, in both cases, convert such value to an Unforced Capacity basis by multiplying such value by the DR Factor (for Delivery Years through May 31, 2018) times the Forecast Pool Requirement. Demand Resources shall specify the LDA in which the Demand Resource is located, including the location of such resource within any Zone that includes more than one LDA as identified on Schedule 10.1 of the RAA.

e) For Delivery Years through May 31, 2018, a Demand Resource with the potential to qualify as two or more of a Limited Demand Resource, Extended Summer Demand Resource or Annual Demand Resource may submit separate but coupled Sell Offers for each Demand Resource type for which it qualifies at different prices and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. For such coupled Demand Resource offers, the offer price of an Annual Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Extended Summer Demand Resource offer and the offer price of a Extended Summer Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Limited Demand Resource offer.

f) For a Qualifying Transmission Upgrade, the Sell Offer shall identify such upgrade, and the Office of the Interconnection shall determine and certify the increase in CETL provided by such upgrade. The Capacity Market Seller may offer the upgrade with an associated increase in CETL to an LDA in accordance with such certification, including an offer price that will be accepted by the Capacity Market Seller, stated in dollars and cents per megawatt-day as a price difference between a Capacity Resource located outside such an LDA and a Capacity Resource located inside such LDA; and the increase in CETL into such LDA to be provided by such Qualifying Transmission Upgrade, as certified by the Office of the Interconnection.

g) For the 2018/2019 and 2019/2020 Delivery Years, each Capacity Market Seller owning or controlling a resource that qualifies as both a Base Capacity Resource and a Capacity Performance Resource may submit separate but coupled Sell Offers for such resource as a Base Capacity Resource and as a Capacity Performance Resource, at different prices, and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. Submission of a coupled Base Capacity Resource Sell Offer shall be mandatory for any Capacity Performance Resource Sell Offer that exceeds a Sell Offer Price equal to the applicable Net Cost of New Entry. For such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer.

(h) For the 2018/2019 Delivery Year and subsequent Delivery Years, a Capacity Market Seller that owns or controls one or more Capacity Storage Resources, Intermittent Resources, Demand Resources, or Energy Efficiency Resources located within the same Locational Deliverability Area may submit a Sell Offer which represents the aggregated Unforced Capacity value of such resources. For the 2018/2019 and 2019/2020 Delivery Years, any such offer may be submitted as Capacity Performance Resource, Base Capacity Resource, or as a coupled offer for Capacity Performance Resource and Base Capacity Resource, provided that, for any such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer. For the 2020/2021 Delivery Year and subsequent Delivery Years, any such offer must be submitted as a Capacity Performance Resource.

### **5.6.2 Compliance with PJM Credit Policy**

Capacity Market Sellers shall comply with the provisions of the PJM Credit Policy as set forth in Attachment Q to this Tariff, including the provisions specific to the Reliability Pricing Model, prior to submission of Sell Offers in any Reliability Pricing Model Auction. A Capacity Market

Seller desiring to submit a Credit-Limited Offer shall specify in its Sell Offer the maximum auction credit requirement, in dollars, and the maximum amount of Unforced Capacity, in megawatts, applicable to its Sell Offer.

### **5.6.3 [reserved]**

### **5.6.4 Qualifying Transmission Upgrades**

A Qualifying Transmission Upgrade may not be the subject of any Sell Offer in a Base Residual Auction unless it has been approved by the Office of the Interconnection, including certification of the increase in Import Capability to be provided by such Qualifying Transmission Upgrade, no later than 45 days prior to such Base Residual Auction. No such approval shall be granted unless, at a minimum, a Facilities Study Agreement has been executed with respect to such upgrade, and such upgrade conforms to all applicable standards of the Regional Transmission Expansion Plan process.

### **5.6.5 Market-based Sell Offers**

Subject to section 6, a Market Seller authorized by FERC to sell electric generating capacity at market-based prices, or that is not required to have such authorization, may submit Sell Offers that specify market-based prices in any Base Residual Auction or Incremental Auction.

### **5.6.6 Availability of Capacity Resources for Sale**

(a) The Office of the Interconnection shall determine the quantity of megawatts of available installed capacity that each Capacity Market Seller must offer in any RPM Auction pursuant to Section 6.6 of Attachment DD, through verification of the availability of megawatts of installed capacity from: (i) all Generation Capacity Resources owned by or under contract to the Capacity Market Seller, including all Generation Capacity Resources obtained through bilateral contract; (ii) the results of prior Reliability Pricing Model Auctions, if any, for such Delivery Year (including consideration of any restriction imposed as a consequence of a prior failure to offer); and (iii) such other information as may be available to the Office of the Interconnection. The Office of the Interconnection shall reject Sell Offers or portions of Sell Offers for Capacity Resources in excess of the quantity of installed capacity from such Capacity Market Seller's Capacity Resource that it determines to be available for sale.

(b) The Office of the Interconnection shall determine the quantity of installed capacity available for sale in a Base Residual Auction or Incremental Auction as of the beginning of the period during which Buy Bids and Sell Offers are accepted for such auction, as applicable, in accordance with the time schedule set forth in the PJM Manuals. Removal of a resource from Capacity Resource status shall not be reflected in the determination of available installed capacity unless the associated unit-specific bilateral transaction is approved, the designation of such resource (or portion thereof) as a network resource for the external load is demonstrated to the Office of the Interconnection, or equivalent evidence of a firm external sale is provided prior to the deadline established therefor. The determination of available installed capacity shall also take into account, as they apply in proportion to the share of each resource owned or controlled by a Capacity Market Seller, any approved capacity modifications, and



existing capacity commitments established in a prior RPM Auction, an FRR Capacity Plan, Locational UCAP transactions and/or replacement capacity transactions under this Attachment DD. To enable the Office of the Interconnection to make this determination, no bilateral transactions for Capacity Resources applicable to the period covered by an auction will be processed from the beginning of the period for submission of Sell Offers and Buy Bids, as appropriate, for that auction until completion of the clearing determination for such auction. Processing of such bilateral transactions will reconvene once clearing for that auction is completed. A Generation Capacity Resource located in the PJM Region shall not be removed from Capacity Resource status to the extent the resource is committed to service of PJM loads as a result of an RPM Auction, FRR Capacity Plan, Locational UCAP transaction and/or by designation as a replacement resource under this Attachment DD.

(c) In order for a bilateral transaction for the purchase and sale of a Capacity Resource to be processed by the Office of the Interconnection, both parties to the transaction must notify the Office of the Interconnection of the transfer of the Capacity Resource from the seller to the buyer in accordance with procedures established by the Office of the Interconnection and set forth in the PJM Manuals. If a material change with respect to any of the prerequisites for the application of Section 5.6.6 to the Generation Capacity Resource occurs, the Capacity Resource Owner shall immediately notify the Market Monitoring Unit and the Office of the Interconnection.

## 5.10 Auction Clearing Requirements

The Office of the Interconnection shall clear each Base Residual Auction and Incremental Auction for a Delivery Year in accordance with the following:

a) Variable Resource Requirement Curve

The Office of the Interconnection shall determine Variable Resource Requirement Curves for the PJM Region and for such Locational Deliverability Areas as determined appropriate in accordance with subsection (a)(iii) for such Delivery Year to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability Principles and Standards. It is recognized that the variable resource requirement reflected in the Variable Resource Requirement Curve can result in an optimized auction clearing in which the level of Capacity Resources committed for a Delivery Year exceeds the PJM Region Reliability Requirement (for Delivery Years through May 31, 2018, less the Short-Term Resource Procurement Target) or Locational Deliverability Area Reliability Requirement (for Delivery Year through May 31, 2018, less the Short-Term Resource Procurement Target for the Zones associated with such LDA) for such Delivery Year. For any auction, the Updated Forecast Peak Load, and Short-Term Resource Procurement Target applicable to such auction, shall be used, and Price Responsive Demand from any applicable approved PRD Plan, including any associated PRD Reservation Prices, shall be reflected in the derivation of the Variable Resource Requirement Curves, in accordance with the methodology specified in the PJM Manuals.

i) Methodology to Establish the Variable Resource Requirement Curve

Prior to the Base Residual Auction, in accordance with the schedule in the PJM Manuals, the Office of the Interconnection shall establish the Variable Resource Requirement Curve for the PJM Region as follows:

- Each Variable Resource Requirement Curve shall be plotted on a graph on which Unforced Capacity is on the x-axis and price is on the y-axis;
- For the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), (iii) a straight line connecting points (2) and (3), and (iv) a vertical line from point (3) to the x-axis, where:
  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin (“IRM”)% minus 3%) divided by (100% plus IRM%)], and for Delivery Years

through May 31, 2018, minus the Short-Term Resource Procurement Target;

- For point (2), price equals: (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset) divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 1%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target; and
- For point (3), price equals [0.2 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 5%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), and (iii) a straight line connecting points (2) and (3), where:
  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin (“IRM”)% minus 0.2%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target;
  - For point (2), price equals: [0.75 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)] divided by (one minus the pool-wide average EFORD) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 2.9%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target; and
  - For point (3), price equals zero and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 8.8%) divided by (100% plus IRM%)] minus the Short-Term Resource Procurement Target.

ii) For any Delivery Year, the Office of the Interconnection shall establish a separate Variable Resource Requirement Curve for each LDA for which:

- A. the Capacity Emergency Transfer Limit is less than 1.15 times the Capacity Emergency Transfer Objective, as determined by the Office of the Interconnection in accordance with NERC and Applicable Regional Entity guidelines; or
- B. such LDA had a Locational Price Adder in any one or more of the three immediately preceding Base Residual Auctions; or
- C. such LDA is determined in a preliminary analysis by the Office of the Interconnection to be likely to have a Locational Price Adder, based on historic offer price levels; provided however that for the Base Residual Auction conducted for the Delivery Year commencing on June 1, 2012, the Eastern Mid-Atlantic Region (“EMAR”), Southwest Mid-Atlantic Region (“SWMAR”), and Mid-Atlantic Region (“MAR”) LDAs shall employ separate Variable Resource Requirement Curves regardless of the outcome of the above three tests; and provided further that the Office of the Interconnection may establish a separate Variable Resource Requirement Curve for an LDA not otherwise qualifying under the above three tests if it finds that such is required to achieve an acceptable level of reliability consistent with the Reliability Principles and Standards, in which case the Office of the Interconnection shall post such finding, such LDA, and such Variable Resource Requirement Curve on its internet site no later than the March 31 last preceding the Base Residual Auction for such Delivery Year. The same process as set forth in subsection (a)(i) shall be used to establish the Variable Resource Requirement Curve for any such LDA, except that the Locational Deliverability Area Reliability Requirement for such LDA shall be substituted for the PJM Region Reliability Requirement and, for Delivery Years through May 31, 2018, the LDA Short-Term Resource Procurement Target shall be substituted for the PJM Region Short-Term Resource Procurement Target. For purposes of calculating the Capacity Emergency Transfer Limit under this section, all generation resources located in the PJM Region that are, or that qualify to become, Capacity Resources, shall be modeled at their full capacity rating, regardless of the amount of capacity cleared from such resource for the immediately preceding Delivery Year.

For each such LDA, for the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection shall (a) determine the Net Cost of New Entry for each Zone in such LDA, with such Net Cost of New Entry equal to the applicable Cost of New Entry value for such Zone minus the Net Energy and Ancillary Services Revenue Offset value for such Zone, and (b) compute the average of the Net Cost of New Entry values of all such Zones to determine the Net Cost of New Entry for such LDA; provided however, that the Net Cost of New Entry for an LDA may

be greater than, but shall be no less than, the Net Cost of New Entry determined for any other LDA in which the first LDA resides (immediately or successively) including the Net Cost of New Entry for the RTO. The Net Cost of New Entry for use in an LDA in any Incremental Auction for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years shall be the Net Cost of New Entry used for such LDA in the Base Residual Auction for such Delivery Year.

iii) Procedure for ongoing review of Variable Resource Requirement Curve shape.

Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall perform a review of the shape of the Variable Resource Requirement Curve, as established by the requirements of the foregoing subsection. Such analysis shall be based on simulation of market conditions to quantify the ability of the market to invest in new Capacity Resources and to meet the applicable reliability requirements on a probabilistic basis. Based on the results of such review, PJM shall prepare a recommendation to either modify or retain the existing Variable Resource Requirement Curve shape. The Office of the Interconnection shall post the recommendation and shall review the recommendation through the stakeholder process to solicit stakeholder input. If a modification of the Variable Resource Requirement Curve shape is recommended, the following process shall be followed:

- A) If the Office of the Interconnection determines that the Variable Resource Requirement Curve shape should be modified, Staff of the Office of the Interconnection shall propose a new Variable Resource Requirement Curve shape on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- B) The PJM Members shall review the proposed modification to the Variable Resource Requirement Curve shape.
- C) The PJM Members shall either vote to (i) endorse the proposed modification, (ii) propose alternate modifications or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- D) The PJM Board of Managers shall consider a proposed modification to the Variable Resource Requirement Curve shape, and the Office of the Interconnection shall file any approved modified Variable Resource Requirement Curve shape with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

## iv) Cost of New Entry

- A) For the Incremental Auctions for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Cost of New Entry for the PJM Region and for each LDA shall be the respective value used in the Base Residual Auction for such Delivery Year and LDA. For the Delivery Year commencing on June 1, 2018, and continuing thereafter unless and until changed pursuant to subsection (B) below, the Cost of New Entry for the PJM Region shall be the average of the Cost of New Entry for each CONE Area listed in this section as adjusted pursuant to subsection (a)(iv)(B).

<b>Geographic Location Within the PJM Region Encompassing These Zones</b>	<b>Cost of New Entry in \$/MW-Year</b>
PS, JCP&L, AE, PECO, DPL, RECO (“CONE Area 1”)	132,200
BGE, PEPCO (“CONE Area 2”)	130,300
AEP, Dayton, ComEd, APS, DQL, ATSI, DEOK, EKPC, Dominion (“CONE Area 3”)	128,900
PPL, MetEd, Penelec (“CONE Area 4”)	130,300

- B) Beginning with the 2019/2020 Delivery Year, the CONE for each CONE Area shall be adjusted to reflect changes in generating plant construction costs based on changes in the Applicable United States Bureau of Labor Statistics (“BLS”) Composite Index, in accordance with the following:

(1) The Applicable BLS Composite Index for any Delivery Year and CONE Area shall be the most recently published twelve-month change, at the time CONE values are required to be posted for the Base Residual Auction for such Delivery Year, in a composite of the BLS Quarterly Census of Employment and Wages for Utility System Construction (weighted 20%), the BLS Producer Price Index for Construction Materials and Components (weighted 50%), and the BLS Producer Price Index Turbines and Turbine Generator Sets (weighted 30%), as each such index is further specified for each CONE Area in the PJM Manuals.

(2) The CONE in a CONE Area shall be adjusted prior to the Base Residual Auction for each Delivery Year by applying the Applicable BLS Composite Index for such CONE Area to the Benchmark CONE for such CONE Area.

(3) The Benchmark CONE for a CONE Area shall be the CONE used for such CONE Area in the Base Residual Auction for the prior Delivery Year (provided, however that the Gross CONE values stated in subsection (a)(iv)(A) above shall be the Benchmark

CONE values for the 2018/2019 Delivery Year to which the Applicable BLS Composite Index shall be applied to determine the CONE for subsequent Delivery Years).

(4) Notwithstanding the foregoing, CONE values for any CONE Area for any Delivery Year shall be subject to amendment pursuant to appropriate filings with FERC under the Federal Power Act, including, without limitation, any filings resulting from the process described in section 5.10(a)(vi)(C) or any filing to establish new or revised CONE Areas.

v) Net Energy and Ancillary Services Revenue Offset

- A) The Office of the Interconnection shall determine the Net Energy and Ancillary Services Revenue Offset each year for the PJM Region as (A) the annual average of the revenues that would have been received by the Reference Resource from the PJM energy markets during a period of three consecutive calendar years preceding the time of the determination, based on (1) the heat rate and other characteristics of such Reference Resource; (2) fuel prices reported during such period at an appropriate pricing point for the PJM Region with a fuel transmission adder appropriate for such region, as set forth in the PJM Manuals, assumed variable operation and maintenance expenses for such resource of \$6.47 per MWh, and actual PJM hourly average Locational Marginal Prices recorded in the PJM Region during such period; and (3) an assumption that the Reference Resource would be dispatched for both the Day-Ahead and Real-Time Energy Markets on a Peak-Hour Dispatch basis; plus (B) ancillary service revenues of \$2,199 per MW-year.
- B) For the Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the Office of the Interconnection will employ for purposes of the Variable Resource Requirement Curves for such Delivery Years the same calculations of the sub-regional Net Energy and Ancillary Services Revenue Offsets that were used in the Base Residual Auctions for such Delivery year and sub-region. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection also shall determine a Net Energy and Ancillary Service Revenue Offset each year for each Zone, using the same procedures and methods as set forth in the previous subsection; provided, however, that: (1) the average hourly LMPs for such Zone shall be used in place of the PJM Region average hourly LMPs; (2) if such Zone was not integrated into the PJM Region for the entire applicable period, then the offset shall be calculated using only those whole calendar years during which the Zone was integrated; and (3) a posted fuel pricing point in such Zone, if available, and (if such pricing point is not available in such Zone) a fuel transmission adder appropriate

to such Zone from an appropriate PJM Region pricing point shall be used for each such Zone.

- Curve
- vi) Process for Establishing Parameters of Variable Resource Requirement
- A) The parameters of the Variable Resource Requirement Curve will be established prior to the conduct of the Base Residual Auction for a Delivery Year and will be used for such Base Residual Auction.
- B) The Office of the Interconnection shall determine the PJM Region Reliability Requirement and the Locational Deliverability Area Reliability Requirement for each Locational Deliverability Area for which a Variable Resource Requirement Curve has been established for such Base Residual Auction on or before February 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values will be applied, in accordance with the Reliability Assurance Agreement.
- C) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the calculation of the Cost of New Entry for each CONE Area.
- 1) If the Office of the Interconnection determines that the Cost of New Entry values should be modified, the Staff of the Office of the Interconnection shall propose new Cost of New Entry values on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 2) The PJM Members shall review the proposed values.
  - 3) The PJM Members shall either vote to (i) endorse the proposed values, (ii) propose alternate values or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 4) The PJM Board of Managers shall consider Cost of New Entry values, and the Office of the Interconnection shall file any approved modified Cost of New Entry values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.



- D) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the methodology set forth in this Attachment for determining the Net Energy and Ancillary Services Revenue Offset for the PJM Region and for each Zone.
- 1) If the Office of the Interconnection determines that the Net Energy and Ancillary Services Revenue Offset methodology should be modified, Staff of the Office of the Interconnection shall propose a new Net Energy and Ancillary Services Revenue Offset methodology on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.
  - 2) The PJM Members shall review the proposed methodology.
  - 3) The PJM Members shall either vote to (i) endorse the proposed methodology, (ii) propose an alternate methodology or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.
  - 4) The PJM Board of Managers shall consider the Net Revenue Offset methodology, and the Office of the Interconnection shall file any approved modified Net Energy and Ancillary Services Revenue Offset values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

b) Locational Requirements

The Office of Interconnection shall establish locational requirements prior to the Base Residual Auction to quantify the amount of Unforced Capacity that must be committed in each Locational Deliverability Area, in accordance with the PJM Reliability Assurance Agreement.

c) Resource Requirements and Constraints

Prior to the Base Residual Auction and each Incremental Auction for the Delivery Years starting on June 1, 2014 and ending May 31, 2017, the Office of the Interconnection shall establish the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and

Incremental Auctions for the 2017/2018 Delivery Year, the Office of the Interconnection shall establish the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and Incremental Auctions for 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year.

d) Preliminary PJM Region Peak Load Forecast for the Delivery Year

The Office of the Interconnection shall establish the Preliminary PJM Region Load Forecast for the Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the Base Residual Auction for such Delivery Year.

e) Updated PJM Region Peak Load Forecasts for Incremental Auctions

The Office of the Interconnection shall establish the updated PJM Region Peak Load Forecast for a Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the First, Second, and Third Incremental Auction for such Delivery Year.

## 5.11 Posting of Information Relevant to the RPM Auctions

a) In accordance with the schedule provided in the PJM Manuals, PJM will post the following information for a Delivery Year prior to conducting the Base Residual Auction for such Delivery Year:

i) The Preliminary PJM Region Peak Load Forecast (for the PJM Region, and allocated to each Zone);

ii) The PJM Region Installed Reserve Margin, the Pool-wide average EFORd, the Forecast Pool Requirement, *and all applicable Capacity Import Limits*;

iii) For the Delivery Years through May 31, 2018, the Demand Resource Factor;

iv) The PJM Region Reliability Requirement, and the Variable Resource Requirement Curve for the PJM Region, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices;

v) The Locational Deliverability Area Reliability Requirement and the Variable Resource Requirement Curve for each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices, and the CETO and CETL values for all Locational Deliverability Areas;

vi) For the Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year; and for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year;

vii) Any Transmission Upgrades that are expected to be in service for such Delivery Year, provided that a Transmission Upgrade that is Backbone Transmission satisfies the project development milestones set forth in section 5.11A;

viii) The bidding window time schedule for each auction to be conducted for such Delivery Year; and

ix) The Net Energy and Ancillary Services Revenue Offset values for the PJM Region for use in the Variable Resource Requirement Curves for the PJM Region and each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction.

b) In addition to the information required to be posted by subsection (a), PJM will post for a Delivery Year, at least sixty (60) days prior to conducting the Base Residual Auction for such Delivery Year, the aggregate megawatt quantity of, for the PJM Region, all Self-Supply Exemption requests under section 5.14(h), all Competitive Entry Exemption requests under section 5.14(h), and such exemptions granted in each such category, and to the extent PJM has made any such determination, notice that PJM has determined that one or more state-sponsored or state-mandated procurement processes is Competitive and Non-Discriminatory pursuant to section 5.14(h).

c) The information listed in (a) will be posted and applicable for the First, Second, Third, and Conditional Incremental Auctions for such Delivery Year, except to the extent updated or adjusted as required by other provisions of this Tariff.

d) In accordance with the schedule provided in the PJM Manuals, PJM will post the Final PJM Region Peak Load Forecast and the allocation to each zone of the obligation resulting from such final forecast, following the completion of the final Incremental Auction (including any Conditional Incremental Auction) conducted for such Delivery Year;

e) In accordance with the schedule provided in the PJM Manuals, PJM will advise owners of Generation Capacity Resources of the updated EFORd values for such Generation Capacity Resources prior to the conduct of the Third Incremental Auction for such Delivery Year.

f) After conducting the Reliability Pricing Model Auctions, PJM will post the results of each auction as soon thereafter as possible, including any adjustments to PJM Region or LDA Reliability Requirements to reflect Price Responsive Demand with a PRD Reservation Price equal to or less than the applicable Base Residual Auction clearing price. The posted results shall include graphical supply curves that are (a) provided for the entire PJM Region, (b) provided for any Locational Deliverability Area for which there are four (4) or more suppliers, and (c) developed using a formulaic approach to smooth the curves using a statistical technique that fits a smooth curve to the underlying supply curve data while ensuring that the point of intersection between supply and demand curves is at the market clearing price. At such time, PJM also shall post the aggregate megawatt quantity requested and granted in the Self-Supply and Competitive Entry Exemption categories in the EMAAC, MAAC and Rest of RTO LDAs/regions; the aggregate megawatt quantity cleared in the RPM Auction for Self-Supply and Competitive Entry Exemption categories; and the aggregate megawatt quantity of Self-Supply and Competitive Entry Exemptions requested and granted for any LDA other than those specified in the preceding clause if the LDA has more than four new generation projects in the generation interconnection queue that could have offered into the applicable RPM Auction and the LDA had a separate VRR Curve posted for the applicable RPM Auction.

If PJM discovers an error in the initial posting of auction results for a particular Reliability Pricing Model Auction, it shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the fifth business day following the initial publication of the results of the auction. After this initial notification, if PJM determines it is necessary to post modified results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the seventh business day following the initial publication of the results of the auction. Thereafter, PJM must post on its Web site any corrected auction results by no later than 5:00 p.m. of the tenth business day following the initial publication of the results of the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

## 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 and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement.

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.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement

- For Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;
- 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) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction 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.

(ii) When 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD. 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.

(iii) When 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 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, plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD; 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.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) 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 in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years 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), (ii), or (iii) 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) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such

auctions, 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 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 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) Conditional Incremental Auction

For each 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a 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.

## 5.14 Clearing Prices and Charges

### a) Capacity Resource Clearing Prices

For each Base Residual Auction and Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. The Capacity Resource Clearing Price for each LDA will be the marginal value of system capacity for the PJM Region, without considering locational constraints, adjusted as necessary by any applicable Locational Price Adders, Annual Resource Price Adders, Extended Summer Resource Price Adders, Limited Resource Price Decrements, Sub-Annual Resource Price Decrements, Base Capacity Demand Resource Price Decrements, and Base Capacity Resource Price Decrements, all as determined by the Office of the Interconnection based on the optimization algorithm. If a Capacity Resource is located in more than one Locational Deliverability Area, it shall be paid the highest Locational Price Adder in any applicable LDA in which the Sell Offer for such Capacity Resource cleared. The Annual Resource Price Adder is applicable for Annual Resources only. The Extended Summer Resource Price Adder is applicable for Annual Resources and Extended Summer Demand Resources.

### b) Resource Make-Whole Payments

If a Sell Offer specifies a minimum block, and only a portion of such block is needed to clear the market in a Base Residual or Incremental Auction, the MW portion of such Sell Offer needed to clear the market shall clear, and such Sell Offer shall set the marginal value of system capacity. In addition, the Capacity Market Seller shall receive a Resource Make-Whole Payment equal to the Capacity Resource Clearing Price in such auction times the difference between the Sell Offer's minimum block MW quantity and the Sell Offer's cleared MW quantity. The cost for any such Resource Make-Whole Payments required in a Base Residual Auction or Incremental Auction for adjustment of prior capacity commitments shall be collected pro rata from all LSEs in the LDA in which such payments were made, based on their Daily Unforced Capacity Obligations. The cost for any such Resource Make-Whole Payments required in an Incremental Auction for capacity replacement shall be collected from all Capacity Market Buyers in the LDA in which such payments were made, on a pro-rata basis based on the MWs purchased in such auction.

### c) New Entry Price Adjustment

A Capacity Market Seller that submits a Sell Offer based on a Planned Generation Capacity Resource that clears in the BRA for a Delivery Year may, at its election, submit Sell Offers with a New Entry Price Adjustment in the BRAs for the two immediately succeeding Delivery Years if:

1. Such Capacity Market Seller provides notice of such election at the time it submits its Sell Offer for such resource in the BRA for the first Delivery Year for which such resource is eligible to be considered a Planned Generation Capacity Resource. When the Capacity Market Seller provides notice of such election, it must specify whether its Sell Offer is contingent upon qualifying for the New Entry Price Adjustment. The Office of the

Interconnection shall not clear such contingent Sell Offer if it does not qualify for the New Entry Price Adjustment.

2. All or any part of a Sell Offer from the Planned Generation Capacity Resource submitted in accordance with section 5.14(c)(1) is the marginal Sell Offer that sets the Capacity Resource Clearing Price for the LDA.

3. Acceptance of all or any part of a Sell Offer that meets the conditions in section 5.14(c)(1)-(2) in the BRA increases the total Unforced Capacity committed in the BRA (including any minimum block quantity) for the LDA in which such Resource will be located from a megawatt quantity below the LDA Reliability Requirement, minus the Short Term Resource Procurement Target, to a megawatt quantity at or above a megawatt quantity at the price-quantity point on the VRR Curve at which the price is 0.40 times the applicable Net CONE divided by (one minus the pool-wide average EFORd).

4. Such Capacity Market Seller submits Sell Offers in the BRA for the two immediately succeeding Delivery Years for the entire Unforced Capacity of such Generation Capacity Resource committed in the first BRA under section 5.14(c)(1)-(2) equal to the lesser of: A) the price in such seller's Sell Offer for the BRA in which such resource qualified as a Planned Generation Capacity Resource that satisfies the conditions in section 5.14(c)(1)-(3); or B) 0.90 times the Net CONE applicable in the first BRA in which such Planned Generation Capacity Resource meeting the conditions in section 5.14(c)(1)-(3) cleared, on an Unforced Capacity basis, for such LDA.

5. If the Sell Offer is submitted consistent with section 5.14(c)(1)-(4) the foregoing conditions, then:

- (i) in the first Delivery Year, the Resource sets the Capacity Resource Clearing Price for the LDA and all cleared resources in the LDA receive the Capacity Resource Clearing Price set by the Sell Offer as the marginal offer, in accordance with sections 5.12(a) and 5.14(a).
- (ii) in either of the subsequent two BRAs, if any part of the Sell Offer from the Resource clears, it shall receive the Capacity Resource Clearing Price for such LDA for its cleared capacity and for any additional minimum block quantity pursuant to section 5.14(b); or
- (iii) if the Resource does not clear, it shall be deemed resubmitted at the highest price per MW-day at which the megawatt quantity of Unforced Capacity of such Resource that cleared the first-year BRA will clear the subsequent-year BRA pursuant to the optimization algorithm described in section 5.12(a) of this Attachment, and
- (iv) the resource with its Sell Offer submitted shall clear and shall be committed to the PJM Region in the amount cleared, plus any additional minimum-block quantity from its Sell Offer for such Delivery Year, but such additional amount shall be no greater than the portion of a minimum-

block quantity, if any, from its first-year Sell Offer satisfying section 5.14(c)(1)-(3) that is entitled to compensation pursuant to section 5.14(b) of this Attachment; and

- (v) the Capacity Resource Clearing Price, and the resources cleared, shall be re-determined to reflect the resubmitted Sell Offer. In such case, the Resource for which the Sell Offer is submitted pursuant to section 5.14(c)(1)-(4) shall be paid for the entire committed quantity at the Sell Offer price that it initially submitted in such subsequent BRA. The difference between such Sell Offer price and the Capacity Resource Clearing Price (as well as any difference between the cleared quantity and the committed quantity), will be treated as a Resource Make-Whole Payment in accordance with Section 5.14(b). Other capacity resources that clear the BRA in such LDA receive the Capacity Resource Clearing Price as determined in Section 5.14(a).

6. The failure to submit a Sell Offer consistent with Section 5.14(c)(i)-(iii) in the BRA for Delivery Year 3 shall not retroactively revoke the New Entry Price Adjustment for Delivery Year 2. However, the failure to submit a Sell Offer consistent with section 5.14(c)(4) in the BRA for Delivery Year 2 shall make the resource ineligible for the New Entry Pricing Adjustment for Delivery Years 2 and 3.

7. For each Delivery Year that the foregoing conditions are satisfied, the Office of the Interconnection shall maintain and employ in the auction clearing for such LDA a separate VRR Curve, notwithstanding the outcome of the test referenced in Section 5.10(a)(ii) of this Attachment.

8. On or before August 1, 2012, PJM shall file with FERC under FPA section 205, as determined necessary by PJM following a stakeholder process, tariff changes to establish a long-term auction process as a not unduly discriminatory means to provide adequate long-term revenue assurances to support new entry, as a supplement to or replacement of this New Entry Price Adjustment.

d) Qualifying Transmission Upgrade Payments

A Capacity Market Seller that submitted a Sell Offer based on a Qualifying Transmission Upgrade that clears in the Base Residual Auction shall receive a payment equal to the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA into which the Qualifying Transmission Upgrade is to increase Capacity Emergency Transfer Limit, less the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA from which the upgrade was to provide such increased CETL, multiplied by the megawatt quantity of increased CETL cleared from such Sell Offer. Such payments shall be reflected in the Locational Price Adder determined as part of the Final Zonal Capacity Price for the Zone associated with such LDAs, and shall be funded through a reduction in the Capacity Transfer Rights allocated to Load-Serving Entities under section 5.15, as set forth in that section. PJM Settlement shall be the Counterparty to any cleared capacity transaction resulting from a Sell Offer based on a Qualifying Transmission Upgrade.

e) Locational Reliability Charge

In accordance with the Reliability Assurance Agreement, each LSE shall incur a Locational Reliability Charge (subject to certain offsets and other adjustments as described in sections 5.13, 5.14A, 5.14B, 5.14C, 5.14D, and 5.15) equal to such LSE's Daily Unforced Capacity Obligation in a Zone during such Delivery Year multiplied by the applicable Final Zonal Capacity Price in such Zone. PJMSettlement shall be the Counterparty to the LSEs' obligations to pay, and payments of, Locational Reliability Charges.

f) The Office of the Interconnection shall determine Zonal Capacity Prices in accordance with the following, based on the optimization algorithm:

i) The Office of the Interconnection shall calculate and post the Preliminary Zonal Capacity Prices for each Delivery Year following the Base Residual Auction for such Delivery Year. The Preliminary Zonal Capacity Price for each Zone shall be the sum of: 1) the marginal value of system capacity for the PJM Region, without considering locational constraints; 2) the Locational Price Adder, if any, for the LDA in which such Zone is located; provided however, that if the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA; 3) an adjustment, if required, to account for adders paid to Annual Resources and Extended Summer Demand Resources in the LDA for which the zone is located; 4) an adjustment, if required, to account for Resource Make-Whole Payments; and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits, all as determined in accordance with the optimization algorithm.

ii) The Office of the Interconnection shall calculate and post the Adjusted Zonal Capacity Price following each Incremental Auction. The Adjusted Zonal Capacity Price for each Zone shall equal the sum of: (1) the average marginal value of system capacity weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (2) the average Locational Price Adder weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (3) an adjustment, if required, to account for adders paid to Annual Resources and Extended Summer Demand Resources for all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (4) an adjustment, if required, to account for Resource Make-Whole Payments for all actions previously conducted (excluding any Resource Make-Whole Payments to be charged to the buyers of replacement capacity); and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits. The Adjusted Zonal Capacity Price may decrease if Unforced Capacity is decommitted or the Resource Clearing Price decreases in an Incremental Auction.

iii) The Office of the Interconnection shall calculate and post the Final Zonal Capacity Price for each Delivery Year after the final auction is held for such Delivery Year, as set forth above. The Final Zonal Capacity Price for each Zone shall equal the Adjusted Zonal Capacity Price, as further adjusted to reflect any decreases in the Nominated Demand Resource



Value of any existing Demand Resource cleared in the Base Residual Auction and Second Incremental Auction.

g) Resource Substitution Charge

Each Capacity Market Buyer in an Incremental Auction securing replacement capacity shall pay a Resource Substitution Charge equal to the Capacity Resource Clearing Price resulting from such auction multiplied by the megawatt quantity of Unforced Capacity purchased by such Market Buyer in such auction.

h) Minimum Offer Price Rule for Certain Generation Capacity Resources

(1) *General Rule.* Any Sell Offer submitted in any RPM Auction for any Delivery Year based on a MOPR Screened Generation Resource shall have an offer price no lower than the MOPR Floor Offer Price for the period specified in this subsection (h), unless the Capacity Market Seller has obtained a Self-Supply Exemption, a Competitive Entry Exemption, or a *Unit-Specific Exception* with respect to such MOPR Screened Generation Resource in such auction prior to the submission of such offer, in accordance with the provisions of this subsection. Nothing in subsection (c) of this section 5.14 shall be read to excuse compliance of any Sell Offer with the requirements of this subsection (h).

(2) *Applicability.* A MOPR Screened Generation Resource shall be any Generation Capacity Resource, and any uprate to a Generation Capacity Resource that is being, or has been, modified to increase the number of megawatts of available installed capacity thereof by 20 MW or more, based on a combustion turbine, combined cycle, or integrated gasification combined cycle generating plant (including Repowering of an existing plant whenever the repowered plant utilizes combustion turbine, combined cycle, or integrated gasification combined cycle *technology*) with an installed capacity rating, combined for all units comprising such resource at a single point of interconnection to the Transmission System, of no less than 20 MW; provided, however, that a MOPR Screened Generation Resource shall not include: (i) the Installed Capacity equivalent (measured as of the time of clearing) of any of a resource's Unforced Capacity that has cleared any RPM Auction conducted prior to February 1, 2013 or an uprate of such resource to the extent that the developer or owner of the uprate timely submitted a request for, and PJM issued, an offer floor pursuant to the unit-specific exception process of this subsection (h) before the start of the commencement of the Base Residual Auction for the 2016/2017 Delivery Year and the capacity associated with the uprate clears that auction; (ii) any unit primarily fueled with landfill gas; (iii) any cogeneration unit that is certified or self-certified as a Qualifying Facility (as defined in Part 292 of FERC's regulations), where the Capacity Market Seller is the owner of the Qualifying Facility or has contracted for the Unforced Capacity of such facility and the Unforced Capacity of the unit is no larger than approximately all of the Unforced Capacity Obligation of the host load, and all Unforced Capacity of the unit is used to meet the Unforced Capacity Obligation of the host load. A MOPR Screened Generation Resource shall include all Generation Capacity Resources located in the PJM Region that meet the foregoing criteria, and all Generation Capacity Resources located outside the PJM Region (where such Sell Offer is based solely on such resource) that entered commercial service on or after January 1, 2013, that meet the foregoing criteria and that require sufficient transmission

investment for delivery to the PJM Region to indicate a long-term commitment to providing capacity to the PJM Region.

(3) *MOPR Floor Offer Price.* The MOPR Floor Offer Price shall be 100% of the Net Asset Class Cost of New Entry for the relevant generator type and location, as determined hereunder. The gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be, for purposes of the *2018/2019 Delivery Year and subsequent Delivery Years*, the values indicated in the table below for each CONE Area for a combustion turbine generator (“CT”), a combined cycle generator (“CC”), and an integrated gasification combined cycle generator (“IGCC”), respectively, and shall be adjusted for subsequent Delivery Years in accordance with subsection (h)(3)(i) below. *For purposes of Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the MOPR Floor Offer Price shall be the same as that used in the Base Residual Auction for such Delivery Year.* The estimated energy and ancillary service revenues for each type of plant shall be determined as described in subsection (h)(3)(ii) below.

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4
CT \$/MW-yr	132,200	130,300	128,900	130,300
CC \$/MW-yr	185,700	176,000	172,600	179,400
IGCC \$/MW-yr	582,042	558,486	547,240	537,306

i) Commencing with the Delivery Year that begins on June 1, 2019, the gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be adjusted to reflect changes in generating plant construction costs in the same manner as set forth for the cost of new entry in section 5.10(a)(iv)(B), provided, however, *that the Applicable BLS Composite Index used for CC plants shall be calculated from the three indices referenced in that section but weighted 25% for the wages index, 60% for the construction materials index, and 15% for the turbines index, and provided further that nothing herein shall preclude the Office of the Interconnection from filing to change the Net Asset Class Cost of New Entry for any Delivery Year pursuant to appropriate filings with FERC under the Federal Power Act.*

ii) For purposes of this provision, the net energy and ancillary services revenue estimate for a combustion turbine generator shall be that determined by section 5.10(a)(v)(A) of this Attachment DD, provided that the energy revenue estimate for each CONE Area shall be based on the Zone within such CONE Area that has the highest energy revenue estimate calculated under the methodology in that subsection. The net energy and ancillary services revenue estimate for a combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator in the previous sentence, except that the heat rate assumed for the combined cycle resource shall be 6.722 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$3.23 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3198 per MW-year. The net energy and ancillary services revenue estimate for an integrated gasification combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator above,

except that the heat rate assumed for the combined cycle resource shall be 8.7 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$7.77 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3,198 per MW-year.

(4) Duration. The MOPR Floor Offer Price shall apply to any Sell Offer based on a MOPR Screened Generation Resource (to the extent an exemption has not been obtained for such resource under this subsection) until *(and including)* the *first Delivery Year* for which a Sell Offer based on the non-exempt portion of such resource has cleared an RPM Auction.

(5) Effect of Exemption or Exception. To the extent a Sell Offer in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, either a Competitive Entry Exemption or a Self-Supply Exemption, such offer (to the extent of such exemption) may include an offer price below the MOPR Floor Offer Price (including, without limitation, an offer price of zero or other indication of intent to clear regardless of price). *To the extent a Sell Offer in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, a Unit-Specific Exception, such offer (to the extent of such exception) may include an offer price below the MOPR Floor Offer Price but no lower than the minimum offer price determined in such exception process.* The Installed Capacity equivalent of any MOPR Screened Generation Resource's Unforced Capacity that has both obtained such an exemption *or exception* and cleared the RPM Auction for which it obtained such exemption *or exception* shall not be subject to a MOPR Floor Offer Price in any subsequent RPM Auction, except as provided in subsection (h)(10) hereof.

(6) Self-Supply Exemption. A Capacity Market Seller that is a Self-Supply LSE may qualify its MOPR Screened Generation Resource in any RPM Auction for any Delivery Year for a Self-Supply Exemption if the MOPR Screened Generation Resource satisfies the criteria specified below:

i) Cost and revenue criteria. The costs and revenues associated with a MOPR Screened Generation Resource for which a Self-Supply LSE seeks a Self-Supply Exemption may permissibly reflect: (A) payments, concessions, rebates, subsidies, or incentives designed to incent or promote, or participation in a program, contract, or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (B) payments, concessions, rebates, subsidies or incentives from a county or other local government authority designed to incent, or participation in a program, contract or other arrangement established by a county or other local governmental authority utilizing eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; (C) revenues received by the Self-Supply LSE attributable to the inclusion of costs of the MOPR Screened Generation Resource in such LSE's regulated retail rates where such LSE is a *Vertically Integrated Utility* and the MOPR Screened Generation Resource is planned

consistent with such LSE's most recent integrated resource plan found reasonable by the RERRA to meet the needs of its customers; and (D) payments to the Self-Supply LSE (such as retail rate recovery) traditionally associated with revenues and costs of Public Power Entities (or joint action of multiple Public Power Entities); revenues to a Public Power Entity from its contracts having a term of one year or more with its members or customers (including wholesale power contracts between an electric cooperative and its members); or cost or revenue advantages related to a longstanding business model employed by the Self-Supply LSE, such as its financial condition, tax status, access to capital, or other similar conditions affecting the Self-Supply LSE's costs and revenues. A Self-Supply Exemption shall not be permitted to the extent that the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, has any formal or informal agreements or arrangements to seek, recover, accept or receive: (E) any material payments, concessions, rebates, or subsidies, connected to the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource, not described by (A) through (D) of this section; or (F) other support through contracts having a term of one year or more obtained in any procurement process sponsored or mandated by any state legislature or agency connected with the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource. Any cost and revenue advantages described by (A) through (D) of this subsection that are material to the cost of the MOPR Screened Generation Resource and that are irregular or anomalous, that do not reflect arms-length transactions, or that are not in the ordinary course of the Self-Supply LSE's business, shall disqualify application of the Self-Supply Exemption unless the Self-Supply LSE demonstrates in the exemption process provided hereunder that such costs and revenues are consistent with the overall objectives of the Self-Supply Exemption.

ii) **Owned and Contracted Capacity.** To qualify for the Self-Supply Exemption, the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, must demonstrate that the MOPR Screened Generation Resource is included in such LSE's Owned and Contracted Capacity and that its Owned and Contracted Capacity meets the criteria outlined below after the addition of such MOPR Screened Generation Resource.

iii) **Maximum Net Short Position.** If the excess, if any, of the Self-Supply LSE's Estimated Capacity Obligation above its Owned and Contracted Capacity ("Net Short") is less than the amount of Unforced Capacity specified in or calculated under the table below for all relevant areas based on the specified type of LSE, then this exemption criterion is satisfied. For this purpose, the Net Short position shall be calculated for any Self-Supply LSE requesting this exemption for the PJM Region and for each LDA specified in the table below in which the MOPR Screened Generation Resource is located (including through nesting of LDAs) to the extent the Self-Supply LSE has an Estimated Capacity Obligation in such LDA. If the Self-Supply LSE does not have an Estimated Capacity Obligation in an evaluated LDA, then the Self-Supply LSE is deemed to satisfy the test for that LDA.

Type of Self-Supply LSE	Maximum Net Short Position (UCAP MW, measured at RTO, MAAC, SWMAAC and EMAAC unless otherwise specified)
Single Customer Entity	150 MW

Public Power Entity	1000 MW
Multi-state Public Power Entity*	1000 MW in SWMAAC, EMAAC, or MAAC LDAs and 1800 MW RTO
Vertically Integrated Utility	20% of LSE's Reliability Requirement

\*A Multi-state Public Power Entity shall not have more than 90% of its total load in any one state.

iv) **Maximum Net Long Position.** If the excess, if any, of the Self-Supply LSE's Owned and Contracted Capacity for the PJM Region above its Estimated Capacity Obligation for the PJM Region ("Net Long"), is less than the amount of Unforced Capacity specified in or calculated under the table below, then this exemption criterion is satisfied:

Self-Supply LSE Total Estimated Capacity Obligation in the PJM Region (UCAP MW)	Maximum Net Long Position (UCAP MW)
Less than 500	75 MW
Greater than or equal to 500 and less than 5,000	15% of LSE's Estimated Capacity Obligation
Greater than or equal to 5,000 and less than 15,000	750 MW
Greater than or equal to 15,000 and less than 25,000	1,000 MW
Greater than or equal to 25,000	4% of LSE's Estimated Capacity Obligation capped at 1300 MWs

If the MOPR Screened Generation Resource causes the Self-Supply LSE's Net Long Position to exceed the applicable threshold stated above, the MOPR Floor Offer Price shall apply, for the Delivery Year in which such threshold is exceeded, only to the quantity of Unforced Capacity of such resource that exceeds such threshold. In such event, such Unforced Capacity of such resource shall be subject to the MOPR Floor Offer Price for the period specified in subsection (h)(4) hereof; provided however, that any such Unforced Capacity that did not qualify for such exemption for such Delivery Year may qualify for such exemption in any RPM Auction for a future Delivery Year to the extent the Self-Supply LSE's future load growth accommodates the resource under the Net Long Position criteria.

v) *Beginning with the Delivery Year that commences June 1, 2020, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the Maximum Net Short and Net Long positions, as required by the foregoing subsection. Such review may include, without limitation, analyses under various appropriate scenarios of the minimum net short quantities at which the benefit to an LSE of a clearing price reduction for its capacity purchases from the RPM Auction outweighs the cost to the LSE of a new generating unit that is offered at an uneconomic price, and may, to the extent appropriate, reasonably balance the need to protect the market with the need to accommodate the normal business operations of Self-Supply LSEs. Based on the results of such review, PJM shall propose either to modify or retain the existing Maximum Net Short and Net Long positions. The Office of the Interconnection shall post publicly and solicit stakeholder comment regarding the proposal. If, as a result of this process, changes to the Maximum Net Short and/or Net Long*

*positions are proposed, the Office of the Interconnection shall file such modified Maximum Net Short and/or Net Long positions with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.*

vi) Officer Certification. The Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller's decision to submit a Sell Offer into the RPM Auction for the MOPR Screened Generation Resource and seek an exemption from the MOPR Floor Offer Price for such resource, and to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection in support of its exemption request is true and correct and the MOPR Screened Generation Resource will be Owned and Contracted Capacity for the purpose of self-supply for the benefit of the Self-Supply LSE; (B) the Self-Supply LSE has disclosed all material facts relevant to the exemption request; and (C) the Capacity Market Seller satisfies the criteria for the exemption.

vii) For purposes of the Self-Supply Exemption:

(A) "Self-Supply LSE" means the following types of Load Serving Entity, which operate under long-standing business models: Municipal/Cooperative Entity, Single Customer Entity, or Vertically Integrated Utility.

(B) "Municipal/Cooperative Entity" means cooperative and municipal utilities, including public power supply entities comprised of either or both of the same, and joint action agencies.

(C) "Vertically Integrated Utility" means a utility that owns generation, includes such generation in its regulated rates, and earns a regulated return on its investment in such generation.

(D) "Single Customer Entity" means an LSE that serves at retail only customers that are under common control with such LSE, where such control means holding 51% or more of the voting securities or voting interests of the LSE and all its retail customers.

(E) All capacity calculations shall be on an Unforced Capacity basis.

(F) Estimated Capacity Obligations and Owned and Contracted Capacity shall be measured on a three-year average basis for the three years starting with the first day of the Delivery Year associated with the RPM Auction for which the exemption is being sought ("MOPR Exemption Measurement Period"). Such measurements shall be verified by PJM using the latest available data that PJM uses to determine capacity obligations.

(G) The Self-Supply LSE's Estimated Capacity Obligation shall be the average, for the three Delivery Years of the MOPR Exemption Measurement Period, of

the Self-Supply LSE's estimated share of the most recent available Zonal Peak Load Forecast for each such Delivery Year for each Zone in which the Self-Supply LSE will serve load during such Delivery Year, times the Forecast Pool Requirement established for the first such Delivery Year, shall be stated on an Unforced Capacity basis. The Self-Supply LSE's share of such load shall be determined by the ratio of: (1) the peak load contributions, from the most recent summer peak for which data is available at the time of the exemption request, of the customers or areas within each Zone for which such LSE will have load-serving responsibility during the first Delivery Year of the MOPR Exemption Measurement Period to (2) the weather-normalized summer peak load of such Zone for the same summer peak period addressed in the previous clause. *Notwithstanding the foregoing, solely in the case of any Self-Supply LSE that demonstrates to the Office of the Interconnection that its annual peak load occurs in the winter, such LSE's Estimated Capacity Obligation determined solely for the purposes of this subsection 5.14(h) shall be based on its winter peak.* Once submitted, an exemption request shall not be subject to change due to later revisions to the PJM load forecasts for such Delivery Years. The Self-Supply LSE's Estimated Capacity Obligation shall be limited to the LSE's firm obligations to serve specific identifiable customers or groups of customers including native load obligations and specific load obligations in effective contracts for which the term of the contract includes at least a portion of the Delivery Year associated with the RPM Auction for which the exemption is requested (and shall not include load that is speculative or load obligations that are not native load or customer specific); as well as retail loads of entities that directly (as through charges on a retail electric bill) or indirectly, contribute to the cost recovery of the MOPR Screened Generation Resource; provided, however, nothing herein shall require a Self-Supply LSE that is a joint owner of a MOPR Screened Generation Resource to aggregate its expected loads with the loads of any other joint owner for purposes of such Self-Supply LSE's exemption request.

(H) "Owned and Contracted Capacity" includes all of the Self-Supply LSE's qualified Capacity Resources, whether internal or external to PJM. For purposes of the Self-Supply Exemption, Owned and Contracted Capacity includes Generation Capacity Resources without regard to whether such resource has failed or could fail the Competitive and Non-Discriminatory procurement standard of the Competitive Entry Exemption. To qualify for a Self-Supply Entry exemption, the MOPR Screened Generation must be used by the Self-Supply LSE, meaning such Self-Supply LSE is the beneficial off-taker of such generation such that the owned or contracted for MOPR Screened Generation is for the Self-Supply LSE's use to supply its customer(s).

(I) If multiple entities will have an ownership or contractual share in, or are otherwise sponsoring, the MOPR Screened Generation Resource, the positions of each such entity will be measured and considered for a Self-Supply Exemption with respect to the individual Self-Supply LSE's ownership or contractual share of such resource.

(7) Competitive Entry Exemption. A Capacity Market Seller may qualify a MOPR Screened Generation Resource for a Competitive Entry Exemption in any RPM Auction for any Delivery Year if the Capacity Market Seller demonstrates that the MOPR Screened Generation Resource satisfies all of the following criteria:

i) No costs of the *MOPR Screened Generation Resource* are recovered from customers either directly or indirectly through a non-bypassable charge, *except in the event that Sections 5.14(h)(7)(ii) and (iii), to the extent either or both are applicable to such resource, are satisfied.*

ii) No costs of the *MOPR Screened Generation Resource* are supported through any contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes that are not Competitive and Non-Discriminatory. The Office of the Interconnection and the Market Monitoring Unit may deem a procurement process to be “Competitive and Non-Discriminatory” only if: (A) both new and existing resources may satisfy the requirements of the procurement; (B) the requirements of the procurement are fully objective and transparent; (C) the procurement terms do not restrict the type of capacity resources that may participate in and satisfy the requirements of the procurement; (D) the procurement terms do not include selection criteria that could give preference to new resources; and (E) the procurement terms do not use indirect means to discriminate against existing capacity, such as geographic constraints inconsistent with LDA import capabilities, unit technology or unit fuel requirements or unit heat-rate requirements, identity or nature of seller requirements, or requirements for new construction.

iii) The Capacity Market Seller does not have any formal or informal agreements or arrangements to seek, recover, accept or receive any (A) material payments, concessions, rebates, or subsidies directly or indirectly from any governmental entity connected with the construction, or clearing in any RPM Auction, of the *MOPR Screened Generation Resource*, or (B) other material support through contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes, connected to the construction, or clearing in any RPM Auction, of the *MOPR Screened Generation Resource*. These restrictions shall not include (C) payments (including payments in lieu of taxes), concessions, rebates, subsidies, or incentives designed to incent, or participation in a program, contract or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (D) payments, concessions, rebates, subsidies or incentives designed to incent, or participation in a program, contract or other arrangements from a county or other local governmental authority using eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; or (E) federal government production tax credits, investment tax credits, and similar tax advantages or incentives that are available to generators without regard to the geographic location of the generation.

iv) The Capacity Market Seller shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller’s decision to submit a Sell Offer into the RPM Auction for the *MOPR Screened Generation Resource* and seek an exemption from the *MOPR Floor Offer Price* for such resource, and, to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection to support its exemption is true and correct and the resource is being constructed or contracted for purposes of competitive entry by the Capacity Market Seller; (B) the Capacity Market Seller has disclosed all material facts



relevant to the request for the exemption; and (C) the exemption request satisfies the criteria for the exemption.

(8) Unit-Specific Exception. *A Capacity Market Seller intending to submit a Sell Offer in any RPM Auction below the MOPR Floor Offer Price for any Delivery Year based on a MOPR Screened Generation Resource may, at its election, submit a request for a Unit-Specific Exception in addition to, or in lieu of, a request for a Self-Supply Exemption or a Competitive Entry Exemption, for such MOPR Screened Generation Resource. A Sell Offer meeting the Unit-Specific Exception criteria in this subsection shall be permitted and shall not be re-set to the MOPR Floor Offer Price if the Capacity Market Seller obtains a determination from the Office of the Interconnection or the Commission, prior to the RPM Auction in which it seeks to submit the Sell Offer, that such Sell Offer is permissible because it is consistent with the competitive, cost-based, fixed, net cost of new entry were the resource to rely solely on revenues from PJM-administered markets. The following requirements shall apply to requests for such determinations:*

i) *The Capacity Market Seller shall submit a written request with all of the required documentation as described below and in the PJM Manuals. For such purpose, per subsection (h)(9)(i) below, the Office of the Interconnection shall post a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price expected to be established hereunder. If the MOPR Floor Offer Price subsequently established for the relevant Delivery Year is less than the Sell Offer, the Sell Offer shall be permitted and no exception shall be required.*

ii) *As more fully set forth in the PJM Manuals, the Capacity Market Seller must include in its request for an exception under this subsection documentation to support the fixed development, construction, operation, and maintenance costs of the MOPR Screened Generation Resource, as well as estimates of offsetting net revenues. Estimates of costs or revenues shall be supported at a level of detail comparable to the cost and revenue estimates used to support the Net Asset Class Cost of New Entry established under this section 5.14(h). As more fully set forth in the PJM Manuals, supporting documentation for project costs may include, as applicable and available, a complete project description; environmental permits; vendor quotes for plant or equipment; evidence of actual costs of recent comparable projects; bases for electric and gas interconnection costs and any cost contingencies; bases and support for property taxes, insurance, operations and maintenance (“O&M”) contractor costs, and other fixed O&M and administrative or general costs; financing documents for construction–period and permanent financing or evidence of recent debt costs of the seller for comparable investments; and the bases and support for the claimed capitalization ratio, rate of return, cost-recovery period, inflation rate, or other parameters used in financial modeling. Such documentation also shall identify and support any sunk costs that the Capacity Market Seller has reflected as a reduction to its Sell Offer. The request shall include a certification, signed by an officer of the Capacity Market Seller, that the claimed costs accurately reflect, in all material respects, the seller’s reasonably expected costs of new entry and that the request satisfies all standards for a Unit-Specific Exception hereunder. The request also shall identify all revenue sources relied upon in the Sell Offer to offset the claimed fixed costs, including, without limitation, long-term power supply contracts, tolling agreements, or tariffs on file with state regulatory agencies, and shall demonstrate that such offsetting revenues are consistent,*

*over a reasonable time period identified by the Capacity Market Seller, with the standard prescribed above. In making such demonstration, the Capacity Market Seller may rely upon forecasts of competitive electricity prices in the PJM Region based on well defined models that include fully documented estimates of future fuel prices, variable operation and maintenance expenses, energy demand, emissions allowance prices, and expected environmental or energy policies that affect the seller's forecast of electricity prices in such region, employing input data from sources readily available to the public. Documentation for net revenues also may include, as available and applicable, plant performance and capability information, including heat rate, start-up times and costs, forced outage rates, planned outage schedules, maintenance cycle, fuel costs and other variable operations and maintenance expenses, and ancillary service capabilities.*

*iii) A Sell Offer evaluated under the Unit-Specific Exception shall be permitted if the information provided reasonably demonstrates that the Sell Offer's competitive, cost-based, fixed, net cost of new entry is below the MOPR Floor Offer Price, based on competitive cost advantages relative to the costs implied by the MOPR Floor Offer Price, including, without limitation, competitive cost advantages resulting from the Capacity Market Seller's business model, financial condition, tax status, access to capital or other similar conditions affecting the applicant's costs, or based on net revenues that are reasonably demonstrated hereunder to be higher than those implied by the MOPR Floor Offer Price. Capacity Market Sellers shall be asked to demonstrate that claimed cost advantages or sources of net revenue that are irregular or anomalous, that do not reflect arm's-length transactions, or that are not in the ordinary course of the Capacity Market Seller's business are consistent with the standards of this subsection. Failure to adequately support such costs or revenues so as to enable the Office of the Interconnection to make the determination required in this section will result in denial of a Unit-Specific Exception hereunder by the Office of the Interconnection.*

(9) Exemption/Exception Process.

*i) The Office of the Interconnection shall post, by no later than one hundred fifty (150) days prior to the commencement of the offer period for an RPM Auction, a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price.*

*ii) The Capacity Market Seller must submit its request for a Unit-Specific Exception, Competitive Entry Exemption or a Self-Supply Exemption in writing simultaneously to the Market Monitoring Unit and the Office of Interconnection by no later than one hundred thirty five (135) days prior to the commencement of the offer period for the RPM Auction in which such seller seeks to submit its Sell Offer. The Capacity Market Seller shall include in its request a description of its MOPR Screened Generation Resource, the exemption or exception that the Capacity Market Seller is requesting, and all documentation necessary to demonstrate that the exemption or exception criteria are satisfied, including without limitation the applicable certification(s) specified in this subsection (h). In addition to the documentation identified herein and in the PJM Manuals, the Capacity Market Seller shall provide any additional supporting information reasonably requested by the Office of the Interconnection or the Market Monitoring Unit to evaluate the Sell Offer. Requests for additional documentation will not extend the deadline by which the Office of the Interconnection or the Market Monitoring Unit must provide their determinations of the exemption request. The Capacity Market Seller*

shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes in the request.

iii) As further described in Section II.D. of Attachment M-Appendix to this Tariff, the Market Monitoring Unit shall review the request and supporting documentation and shall provide its determination by no later than forty-five (45) days after receipt of the exemption *or exception* request. The Office of the Interconnection shall also review all exemption *and exception* requests to determine whether the request is acceptable in accordance with the standards and criteria under this section 5.14(h) and shall provide its determination in writing to the Capacity Market Seller, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days after receipt of the exemption *or exception* request. The Office of the Interconnection shall reject a requested exemption *or exception* if the Capacity Market Seller's request does not comply with the PJM Market Rules, as interpreted and applied by the Office of the Interconnection. Such rejection shall specify those points of non-compliance upon which the Office of the Interconnection based its rejection of the exemption *or exception* request. If the Office of the Interconnection does not provide its determination *on an exemption or exception request* by no later than sixty-five (65) days after receipt of the exemption *or exception* request, the request shall be deemed granted. *Following the Office of the Interconnection's determination on a Unit-Specific Exception request, the Capacity Market Seller shall notify the Market Monitoring Unit and the Office of the Interconnection, in writing, of the minimum level of Sell Offer, consistent with such determination, to which it agrees to commit by no later than five (5) days after receipt of the Office of the Interconnection's determination of its Unit-Specific Exception request.* A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

(10) *Procedures and Remedies in Cases of Suspected Fraud or Material Misrepresentation or Omissions in Connection with Exemption Requests.*

In the event the Office of the Interconnection reasonably believes that a request for a Competitive Entry Exemption or a Self-Supply Exemption that has been granted contains fraudulent or material misrepresentations or fraudulent or material omissions such that the Capacity Market Seller would not have been eligible for the exemption for that resource had the request not contained such misrepresentations or omissions, then:

i) if the Office of the Interconnection provides written notice of revocation to the Capacity Market Seller no later than thirty (30) days prior to the commencement of the offer period for the RPM Auction for which the seller submitted a fraudulent exemption request, the Office of the Interconnection shall revoke the exemption for that auction. In such event, the Office of the Interconnection shall make any filings with FERC that the Office of the Interconnection deems necessary, and

ii) if the Office of the Interconnection does not provide written notice of revocation no later than 30 days before the start of the relevant RPM Auction, then the Office of the Interconnection may not revoke the exemption absent FERC approval. In any such filing to FERC, the requested remedies shall include (A) in the event that such resource has not cleared

in the RPM Auction for which the exemption has been granted and the filing is made no later than 5 days prior to the commencement of the offer period for the RPM Auction, revocation of the exemption or, (B) in the event that the resource has cleared the RPM Auction for which the exemption has been granted and the filing is made no later than two (2) years after the close of the offer period for the relevant RPM Auction, suspension of any payments, during the pendency of the FERC proceeding, to the Capacity Market Seller for the resource that cleared in any RPM Auction relying on such exemption; and suspension of the Capacity Market Seller's exemption for that resource for future RPM Auctions.

iii) Prior to any automatic revocation or submission to FERC, the Office of the Interconnection and/or the Market Monitoring Unit shall notify the affected Capacity Market Seller and, to the extent practicable, provide the Capacity Market Seller an opportunity to explain the alleged misrepresentation or omission. Any filing to FERC under this provision shall seek fast track treatment and neither the name nor any identifying characteristics of the Capacity Market Seller or the resource shall be publicly revealed, but otherwise the filing shall be public. The Capacity Market Seller may apply for a new exemption for that resource for subsequent auctions, including auctions held during the pendency of the FERC proceeding. In the event that the Capacity Market Seller is cleared by FERC from such allegations of misrepresentations or omissions then the exemption shall be restored to the extent and in the manner permitted by FERC. The remedies required by this subsection (h)(10) to be requested in any filing to FERC shall not be exclusive of any other remedies or penalties that may be pursued against the Capacity Market Seller.

i) Capacity Export Charges and Credits

(1) Charge

Each Capacity Export Transmission Customer shall incur for each day of each Delivery Year a Capacity Export Charge equal to the Reserved Capacity of Long-Term Firm Transmission Service used for such export ("Export Reserved Capacity") multiplied by (the Final Zonal Capacity Price for such Delivery Year for the Zone encompassing the interface with the Control Area to which such capacity is exported minus the Final Zonal Capacity Price for such Delivery Year for the Zone in which the resources designated for export are located, but not less than zero). If more than one Zone forms the interface with such Control Area, then the amount of Reserved Capacity described above shall be apportioned among such Zones for purposes of the above calculation in proportion to the flows from such resource through each such Zone directly to such interface under CETO/CETL analysis conditions, as determined by the Office of the Interconnection using procedures set forth in the PJM Manuals. The amount of the Reserved Capacity that is associated with a fully controllable facility that crosses such interface shall be completely apportioned to the Zone within which such facility terminates.

(2) Credit

To recognize the value of firm Transmission Service held by any such Capacity Export Transmission Customer, such customer assessed a charge under section 5.14(i)(1) also shall receive a credit, comparable to the Capacity Transfer Rights provided to Load-Serving Entities under section 5.15. Such credit shall be equal to the locational capacity price difference

specified in section 5.14(i)(1) times the Export Customer's Allocated Share determined as follows:

Export Customer's Allocated Share equals

(Export Path Import \* Export Reserved Capacity) /

(Export Reserved Capacity + Daily Unforced Capacity Obligations of all LSEs in such Zone).

Where:

“Export Path Import” means the megawatts of Unforced Capacity imported into the export interface Zone from the Zone in which the resource designated for export is located.

If more than one Zone forms the interface with such Control Area, then the amount of Export Reserved Capacity shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

### (3) Distribution of Revenues

Any revenues collected from the Capacity Export Charge with respect to any capacity export for a Delivery Year, less the credit provided in subsection (i)(2) for such Delivery Year, shall be distributed to the Load Serving Entities in the export-interface Zone that were assessed a

Locational Reliability Charge for such Delivery Year, pro rata based on the Daily Unforced Capacity Obligations of such Load-serving Entities in such Zone during such Delivery Year. If more than one Zone forms the interface with such Control Area, then the revenues shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

### **5.14A Demand Response Transition Provision for RPM Delivery Years 2012/2013, 2013/2014, and 2014/2015**

A. This transition provision applies only with respect to Demand Resources cleared in the Base Residual Auction for any or all of the 2012/2013, 2013/2014, or 2014/2015 Delivery Years (hereafter, “Transition Delivery Years” and each a “Transition Delivery Year”) by a Curtailment Service Provider as an aggregator of end-use customers registered for the Emergency Load Response Program as Full Program Option or Capacity Only Option. A Curtailment Service Provider meeting the description of the preceding sentence is hereafter in this Section 5.14A referred to as a “Qualified DR Provider.”

B. In the event that a Qualified DR Provider concludes that its cleared Demand Resource for a Transition Delivery Year is not viable under the revised Reporting and Compliance provisions of the Emergency Load Response Program which became effective on November 7, 2011, pursuant to the Commission's order issued on November 4, 2011, in Docket No. ER11-3322-000 (137 FERC ¶ 61,108), the Qualified DR Provider must so inform PJM in writing by no later than 30 days prior to the next Incremental Auction for the Transition Delivery Year for which the

identified Demand Resource was cleared. A Qualified DR Provider that does not timely provide the notice described in this paragraph shall be excluded from application of the remainder of this *section 5.14A*. A Demand Resource cleared for a Transition Delivery Year is not viable for purposes of this *section 5.14A* to the extent that it relies upon load reduction by any end-use customer for which the applicable Qualified DR Provider anticipated, when it offered the Demand Resource, measuring load reduction at loads in excess of such customer's peak load contribution during Emergency Load Response dispatch events or tests.

1. In the event a Qualified DR Provider that participates in an Incremental Auction after providing notice pursuant to paragraph B. above purchases Capacity Resources to replace its previously cleared Demand Resource at a price that exceeds the price at which the provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year, the Qualified DR Provider shall receive a DR Capacity Transition Credit in an amount determined by the following:

$$\text{DRTC} = (\text{IAP} - \text{BRP}) * \text{DRMW}$$

Where:

DRTC is the amount of the DR Capacity Transition Credit for the Qualified DR Provider, expressed in dollars;

IAP = the Capacity Resource Clearing Price paid by the Qualified DR Provider for replacement Capacity Resources in the Incremental Auction for the relevant Transition Delivery Year;

BRP = the Capacity Resource Clearing Price at which the Qualified DR Provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year; and

DRMW = the capacity in MW of the Qualified DR Provider's previously cleared Demand Resource.

2. All DR Capacity Transition Credits will be paid weekly to the recipient Qualified DR Providers by PJMSettlement during the relevant Transition Delivery Year.
3. The cost of payments of DR Capacity Transition Credits to Qualified DR Providers shall be included in the Locational Reliability Charge collected by PJMSettlement during the relevant Transition Delivery Year from Load-Serving Entities in the LDA(s) for which the Qualified DR Provider's subject Demand Resource was cleared.

C. A Qualified DR Provider may seek compensation related to its previously cleared Demand Resource for a particular Transition Delivery Year, in lieu of any DR Capacity Transition Credits for which it otherwise might be eligible under paragraph B.1. above, under the following conditions:

1. The Qualified DR Provider must provide timely notice to PJM in accordance with paragraph B of this *section 5.14A*, and
2. The Qualified DR Provider must demonstrate to PJM's reasonable satisfaction, not later than 60 days prior to the start of the applicable Transition Delivery Year, that
  - a. the Qualified DR Provider entered into contractual arrangements on or before April 7, 2011, with one or more end-use customers registered for the Emergency Load Response Program as Full Program Option or Capacity Only Option in association with the Demand Resource identified in the provider's notice pursuant to paragraph B above,
  - b. under which the Qualified DR Provider is unavoidably obligated to pay to such end-use customers during the relevant Transition Delivery Year
  - c. an aggregate amount that exceeds:
    - (i) any difference of (A) the amount the Qualified DR Provider is entitled to receive in payment for the previously cleared Demand Resource it designated as not viable in its notice pursuant to paragraph B of this provision, minus (B) the amount the provider is obligated to pay for capacity resources it purchased in the Incremental Auctions to replace the Demand Resource the provider designated as not viable, plus
    - (ii) any monetary gains the Qualified DR Provider realizes from purchases of Capacity Resources in Incremental Auctions for the same Transition Delivery Year to replace any Demand Resources that the Qualified DR Provider cleared in the applicable Base Residual Auction other than the resource designated as not viable in the provider's notice pursuant to paragraph (B) of this provision,
    - (iii) where "monetary gains" for the purpose of clause (ii) shall be any positive difference of (A) the aggregate amount the Qualified DR Provider is entitled to receive in payment for any such other Demand Resource it cleared in the Base Residual Auction, minus (B) the aggregate amount the provider is obligated to pay for capacity resources it purchased in the applicable Incremental Auctions to replace any such other Demand Resource the provider cleared in the Base Residual Auction.

D. A Qualified DR Provider which demonstrates satisfaction of the conditions of paragraph C of this *section 5.14A* shall be entitled to an Alternative DR Transition Credit equal to the amount described in paragraph C.2.c. above. Any Alternative DR Transition Credit provided in accordance with this paragraph shall be paid and collected by PJMSettlement in the same manner as described in paragraphs B.2. and B.3. of this *section 5.14A*, provided, however, that each Qualified DR Provider receiving an Alternative DR Transition Credit shall submit to PJM within 15 days following the end of each month of the relevant Transition Delivery Year a report providing the calculation described in paragraph C.2.c. above, using actual amounts paid and

received through the end of the month just ended. The DR Provider's Alternative DR Transition Credit shall be adjusted as necessary (including, if required, in the month following the final month of the Transition Delivery Year) to ensure that the total credit paid to the Qualified DR Provider for the Transition Delivery Year will equal, but shall not exceed, the amount described in paragraph C.2.c. above, calculated using the actual amounts paid and received by the Qualified DR Provider.

#### **5.14B Generating Unit Capability Verification Test Requirements Transition Provision for RPM Delivery Years 2014/2015, 2015/2016, and 2016/2017**

A. This *transition provision* applies only with respect to Generation Capacity Resources with existing capacity commitments for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years that experience reductions in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals. A Generation Capacity Resource meeting the description of the preceding sentence, and the Capacity Market Seller of such a resource, are hereafter in this section 5.14B referred to as an "Affected Resource" and an "Affected Resource Owner," respectively.

B. For each of its Affected Resources, an Affected Resource Owner is required to provide documentation to the Office of the Interconnection sufficient to show a reduction in installed capacity value as a direct result of the revised capability test procedures. Upon acceptance by the Office of the Interconnection, the Affected Resource's installed capacity value will be updated in the eRPM system to reflect the reduction, and the Affected Resource's Capacity Interconnection Rights value will be updated to reflect the reduction, effective June 1, 2014. The reduction's impact on the Affected Resource's existing capacity commitments for the 2014/2015 Delivery Year will be determined in Unforced Capacity terms, using the final EFORD value established by the Office of the Interconnection for the 2014/2015 Delivery Year as applied to the Third Incremental Auction for the 2014/2015 Delivery Year, to convert installed capacity to Unforced Capacity. The reduction's impact on the Affected Resource's existing capacity commitments for each of the 2015/2016 and 2016/2017 Delivery Years will be determined in Unforced Capacity terms, using the EFORD value from each Sell Offer in each applicable RPM Auction, applied on a pro-rata basis, to convert installed capacity to Unforced Capacity. The Unforced Capacity impact for each Delivery Year represents the Affected Resource's capacity commitment shortfall, resulting wholly and directly from the revised capability test procedures, for which the Affected Resource Owner is subject to a Capacity Resource Deficiency Charge for the Delivery Year, as described in section 8 of this Attachment DD, unless the Affected Resource Owner (i) provides replacement Unforced Capacity, as described in section 8.1 of this Attachment DD, prior to the start of the Delivery Year to resolve the Affected Resource's total capacity commitment shortfall; or (ii) requests relief from Capacity Resource Deficiency Charges that result wholly and directly from the revised capability test procedures by electing the transition mechanism described in this section 5.14B ("Transition Mechanism").

C. Under the Transition Mechanism, an Affected Resource Owner may elect to have the Unforced Capacity commitments for all of its Affected Resources reduced for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years to eliminate the capacity commitment shortfalls, across all of its Affected Resources, that result wholly and directly from the revised capability test



procedures, and for which the Affected Resource Owner otherwise would be subject to Capacity Resource Deficiency Charges for the Delivery Year. In electing this option, the Affected Resource Owner relinquishes RPM Auction Credits associated with the reductions in Unforced Capacity commitments for all of its Affected Resources for the Delivery Year, and Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are adjusted accordingly. Affected Resource Owners wishing to elect the Transition Mechanism for the 2015/2016 Delivery Year must notify the Office of the Interconnection by May 30, 2014. Affected Resource Owners wishing to elect the Transition Mechanism for the 2016/2017 Delivery Year must notify the Office of the Interconnection by July 25, 2014.

D. The Office of the Interconnection will offset the total reduction (across all Affected Resources and Affected Resource Owners) in Unforced Capacity commitments associated with the Transition Mechanism for the 2015/2016 and 2016/2017 Delivery Years by applying corresponding adjustments to the quantity of Buy Bid or Sell Offer activity in the upcoming Incremental Auctions for each of those Delivery Years, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD.

E. By electing the Transition Mechanism, an Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years, and a Locational UCAP Seller that sells Locational UCAP based on an Affected Resource owned by the Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015 Delivery Year, to the extent that the Affected Resource Owner demonstrates, to the satisfaction of the Office of the Interconnection, that an inability to deliver the amount of Unforced Capacity previously committed for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years is due to a reduction in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals; provided, however, that the Affected Resource Owner must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief.

#### **5.14C Demand Response Operational Resource Flexibility Transition Provision for RPM Delivery Years 2015/2016 and 2016/2017**

A. This transition provision applies only to Demand Resources for which a Curtailment Service Provider has existing RPM commitments for the 2015/2016 or 2016/2017 Delivery Years (alternatively referred to in this section 5.14C as “Applicable Delivery Years” and each an “Applicable Delivery Year”) that (i) cannot satisfy the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; (ii) are not excepted from the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; and (iii) cleared in the Base Residual Auction or First Incremental Auction for the 2015/2016 Delivery Year, or cleared in the Base Residual Auction for the 2016/2017 Delivery Year. A Demand Resource meeting these criteria and the Curtailment Service Provider of such a resource are hereafter in this section 5.14C referred to as an “Affected Demand Resource” and an “Affected Curtailment Service Provider,” respectively.

B. For this section 5.14C to apply to an Affected Demand Resource, the Affected Curtailment Service Provider must notify the Office of the Interconnection in writing, with regard to the Affected Demand Resource, of the number of cleared megawatts of Unforced Capacity for the Applicable Delivery Year, by type of Demand Resource (i.e., Limited DR, Annual DR, Extended Summer DR) and by Zone or sub-Zone, by the applicable deadline as follows:

1. For the 2015/2016 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2015/2016 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2015/2016 Delivery Year.

2. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Second Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second or Third Incremental Auctions for the 2016/2017 Delivery Year.

3. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision must not have sold or offered to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second Incremental Auction for the 2016/2017 Delivery Year, and may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2016/2017 Delivery Year.

C. For the Third Incremental Auction for the 2015/2016 Delivery Year and the First, Second, and Third Incremental Auctions for the 2016/2017 Delivery Year, the Office of the Interconnection shall publish aggregate information on the undeliverable megawatts declared under this transition provision (hereafter, “non-viable megawatts”), by type of Demand Resource and by Zone or sub-Zone, concurrently with its posting of planning parameters for the applicable Scheduled Incremental Auction. Non-viable megawatts for a Scheduled Incremental Auction for an Applicable Delivery Year represent those megawatts meeting the criteria of subsection A above and declared in accordance with subsection B above. Prior to each Third Incremental Auction for an Applicable Delivery Year, the Office of the Interconnection shall apply adjustments equal to the declared non-viable megawatt quantity to the quantity of Buy Bid or Sell Offer activity in the upcoming Scheduled Incremental Auctions for the Applicable Delivery Year, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD. Prior to the Second Incremental Auction for the 2016/2017 Delivery Year, the Office of the Interconnection shall adjust the recalculated PJM Region Reliability Requirement and recalculated LDA Reliability Requirements, as described in section 5.4(c) of this Attachment DD, by the applicable quantity of declared non-viable megawatts, and shall update the PJM Region Reliability Requirement and each LDA Reliability Requirement for such Second Incremental Auction only

if the combined change of the applicable adjustment and applicable recalculation is greater than or equal to the lessor of (i) 500 megawatts or (ii) one percent of the prior PJM Region Reliability Requirement or one percent of the prior LDA Reliability Requirement, as applicable.

D. Prior to the start of each Applicable Delivery Year, the Office of the Interconnection shall reduce, by type of Demand Resource and by Zone or sub-Zone, the capacity commitment of each Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year based on the non-viable megawatts declared by the Affected Curtailment Service Provider under this transition provision. If the Affected Curtailment Service Provider cleared megawatts from multiple Affected Demand Resources of the same type and Zone or sub-Zone, or cleared megawatts in multiple RPM Auctions for the Applicable Delivery Year, the Office of the Interconnection shall allocate the reduction in capacity commitment by type of Demand Resource and by Zone or sub-Zone across the applicable Affected Demand Resources and relevant RPM Auctions. Such allocation shall be performed on a pro-rata basis, based on megawatts cleared by the Affected Demand Resources in the relevant RPM Auctions.

E. For each Applicable Delivery Year, an Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year relinquishes an Affected Demand Resource's RPM Auction Credits for the amount of capacity commitment reduction as determined under subsection D above. Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are also adjusted accordingly.

#### **5.14D Capacity Performance and Base Capacity Transition Provision for RPM Delivery Years 2016/2017 and 2017/2018**

A. This transition provision applies only for procuring Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years.

B. For both the 2016/2017 and 2017/2018 Delivery Years, PJM will hold a Capacity Performance Transition Incremental Auction to procure Capacity Performance Resources.

1. For each Capacity Performance Transition Incremental Auction, the optimization algorithm shall consider:

- the target quantities of Capacity Performance Resources specified below;
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity of Capacity Performance Resources specified for that Delivery Year. For the 2016/2017 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a quantity of Capacity Performance Resources equal to 60 percent of the updated Reliability Requirement for the PJM Region. For the 2017/2018 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a

quantity of Capacity Performance Resources equal to 70 percent of the updated Reliability Requirement for the PJM Region.

2. For each Capacity Performance Transition Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. For the 2016/2017 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year. For the 2017/2018 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year.

3. A Capacity Market Seller may offer any Generation Capacity Resource that has not been committed in an FRR Capacity Plan, that qualifies as a Capacity Performance Resource under section 5.5A(a) and that (i) has not cleared an RPM Auction for that Delivery Year; or (ii) has cleared in an RPM Auction for that Delivery Year. A Capacity Market Seller may offer an external Generation Capacity Resource to the extent that such resource: (i) is reasonably expected, by the relevant Delivery Year, to meet all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction; (ii) has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and (iii) is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions.

4. Capacity Resources that already cleared an RPM Auction for a Delivery Year, retain the capacity obligations for that Delivery Year, and clear in a Capacity Performance Transition Incremental Auction for the same Delivery Year shall: (i) receive a payment equal to the Capacity Resource Clearing Price as established in that Capacity Performance Transition Incremental Auction; and (ii) not be eligible to receive a payment for clearing in any prior RPM Auction for that Delivery Year.

D. All Capacity Performance Resources that clear in a Capacity Performance Transition Incremental Auction will be subject to the Non-Performance Charge set forth in section 10A.

## **6. MARKET POWER MITIGATION**

### **6.1 Applicability**

The provisions of the Market Monitoring Plan (in Attachment M and Attachment - M Appendix to this Tariff and this section 6) shall apply to the Reliability Pricing Model Auctions.

### **6.2 Process**

(a) [Reserved for Future Use]

(b) In accordance with the schedule specified in the PJM Manuals, following PJM's conduct of a Base Residual Auction or Incremental Auction pursuant to section 5.12, but prior to the Office of the Interconnection's final determination of clearing prices and charges pursuant to section 5.14, the Office of the Interconnection shall: (i) apply the Market Structure Test to any LDA having a Locational Price Adder greater than zero and to the entire PJM region; (ii) apply Market Seller Offer Caps, if required under this section 6; and (iii) recompute the optimization algorithm to clear the auction with the Market Seller Offer Caps in place.

(c) Within seven days after the deadline for submission of Sell Offers in a Base Residual Auction or Incremental Auction, the Office of the Interconnection shall file with FERC a report of any determination made pursuant to sections 5.14(h), 6.5(a)(ii), or 6.7(c) identified in such sections as subject to the procedures of this section. Such report shall list each such determination, the information considered in making each such determination, and an explanation of each such determination. Any entity that objects to any such determination may file a written objection with FERC no later than seven days after the filing of the report. Any such objection must not merely allege that the determination was in error, and must provide support for the objection, demonstrating that the determination overlooked or failed to consider relevant evidence. In the event that no objection is filed, the determination shall be final. In the event that an objection is filed, FERC shall issue any decision modifying the determination no later than 60 days after the filing of such report; otherwise, the determination shall be final. Final auction results shall reflect any decision made by FERC regarding the report.

### **6.3 Market Structure Test**

(a) [Reserved for Future Use]

(b) Market Structure Test.

A constrained LDA or the PJM Region shall fail the Market Structure Test, and mitigation shall be applied to all jointly pivotal suppliers (including all Affiliates of such suppliers, and all third-party supply in the relevant LDA controlled by such suppliers by contract), if, as to the Sell Offers that comprise the incremental supply determined pursuant to section 6.3(c) that are based on Generation Capacity Resources, there are not more than three jointly pivotal suppliers. The Office of the Interconnection shall apply the Market Structure Test. The Office of the Interconnection shall confirm the results of the Market Structure Test with the Market Monitoring Unit.

(c) Determination of Incremental Supply

In applying the Market Structure Test, the Office of the Interconnection shall consider all (i) incremental supply (provided, however, that the Office of the Interconnection shall consider only such supply available from Generation Capacity Resources) available to solve the constraint applicable to a constrained LDA offered at less than or equal to 150% of the cost-based clearing price; or (ii) supply for the PJM Region, offered at less than or equal to 150% of the cost-based clearing price, provided that supply in this section includes only the lower of cost-based or priced based offers from Generation Capacity Resources. Cost-based clearing prices are the prices resulting from the RPM auction algorithm using the lower of cost-based or price-based offers for all Capacity Resources.

#### 6.4 Market Seller Offer Caps

(a) The Market Seller Offer Cap, stated in dollars per MW/day of unforced capacity, applicable to price-quantity offers within the Base Offer Segment for an Existing Generation Capacity Resource shall be the Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, stated in dollars per MW/day of unforced capacity, provided, however, that the Market Seller Offer Cap for any Capacity Performance Resource shall be the Net Cost of New Entry applicable for the Delivery Year and Locational Deliverability Area for which such Capacity Performance Resource is offered, and that the submission of a Sell Offer with an Offer Price at or below the revised Market Seller Offer Cap permitted under this proviso shall not, in and of itself, be deemed an exercise of market power in the RPM market. Notwithstanding the previous sentence, should a Capacity Performance Resource seek a Market Seller Offer Cap that exceeds the Net Cost of New Entry, it shall be subject to and comply with paragraph (b) of this section 6.4. The Market Seller Offer Cap for an Existing Generation Capacity Resource shall be the Opportunity Cost for such resource, if applicable, as determined in accordance with section 6.7. Nothing herein shall preclude any Capacity Market Seller and the Market Monitoring Unit from agreeing to, nor require either such entity to agree to, an alternative market seller offer cap determined on a mutually agreeable basis. Any such alternative offer cap shall be filed with the Commission for its approval. This provision is duplicated in section II.E.3 of Attachment M- Appendix.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection data and documentation required under section 6.7 to establish the level of the Market Seller Offer Cap applicable to each resource by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller must promptly address any concerns identified by the Market Monitoring Unit regarding the data and documentation provided, review the Market Seller Offer Cap proposed by the Market Monitoring Unit, and attempt to reach agreement with the Market Monitoring Unit on the level of the Market Seller Offer Cap by no later than ninety (90) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, whether an agreement with the Market Monitoring Unit has been reached or, if no agreement has been reached, specifying the level of Market Seller Offer Cap to which it commits by no later than

eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. The Office of the Interconnection shall review the data submitted by the Capacity Market Seller, make a determination whether to accept or reject the requested unit-specific Market Seller Offer Cap, and notify the Capacity Market Seller and the Market Monitoring Unit of its determination in writing, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction. If the Market Monitoring Unit does not provide its determination to the Capacity Market Seller and the Office of the Interconnection by the specified deadline, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction the Office of the Interconnection will make the determination of the level of the Market Seller Offer Cap, which shall be deemed to be final. If the Capacity Market Seller does not notify the Market Monitoring Unit and the Office of the Interconnection of the Market Seller Offer Cap it desires to utilize by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction, it shall be required to utilize a Market Seller Offer Cap determined using the applicable default Avoidable Cost Rate specified in section 6.7(c).

(c) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the Sell Offer complies with the requirements of the Tariff.

(d) For any Third Incremental Auction for Delivery Years through the 2017/2018 Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 or 2019/2020 Delivery Years, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Base Capacity resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 Delivery Year or any subsequent Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Capacity Performance Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to the greater of the Net Cost of New Entry for the relevant LDA and Delivery Year or 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year.

## **6.5 Mitigation**

The Office of the Interconnection shall apply market power mitigation measures in any Base Residual Auction or Incremental Auction for any LDA, Unconstrained LDA Group, or the PJM Region that fails the Market Structure Test.

- (a) Mitigation for Generation Capacity Resources.
  - i) Existing Generation Capacity Resource

Mitigation will be applied on a unit-specific basis and only if the Sell Offer of Unforced Capacity from an Existing Generation Capacity Resource: (1) is greater than the Market Seller Offer Cap applicable to such resource; and (2) would, absent mitigation, increase the Capacity Resource Clearing Price in the relevant auction. If such conditions are met, such Sell Offer shall be set equal to the Market Seller Offer Cap.

ii) Planned Generation Capacity Resources

(A) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) shall be presumed to be competitive and shall not be subject to market power mitigation in any Base Residual Auction or Incremental Auction for which such resource qualifies as a Planned Generation Capacity Resource, but any such Sell Offer shall be rejected if it meets the criteria set forth in subsection (C) below, unless the Capacity Market Seller obtains approval from FERC for use of such offer prior to the deadline for submission of such offers in the applicable auction. Such resources are Existing Generation Capacity Resources in the auctions for any Delivery Year following the Delivery Year for which such resource cleared an RPM Auction. Such resources may receive certain price assurances for the two Delivery Years immediately following the first Delivery Year of service under certain conditions as set forth in section 5.14 of this Attachment. Notwithstanding the foregoing, a Generation Capacity Resource for which construction has not commenced and which would otherwise have been treated as a Planned Generation Capacity Resource but for the fact that it was bid into RPM Auctions for at least two consecutive Delivery Years, and cleared the last such auction only because it was considered existing and its mitigated offer cap was accepted when its price offer would not have otherwise been accepted, shall be deemed to be a Planned Generation Capacity Resource.

(B) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) submitted for the first year in which such resources qualify as Planned Generation Capacity Resources shall be deemed competitive and not be subject to mitigation if: (1) collectively all such Sell Offers provide Unforced Capacity in an amount equal to or greater than two times the incremental quantity of new entry required to meet the LDA Reliability Requirement; and (2) at least two unaffiliated suppliers have submitted Sell Offers for Planned Generation Capacity Resources in such LDA. Notwithstanding the foregoing, any Capacity Market Seller, together with Affiliates, whose Sell Offers based on Planned Generation Capacity Resources in that LDA are pivotal, shall be subject to mitigation.

(C) Where the two conditions stated in subsection (B) are not met, or the Sell Offer is pivotal, the Sell Offer shall be rejected if it exceeds 140 percent of: 1) the average of location-adjusted Sell Offers for Planned



Generation Capacity Resources from the same asset class as such Sell Offer, submitted (and not rejected) (Asset-Class New Plant Offers) for such Delivery Year; or 2) if there are no Asset-Class New Plant Offers for such Delivery Year, the average of Asset-Class New Plant Offers for all prior Delivery Years; or 3) if there are no Asset-Class New Plant Offers for any prior Delivery Year, the Net CONE applicable for such Delivery Year in the LDA for which such offer was submitted. For purposes of this section, asset classes shall be as stated in section 6.7(c) as effective for such Delivery Year, and Asset-Class New Plant Offers shall be location-adjusted by the ratio between the Net CONE effective for such Delivery Year for the LDA in which the Sell Offer subject to this section was submitted and the average, weighted by installed capacity, of the Net CONEs for all LDAs in which the units underlying such Asset Class New Plant Offers are located. Following the conduct of the applicable auction and before the final determination of clearing prices, in accordance with Section 6.2(b) above, each Capacity Market Seller whose Sell Offer is so rejected shall be notified in writing by the Office of the Interconnection by no later than one (1) business day after the close of the offer period for the applicable RPM Auction and allowed an opportunity to submit a revised Sell Offer that does not exceed such threshold within one business (1) day of the Office of the Interconnection's rejection of such Sell Offer. If such revised Sell Offer is accepted by the Office of the Interconnection, the Office of the Interconnection then shall clear the auction with such revised Sell Offer in place.

(b) Mitigation for Demand Resources

The Market Seller Offer Cap shall not be applied to Sell Offers of Demand Resources or Energy Efficiency Resources.

## 6.6 Offer Requirement for Capacity Resources

(a) To avoid application of subsection (h), all of the installed capacity of all Existing Generation Capacity Resources located in the PJM Region shall be offered by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff. The Unforced Capacity of such resources is determined using the EFORD value that is submitted by the Capacity Market Seller in its Sell Offer, which shall not exceed the maximum EFORD for that resource as defined in Section 6.6(b). If a resource should be included on the list of Existing Generation Capacity Resources subject to the must-offer requirement that is maintained by the Market Monitoring Unit pursuant to Section II.C.1 of Attachment M – Appendix of the Tariff, but is omitted therefrom whether by mistake of the Market Monitoring Unit or failure of the Capacity Market Seller that owns or controls all or part of such resource to provide information about the resource

to the Market Monitoring Unit, this shall not excuse such resource from the must-offer requirement.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must timely provide to the Market Monitoring Unit and the Office of the Interconnection all data and documentation required under section 6.6 to establish the maximum EFORD applicable to each resource in accordance with standards and procedures specified in the PJM Manuals. The maximum EFORD that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORDs used for a Delivery Year are posted, is the greater of (i) the average EFORD for the five consecutive years ending on the September 30 that last precedes the Base Residual Auction, or (ii) the EFORD for the 12 months ending on the September 30 that last precedes the Base Residual Auction.

Notwithstanding the foregoing, a Capacity Market Seller may request an alternate maximum EFORD for Sell Offers submitted in such auctions if it has a documented, known reason that would result in an increase in its EFORD, by submitting a written request to the Market Monitoring Unit and Office of the Interconnection, along with data and documentation required to support the request for an alternate maximum EFORD, by no later one hundred twenty (120) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. The Capacity Market Seller must address any concerns identified by the Market Monitoring Unit and/or the Office of the Interconnection regarding the data and documentation provided and attempt to reach agreement with the Market Monitoring Unit on the level of the alternate maximum EFORD by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. As further described in Section II.C of Attachment M-Appendix, the Market Monitoring Unit shall notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination of the requested alternate maximum EFORD by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. By no later than eighty (80) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year, the Capacity Market Seller shall notify the Office of the Interconnection and the Market Monitoring Unit in writing whether it agrees with the Market Monitoring Unit on the alternate maximum EFORD or, if no agreement has been reached, specifying the level of alternate maximum EFORD to which it commits. If a Capacity Market Seller fails to request an alternate maximum EFORD prior to the specified deadlines, the maximum EFORD for the applicable RPM Auction shall be deemed to be the default EFORD calculated pursuant to this section.

The maximum EFORD that may be used in a Sell Offer for Third Incremental Auctions, and for Conditional Incremental Auctions held after the date on which the final EFORD used for a Delivery Year is posted, is the EFORD for the 12 months ending on the September 30 that last precedes the submission of such offers.

(c) [Reserved for Future Use]

(d) In the event that a Capacity Market Seller and the Market Monitoring Unit cannot agree on the maximum level of the alternate EFORD that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORDs used for a Delivery Year are posted,

the Office of the Interconnection shall make its own determination of the maximum level of the alternate EFORD based on the requirements of the Tariff and the PJM Manuals, per Section 5.8 of Attachment DD, by no later than sixty-five (65) days prior to the commencement of the offer period for the Base Residual for the applicable Delivery Year, and shall notify the Capacity Market Seller and the Market Monitoring Unit in writing of such determination.

(e) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the EFORD complies with the requirements of the Tariff.

(f) Notwithstanding the foregoing, a Capacity Market Seller may submit an EFORD that it chooses for an RPM Auction held prior to the date on which the final EFORD used for a Delivery Year is posted, provided that (i) it has participated in good faith with the process described in this section 6.6 and in section II.C of Attachment M - Appendix, (ii) the offer is no higher than the level defined in any agreement reached by the Capacity Market Seller and the Market Monitoring Unit that resulted from the foregoing process, and (iii) the offer is accepted by the Office of the Interconnection subject to the criteria set forth in the Tariff and the PJM Manuals.

(g) A Capacity Market Seller that owns or controls an existing generation resource in the PJM Region that is capable of qualifying as an Existing Generation Capacity Resource as of the date on which bidding commences for an RPM Auction may not avoid the rule in subsection (a) or be removed from Capacity Resource status by failing to qualify as a Generation Capacity Resource, or by attempting to remove a unit previously qualified as a Generation Capacity Resource from classification as a Capacity Resource for that RPM Auction. However, generation resource may qualify for an exception to the must-offer requirement, as shown by appropriate documentation, if the Capacity Market Seller that owns or controls such resource demonstrates that it: (i) is reasonably expected to be physically unable to participate in the relevant Delivery Year; (ii) has a financially and physically firm commitment to an external sale of its capacity, or (iii) was interconnected to the Transmission System as an Energy Resource and not subsequently converted to a Capacity Resource.

In order to establish that a resource is reasonably expected to be physically unable to participate in the relevant auction as set forth in (i) above, the Capacity Market Seller must demonstrate that:

- A. It has a documented plan in place to retire the resource prior to or during the Delivery Year, and has submitted a notice of Deactivation to the Office of the Interconnection consistent with Section 113.1 of the PJM Tariff, without regard to whether the Office of the Interconnection has requested the Capacity Market Seller to continue to operate the resource beyond its desired deactivation date in accordance with Section 113.2 of the PJM Tariff for the purpose of maintaining the reliability of the PJM Transmission System and the Capacity Market Seller has agreed to do so;
- B. Significant physical operational restrictions cause long term or permanent changes to the installed capacity value of the resource, or the resource is under major repair that will

extend into the applicable Delivery Year, that will result in the imposition of RPM performance penalties pursuant to Attachment DD of the PJM Tariff;

- C. The Capacity Market Seller is involved in an ongoing regulatory proceeding (e.g. – regarding potential environmental restrictions) specific to the resource and has received an order, decision, final rule, opinion or other final directive from the regulatory authority that will result in the retirement of the resource; or
- D. A resource considered an Existing Generating Capacity Resource because it cleared an RPM Auction for a Delivery Year prior to the Delivery Year of the relevant auction, but which is not yet in service, is unable to achieve full commercial operation prior to the Delivery Year of the relevant auction. The Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer certifying that the resource will not be in full commercial operation prior to the referenced Delivery Year.

In order to establish that a resource has a financially and physically firm commitment to an external sale of its capacity as set forth in (ii) above, the Capacity Market Seller must demonstrate that it has entered into a unit-specific bilateral transaction for service to load located outside the PJM Region, by a demonstration that such resource is identified on a unit-specific basis as a network resource under the transmission tariff for the control area applicable to such external load, or by an equivalent demonstration of a financially and physically firm commitment to an external sale. The Capacity Market Seller additionally shall identify the megawatt amount, export zone, and time period (in days) of the export.

A Capacity Market Seller that seeks to remove a Generation Capacity Resource from PJM Capacity Resource status and/or seeks approval for an exception to the must-offer requirement, for any reason other than the reason specified in Paragraph A above, shall first submit such request in writing, along with all supporting data and documentation, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction.

In order to obtain an exception to the must-offer requirement for the reason specified in Paragraph A above, a Capacity Market Seller shall first submit a preliminary exception request in writing, along with supporting data and documentation indicating the reasons and conditions upon which the Capacity Market Seller is relying in its analysis of whether to retire such resource, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than (a) November 1, 2013 for the Base Residual Auction for the 2017/2018 Delivery Year, (b) the September 1 that last precedes the Base Residual Auction for the 2018/2019 and subsequent Delivery Years, and (c) two hundred forty (240) days prior to the commencement of the offer period for the applicable Incremental Auction. By no later than five (5) business days after receipt of any such preliminary exception requests, the Office of the Interconnection will post on its website a summary of the number of megawatts of Generation Capacity Resources for which it has received notification of preliminary exception requests, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

Thereafter, as applicable, such Capacity Market Seller shall by no later than (a) the December 1 that last precedes the Base Residual Auction for the applicable Delivery Year, or (b) one hundred twenty (120) days prior to the commencement of the offer period for the applicable Incremental Auction, either (a) notify the Office of the Interconnection and the Market Monitoring Unit in writing that it is withdrawing its preliminary exception request and explaining the changes to its analysis of whether to retire such resource that support its decision to withdraw, or (b) demonstrate that it has met the requirements specified under Paragraph A above. By no later than five (5) business days after receipt of such notification, the Office of the Interconnection will post on its website a revised summary of the number of megawatts of Generation Capacity Resources for which it has received requests for exceptions to the must-offer requirement for the reason specified in Paragraph A above, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

A Capacity Market Seller may only remove the Generation Capacity Resource from PJM Capacity Resource status if (i) the Market Monitoring Unit has determined that the Generation Capacity Resource meets the applicable criteria set forth in Sections 5.6.6 and 6.6 of Attachment DD and the Office of the Interconnection agrees with this determination, or (ii) the Commission has issued an order terminating the Capacity Resource status of the resource. Nothing herein shall require a Market Seller to offer its resource into an RPM Auction prior to seeking to remove a resource from Capacity Resource status, subject to satisfaction of Section 6.6.

If the Capacity Market Seller disagrees with the Market Monitoring Unit's determination of its request to remove a resource from Capacity Resource status or its request for an exception to the must-offer requirement, it must notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, of the same by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. After the Market Monitoring Unit has made its determination of whether a resource has satisfied the must-offer requirement or meets one of the exceptions thereto and has notified the Capacity Market Seller and the Office of the Interconnection of the same pursuant to Section II.C.4 of Attachment M – Appendix, the Office of the Interconnection shall approve or deny the exception request. The exception request shall be deemed to be approved by the Office of the Interconnection, consistent with the determination of the Market Monitoring Unit, unless the Office of the Interconnection notifies the Capacity Market Seller and Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences, that the exception request is denied.

If the Market Monitoring Unit does not timely notify the Capacity Market Seller and the Office of the Interconnection of its determination of the request to remove a Generation Capacity Resource from Capacity Resource status or for an exception to the must-offer requirement, the Office of the Interconnection shall make the determination whether the request shall be approved or denied, and will notify the Capacity Market Seller of its determination in writing, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences.

After the Market Monitoring Unit and the Office of the Interconnection have made their determinations of whether a resource meets the criteria to qualify for an exception to the must-

offer requirement, the Capacity Market Seller must notify the Market Monitoring Unit and the Office of the Interconnection whether it intends to exclude from its Sell Offer some or all of the subject capacity on the basis of an identified exception by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. PJM does not make determinations of whether withholding of capacity constitutes market power. A Generation Capacity Resource that does not qualify for submission into an RPM Auction because it is not owned or controlled by the Capacity Market Seller for a full Delivery Year is not subject to the offer requirement hereunder; provided, however, that a Capacity Market Seller planning to transfer ownership or control of a Generation Capacity Resource during a Delivery Year pursuant to a sale or transfer agreement entered into after March 26, 2009 shall be required to satisfy the offer requirement hereunder for the entirety of such Delivery Year and may satisfy such requirement by providing for the assumption of this requirement by the transferee of ownership or control under such agreement.

If a Capacity Market Seller doesn't timely seek to remove a Generation Capacity Resource from Capacity Resource status or timely submit a request for an exception to the must-offer requirement, the Generation Capacity Resource shall only be removed from Capacity Resource status, and may only be approved for an exception to the must-offer requirement, upon the Capacity Market Seller requesting and receiving an order from FERC, prior to the close of the offer period for the applicable RPM Auction, directing the Office of the Interconnection to remove the resource from Capacity Resource status and/or granting an exception to the must-offer requirement or a waiver of the must-offer requirement as to such resource.

(h) Any existing generation resource located in the PJM Region that satisfies the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for the Base Residual Auction for a Delivery Year, that is not offered into such Base Residual Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All generation resources located in the PJM Region that satisfy the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for an Incremental Auction for a particular Delivery Year, but that did not satisfy such criteria as of the date that on which bidding commenced in the Base Residual Auction for that Delivery Year, that is not offered into that Incremental Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All Existing Generation Capacity Resources that are offered into a Base Residual Auction or Incremental Auction for a particular Delivery Year but do not clear in such auction, that are not offered into each subsequent Incremental Auction, and that do not meet any of the exceptions

stated in the prior subsection (g): (i) may not participate in any Incremental Auctions conducted for such Delivery Year subsequent to such failure to offer; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

Any such Existing Generation Capacity Resources may also be subject to further action by the Market Monitoring Unit under the terms of Attachment M and Attachment M – Appendix.

(i) In addition to the remedies set forth in subsections (g) and (h) above, if the Market Monitoring Unit determines that one or more Capacity Market Sellers' failure to offer part or all of one or more existing generation resources, for which the Office of the Interconnection has not approved an exception to the must-offer requirement, into an RPM Auction as required by this Section 6.6 would result in an increase of greater than five percent in any Zonal Capacity Price determined through such auction, and the Office of the Interconnection agrees with that determination, the Office of the Interconnection shall apply to FERC for an order, on an expedited basis, directing such Capacity Market Seller to participate in the relevant RPM Auction, or for other appropriate relief, and PJM will postpone clearing the auction pending FERC's decision on the matter. If the Office of the Interconnection disagrees with the Market Monitoring Unit's determination and does not apply to FERC for an order directing the Capacity Market Seller to participate in the auction or for other appropriate relief, the Market Monitoring Unit may exercise its powers to inform Commission staff of its concerns and to seek appropriate relief.

#### **6.6A Offer Requirement for Capacity Performance Resources**

(a) For the 2018/2019 Delivery Year and subsequent Delivery Years, the installed capacity of every Generation Capacity Resource located in the PJM Region that is capable (or that reasonably can become capable) of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each such Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff.

(b) Determinations of EFORD and Unforced Capacity made under section 6.6 hereof as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.

(c) Exceptions to the requirement in subsection (a) shall be permitted only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be physically incapable of satisfying the requirements of a Capacity Performance Resource. Intermittent Resources, Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources shall not be required to offer as a Capacity Performance Resource, but shall not be precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies

such requirements. Exceptions shall be determined using the same timeline and procedures as specified in section 6.6.

(d) A resource not exempted or excepted under subsection (c) hereof that is capable of qualifying as a Capacity Performance Resource and does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.

## **6.7 Data Submission**

(a) Potential participants in any PJM Reliability Pricing Model Auction shall submit, together with supporting documentation for each item, to the Market Monitoring Unit and the Office of the Interconnection no later than one hundred twenty (120) days prior to the posted date for the conduct of such auction, a list of owned or controlled generation resources by PJM transmission zone for the specified Delivery Year, including the amount of gross capacity, the EFORD and the net (unforced) capacity. A potential participant intending to offer any Capacity Performance Resource choosing an offer cap at or below the Net Cost of New Entry must provide the associated offer cap and the MW to which the offer cap applies.

(b) Except as provided in subsection (c) below, potential participants in any PJM Reliability Pricing Model Auction in any LDA or Unconstrained LDA Group that request a unit specific Avoidable Cost Rate shall, in addition, submit the following data, together with supporting documentation for each item, to the Market Monitoring Unit no later than one hundred twenty (120) days prior to the commencement of the offer period for such auction:

i. If the Capacity Market Seller intends to submit a non-zero price in its Sell Offer in any such auction, the Capacity Market Seller shall submit a calculation of the Avoidable Cost Rate and Projected PJM Market Revenues, as defined in subsection (d) below, together with detailed supporting documentation.

ii. If the Capacity Market Seller intends to submit a Sell Offer based on opportunity cost, the Capacity Market Seller shall also submit a calculation of Opportunity Cost, as defined in subsection (d), with detailed supporting documentation.

(c) Potential auction participants identified in subsection (b) above need not submit the data specified in that subsection for any Generation Capacity Resource:

i. that is in an Unconstrained LDA Group or, if this is the relevant market, the entire PJM Region, and is in a resource class identified in the table below as not likely to include the marginal price-setting resources in such auction; or

ii. for which the potential participant commits that any Sell Offer it submits as to such resource shall not include any price above: (1) the applicable default level identified below for the relevant resource class, less (2) the Projected PJM Market Revenues for such resource, as determined in accordance with this Tariff.



Nothing herein precludes the Market Monitoring Unit from requesting additional information from any potential auction participant as deemed necessary by the Market Monitoring Unit, including, without limitation, additional cost data on resources in a class that is not otherwise expected to include the marginal price setting resource as outlined in section II.G of Attachment M-Appendix. Any Sell Offer submitted in any auction that is inconsistent with any agreement or commitment made pursuant to this subsection shall be rejected, and the Capacity Market Seller shall be required to resubmit a Sell Offer that complies with such agreement or commitment within one (1) business day of the Office of the Interconnection's rejection of such Sell Offer. If the Capacity Market Seller does not timely resubmit its Sell Offer, fails to request a unit-specific Avoidable Cost Rate by the specified deadline, or if the Office of the Interconnection determines that the information provided by the Capacity Market Seller in support of the requested unit-specific Avoidable Cost Rate or Sell Offer is incomplete, the Capacity Market Seller shall be deemed to have submitted a Sell Offer that complies with the commitments made under this subsection, with a default offer for the applicable class of resource or nearest comparable class of resource determined under this subsection (c)(ii). The obligation imposed under section 6.6(a) shall not be satisfied unless and until the Capacity Market Seller submits (or is deemed to have submitted) a Sell Offer that conforms to its commitments made pursuant to this subsection or subject to the procedures set forth in section 6.4 and section II.H of Attachment M - Appendix.

The default retirement and mothball Avoidable Cost Rates ("ACR") referenced in this subsection (c)(ii) are as set forth in the tables below for the 2013/2014 Delivery Year through the 2016/2017 Delivery Year. Capacity Market Sellers shall use the one-year mothball Avoidable Cost Rate shown below, unless such Capacity Market Seller satisfies the criteria set forth in section 6.7(e), in which case the Capacity Market Seller may use the retirement Avoidable Cost Rate. PJM shall also publish on its Web site the number of Generation Capacity Resources and megawatts per LDA that use the retirement Avoidable Cost Rates.

<b>Maximum Avoidable Cost Rates by Technology Class</b>								
<b>Technology</b>	<b>2013/14 Mothball ACR (\$/MW-Day)</b>	<b>2013/14 Retirement ACR (\$/MW-Day)</b>	<b>2014/15 Mothball ACR (\$/MW-Day)</b>	<b>2014/15 Retirement ACR (\$/MW-Day)</b>	<b>2015/16 Mothball ACR (\$/MW-Day)</b>	<b>2015/16 Retirement ACR (\$/MW-Day)</b>	<b>2016/2017 Mothball ACR (\$/MW-Day)</b>	<b>2016/2017 Retirement ACR (\$/MW-Day)</b>
Nuclear	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pumped Storage	\$23.64	\$33.19	\$24.56	\$34.48	\$25.56	\$35.89	\$24.05	\$33.78
Hydro	\$80.80	\$105.67	\$83.93	\$109.76	\$87.35	\$114.24	\$82.23	\$107.55
Sub-Critical Coal	\$193.98	\$215.02	\$201.49	\$223.35	\$209.71	\$232.46	\$197.43	\$218.84
Super Critical Coal	\$200.41	\$219.21	\$208.17	\$227.70	\$216.66	\$236.99	\$203.96	\$223.10
Waste Coal - Small	\$255.81	\$309.83	\$265.72	\$321.83	\$276.56	\$334.96	\$260.35	\$315.34
Waste Coal – Large	\$94.61	\$114.29	\$98.27	\$118.72	\$102.28	\$123.56	\$96.29	\$116.32
Wind	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CC-2 on 1 Frame F	\$35.18	\$49.90	\$36.54	\$51.83	\$38.03	\$53.94	\$35.81	\$50.79
CC-3 on 1	\$39.06	\$52.89	\$40.57	\$54.94	\$42.23	\$57.18	\$39.75	\$53.83

Frame E/Siemens								
CC-3 or More on 1 or More Frame F	\$30.46	\$42.28	\$31.64	\$43.92	\$32.93	\$45.71	\$30.99	\$43.03
CC-NUG Cogen. Frame B or E Technology	\$130.76	\$175.71	\$135.82	\$182.52	\$141.36	\$189.97	\$133.09	\$178.83
CT - 1st & 2nd Gen. Aero (P&W FT 4)	\$27.96	\$37.19	\$29.04	\$38.63	\$30.22	\$40.21	\$28.45	\$37.85
CT - 1st & Gen. Frame B	\$27.63	\$36.87	\$28.70	\$38.30	\$29.87	\$39.86	\$28.11	\$37.52
CT - 2nd Gen. Frame E	\$26.26	\$35.14	\$27.28	\$36.50	\$28.39	\$37.99	\$26.73	\$35.77
CT - 3rd Gen. Aero (GE LM 6000)	\$63.57	\$93.70	\$66.03	\$97.33	\$68.72	\$101.30	\$64.70	\$95.37
CT - 3rd Gen. Aero (P&W FT - 8 TwinPak)	\$33.34	\$49.16	\$34.63	\$51.06	\$36.04	\$53.14	\$33.93	\$50.03
CT - 3rd Gen. Frame F	\$26.96	\$38.83	\$28.00	\$40.33	\$29.14	\$41.98	\$27.43	\$39.52
Diesel	\$29.92	\$37.98	\$31.08	\$39.45	\$32.35	\$41.06	\$30.44	\$38.66
Oil and Gas Steam	\$74.20	\$90.33	\$77.07	\$93.83	\$80.21	\$97.66	\$75.51	\$91.94

Commencing with the Base Residual Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall determine the default retirement and mothball Avoidable Cost Rates referenced in section (c)(ii) above, and post them on its website, by no later than one hundred fifty (150) days prior to the commencement of the offer period for each Base Residual Auction. To determine the applicable ACR rates, the Office of the Interconnection shall use the actual rate of change in the historical values from the Handy-Whitman Index of Public Utility Construction Costs or a comparable index approved by the Commission (“Handy-Whitman Index”) to the extent they are available to update the base values for the Delivery Year, and for future Delivery Years for which the updated Handy-Whitman Index values are not yet available the Office of the Interconnection shall update the base values for the Delivery Year using the most recent ten-calendar-year annual average rate of change. The ACR rates shall be expressed in dollar values for the applicable Delivery Year.

<b>Maximum Avoidable Cost Rates by Technology Class (Expressed in 2011 Dollars for the 2011/2012 Delivery Year)</b>		
<b>Technology</b>	<b>Mothball ACR (\$/MW-Day)</b>	<b>Retirement ACR (\$/MW-Day)</b>
Combustion Turbine - Industrial Frame	\$24.13	\$33.04
Coal Fired	\$136.91	\$157.83
Combined Cycle	\$29.58	\$40.69
Combustion Turbine - Aero Derivative	\$26.13	\$37.18
Diesel	\$25.46	\$32.33
Hydro	\$68.78	\$89.96
Oil and Gas Steam	\$63.16	\$76.90
Pumped Storage	\$20.12	\$28.26

To determine the default retirement and mothball ACR values for the 2017/2018 Delivery Year, the Office of the Interconnection shall multiply the base default retirement and mothball ACR values in the table above by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Indices for the 2011 to 2013 calendar years to determine updated base default retirement and mothball ACR values. The updated base default retirement and mothball ACR values shall then be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website.

To determine the default retirement and mothball ACR values for the 2018/2019 and subsequent Delivery Years, the Office of the Interconnection shall multiply the updated base default retirement and mothball ACR values from the immediately preceding Delivery Year by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Index. These values become the new adjusted base default retirement and mothball ACR values, as calculated by the Office of the Interconnection and posted to its website. These resulting adjusted base values for the Delivery Year shall be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman

Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website; provided, however, that after the Handy-Whitman indexing methodology has been employed to determine the default retirement and mothball ACR values for the RPM Auctions for the 2017/2018 through 2020/2021 Delivery Years, the Office of the Interconnection shall: i) review the default retirement and mothball ACR values to determine whether any changes other than those produced by such methodology are warranted for subsequent Delivery Years (including seeking the analysis and advice of the Market Monitoring Unit on such matter) and report its conclusions to the Members in writing no later than June 1, 2017; and ii) file with FERC resulting changes, if any, to this section no later than October 1, 2017, to be effective for the Base Residual Auction for the 2021/2022 Delivery Year; provided further, that nothing herein precludes the Office of the Interconnection from filing with FERC changes to the default retirement and mothball ACR values or any other provision of this section prior to the deadline stated in the previous clause, or at any other time.

PJM shall also publish on its website the number of Generation Capacity Resources and megawatts per LDA that use the retirement Avoidable Cost Rates.

After the Market Monitoring Unit conducts its annual review of the table of default Avoidable Cost Rates included in section 6.7(c) above in accordance with the procedure specified in section II.H of Attachment M – Appendix, it will provide updated values or notice of its determination that updated values are not needed to Office of the Interconnection. In the event that the Office of the Interconnection determines that the values should be updated, the Office of the Interconnection shall file its proposed values with the Commission by no later than October 30th prior to the commencement of the offer period for the first RPM Auction for which it proposes to apply the updated values.

(d) In order for costs to qualify for inclusion in the Market Seller Offer Cap, the Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection relevant unit-specific cost data concerning each data item specified as set forth in section 6 by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. If cost data is not available at the time of submission for the time periods specified in section 6.8, costs may be estimated for such period based on the most recent data available, with an explanation of and basis for the estimate used, as may be further specified in the PJM Manuals. Based on the data and calculations submitted by the Capacity Market Sellers for each existing generation resource and the formulas specified below, the Market Monitoring Unit shall calculate the Market Seller Offer Cap for each such resource, and notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination pursuant to section II.E of Attachment M-Appendix.

i. **Avoidable Cost Rate:** The Avoidable Cost Rate for an existing generation resource shall be determined using the formula below and applied to the unit's Base Offer Segment.

ii. **Opportunity Cost:** Opportunity Cost shall be the documented price available to an existing generation resource in a market external to PJM. In the event that the total MW of existing generation resources submitting opportunity cost offers in any auction for a Delivery Year exceeds the firm export capability of the PJM system for such Delivery Year, or the capability of external markets to import capacity in such year, the Office of the

Interconnection will accept such offers on a competitive basis. PJM will construct a supply curve of opportunity cost offers, ordered by opportunity cost, and accept such offers to export starting with the highest opportunity cost, until the maximum level of such exports is reached. The maximum level of such exports is the lesser of the Office of the Interconnection's ability to permit firm exports or the ability of the importing area(s) to accept firm imports or imports of capacity, taking account of relevant export limitations by location. If, as a result, an opportunity cost offer is not accepted from an existing generation resource, the Market Seller Offer Cap applicable to Sell Offers relying on such generation resource shall be the Avoidable Cost Rate less the Projected Market Revenues for such resource (as defined in Section 6.4). The default Avoidable Cost Rate shall be the one year mothball Avoidable Cost Rate set forth in the tables in section 6.7(c) above unless Capacity Market Seller satisfies the criteria delineated in section 6.7(e) below.

iii. **Projected PJM Market Revenues:** Projected PJM Market Revenues are defined by section 6.8(d), for any Generation Capacity Resource to which the Avoidable Cost Rate is applied.

(e) In order for the retirement Avoidable Cost Rate set forth in the table in section 6.7(c) to apply, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction, a Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer representing that the Capacity Market Seller will retire the Generation Capacity Resource if it does not receive during the relevant Delivery Year at least the applicable retirement Avoidable Cost Rate because it would be uneconomic to continue to operate the Generation Capacity Resource in the Delivery Year without the retirement Avoidable Cost Rate, and specifying the date the Generation Capacity Resource would otherwise be retired.

## 6.8 Avoidable Cost Definition

### (a) Avoidable Cost Rate:

The Avoidable Cost Rate for a Generation Capacity Resource that is the subject of a Sell Offer shall be determined using the following formula, expressed in dollars per MW-year:

$$\text{Avoidable Cost Rate} = [\text{Adjustment Factor} * (\text{AOML} + \text{AAE} + \text{AFAE} + \text{AME} + \text{AVE} + \text{ATFI} + \text{ACC} + \text{ACLE}) + \text{ARPIR} + \text{APIR} + \text{CPQR}]$$

Where:

- **Adjustment Factor** equals 1.10 (to provide a margin of error for understatement of costs) plus an additional adjustment referencing the 10-year average Handy-Whitman Index in order to account for expected inflation from the time interval between the submission of the Sell Offer and the commencement of the Delivery Year.
- **AOML (Avoidable Operations and Maintenance Labor)** consists of the avoidable labor expenses related directly to operations and maintenance of the generating unit for the twelve months preceding the month in which the data

must be provided. The categories of expenses included in AOML are those incurred for: (a) on-site based labor engaged in operations and maintenance activities; (b) off-site based labor engaged in on-site operations and maintenance activities directly related to the generating unit; and (c) off-site based labor engaged in off-site operations and maintenance activities directly related to generating unit equipment removed from the generating unit site.

- **AAE (Avoidable Administrative Expenses)** consists of the avoidable administrative expenses related directly to employees at the generating unit for twelve months preceding the month in which the data must be provided. The categories of expenses included in AAE are those incurred for: (a) employee expenses (except employee expenses included in AOML); (b) environmental fees; (c) safety and operator training; (d) office supplies; (e) communications; and (f) annual plant test, inspection and analysis.
- **AFAE (Avoidable Fuel Availability Expenses)** consists of avoidable operating expenses related directly to fuel availability and delivery for the generating unit that can be demonstrated by the Capacity Market Seller based on data for the twelve months preceding the month in which the data must be provided, or on reasonable projections for the Delivery Year supported by executed contracts, published tariffs, or other data sufficient to demonstrate with reasonable certainty the level of costs that have been or shall be incurred for such purpose. The categories of expenses included in AFAE are those incurred for: (a) firm gas pipeline transportation; (b) natural gas storage costs; (c) costs of gas balancing agreements; and (d) costs of gas park and loan services. AFAE expenses are for firm fuel supply and apply solely for offers for a Capacity Performance Resource
- **AME (Avoidable Maintenance Expenses)** consists of avoidable maintenance expenses (other than expenses included in AOML) related directly to the generating unit for the twelve months preceding the month in which the data must be provided. The categories of expenses included in AME are those incurred for: (a) chemical and materials consumed during maintenance of the generating unit; and (b) rented maintenance equipment used to maintain the generating unit.
- **AVE (Avoidable Variable Expenses)** consists of avoidable variable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The categories of expenses included in AVE are those incurred for: (a) water treatment chemicals and lubricants; (b) water, gas, and electric service (not for power generation); and (c) waste water treatment.
- **ATFI (Avoidable Taxes, Fees and Insurance)** consists of avoidable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The categories of expenses included in AFTI are those incurred for: (a)

insurance, (b) permits and licensing fees, (c) site security and utilities for maintaining security at the site; and (d) property taxes.

- **ACC (Avoidable Carrying Charges)** consists of avoidable short-term carrying charges related directly to the generating unit in the twelve months preceding the month in which the data must be provided. Avoidable short-term carrying charges shall include short term carrying charges for maintaining reasonable levels of inventories of fuel and spare parts that result from short-term operational unit decisions as measured by industry best practice standards. For the purpose of determining ACC, short term is the time period in which a reasonable replacement of inventory for normal, expected operations can occur.
- **ACLE (Avoidable Corporate Level Expenses)** consists of avoidable corporate level expenses directly related to the generating unit incurred in the twelve months preceding the month in which the data must be provided. Avoidable corporate level expenses shall include only such expenses that are directly linked to providing tangible services required for the operation of the generating unit proposed for Deactivation. The categories of avoidable expenses included in ACLE are those incurred for: (a) legal services, (b) environmental reporting; and (c) procurement expenses.
- **CPQR (Capacity Performance Quantifiable Risk)** consists of the documented and quantifiable costs of mitigating the risks associated with submission of a Capacity Performance Resource offer, such as insurance expenses solely attributable to risks of being a Capacity Performance Resource. CPQR applies solely for offers for a Capacity Performance Resource.
- **APIR (Avoidable Project Investment Recovery Rate) =  $PI * CRF$**

Where:

- **PI** is the amount of project investment completed prior to June 1 of the Delivery Year, except for Mandatory Capital Expenditures (“CapEx”) for which the project investment must be completed during the Delivery Year, that is reasonably required to enable a Generation Capacity Resource that is the subject of a Sell Offer to continue operating or improve availability during Peak-Hour Periods during the Delivery Year.
- **CRF** is the annual capital recovery factor from the following table, applied in accordance with the terms specified below.

Age of Existing Units (Years)	Remaining Life of Plant	Levelized CRF
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	(Years)	
1 to 5	30	0.107
6 to 10	25	0.114
11 to 15	20	0.125
16 to 20	15	0.146
21 to 25	10	0.198
25 Plus	5	0.363
Mandatory CapEx	4	0.450
40 Plus Alternative	1	1.100

Unless otherwise stated, Age of Existing Unit shall be equal to the number of years since the Unit commenced commercial operation, up to and through the relevant Delivery Year.

Remaining Life of Plant defines the amortization schedule (i.e., the maximum number of years over which the Project Investment may be included in the Avoidable Cost Rate.)

### **Capital Expenditures and Project Investment**

For any given Project Investment, a Capacity Market Seller may make a one-time election to recover such investment using: (i) the highest CRF and associated recovery schedule to which it is entitled; or (ii) the next highest CRF and associated recovery schedule. For these purposes, the CRF and recovery schedule for the 25 Plus category is the next highest CRF and recovery schedule for both the Mandatory CapEx and the 40 Plus Alternative categories. The Capacity Market Seller using the above table must provide the Market Monitoring Unit with information, identifying and supporting such election, including but not limited to the age of the unit, the amount of the Project Investment, the purpose of the investment, evidence of corporate commitment (e.g., an SEC filing, a press release, or a letter from a duly authorized corporate officer indicating intent to make such investment), and detailed information concerning the governmental requirement (if applicable). Absent other written notification, such election shall be deemed based on the CRF such Seller employs for the first Sell Offer reflecting recovery of any portion of such Project Investment.

For any resource using the CRF and associated recovery schedule from the CRF table that set the Capacity Resource Clearing Price in any Delivery Year, such Capacity Market Seller must also provide to the Market Monitoring Unit, for informational purposes only, evidence of the actual expenditure of the Project Investment, when such information becomes available.

If the project associated with a Project Investment that was included in a Sell Offer using a CRF and associated recovery schedule from the above table has not entered into commercial operation prior to the end of the relevant Delivery Year, and the resource's Sell Offer sets the clearing price for the relevant LDA, the Capacity Market Seller shall be required to elect to either (i) pay a charge that is equal to the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR component of the Avoidable Cost Rate, this difference to be multiplied by the cleared MW volume from such Resource ("rebate payment"); (ii) hold such rebate payment in escrow, to be released to the Capacity Market Seller in the event that the project enters into commercial operation during the subsequent Delivery Year or rebated to LSEs in the relevant LDA if the



project has not entered into commercial operation during the subsequent Delivery Year; or (iii) make a reasonable investment in the amount of the PI in other Existing Generation Capacity Resources owned or controlled by the Capacity Market Seller or its Affiliates in the relevant LDA. The revenue from such rebate payments shall be allocated pro rata to LSEs in the relevant LDA(s) that were charged a Locational Reliability Charge for such Delivery Year, based on their Daily Unforced Capacity Obligation in the relevant LDA(s). If the Sell Offer from the Generation Capacity Resource did not set the Capacity Resource Clearing Price in the relevant LDA, no alternative investment or rebate payment is required. If the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR amount does not exceed the greater of \$10 per MW-day or a 10% increase in the clearing price, no alternative investment or rebate payment is required.

### **Mandatory CapEx Option**

The Mandatory CapEx CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), to a resource that must make a Project Investment to comply with a governmental requirement that would otherwise materially impact operating levels during the Delivery Year, where: (i) such resource is a coal, oil or gas-fired resource that began commercial operation no fewer than fifteen years prior to the start of the first Delivery Year for which such recovery is sought, and such Project Investment is equal to or exceeds \$200/kW of capitalized project cost; or (ii) such resource is a coal-fired resource located in an LDA for which a separate VRR Curve has been established for the relevant Delivery Years, and began commercial operation at least 50 years prior to the conduct of the relevant BRA.

A Capacity Market Seller that wishes to elect the Mandatory CapEx option for a Project Investment must do so beginning with the Base Residual Auction for the Delivery Year in which such project is expected to enter commercial operation. A Sell Offer submitted in any Base Residual Auction for which the Mandatory CapEx option is selected may not exceed an offer price equivalent to 0.90 times the then-current Net CONE (on an unforced-equivalent basis).

### **40 Plus Alternative Option**

The 40 Plus Alternative CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), for a resource that is a gas- or oil-fired resource that began commercial operation no less than 40 years prior to the conduct of the relevant BRA (excluding, however, any resource in any Delivery Year for which the resource is receiving a payment under Part V of the PJM Tariff. Generation Capacity Resources electing this 40 Plus Alternative CRF shall be treated as At Risk Generation for purposes of the sensitivity runs in the RTEP process). Resources electing the 40 Plus Alternative option will be modeled in the RTEP process as “at-risk” at the end of the one-year amortization period.

A Capacity Market Seller that wishes to elect the 40 Plus Alternative option for a Project Investment must provide written notice of such election to the Office of the Interconnection no later than six months prior to the Base Residual Auction for which such election is sought; provided however that shorter notice may be provided if unforeseen circumstances give rise to the need to make such election and such seller gives notice as soon as practicable.

The Office of the Interconnection shall give market participants reasonable notice of such election, subject to satisfaction of requirements under the PJM Operating Agreement for protection of confidential and commercially sensitive information. A Sell Offer submitted in any Base Residual Auction for which the 40 Plus Alternative option is selected may not exceed an offer price equivalent to the then-current Net CONE (on an unforced-equivalent basis).

### **Multi-Year Pricing Option**

A Seller submitting a Sell Offer with an APIR component that is based on a Project Investment of at least \$450/kW may elect this Multi-Year Pricing Option by providing written notice to such effect the first time it submits a Sell Offer that includes an APIR component for such Project Investment. Such option shall be available on the same terms, and under the same conditions, as are available to Planned Generation Capacity Resources under section 5.14(c) of this Attachment.

- **ARPIR (Avoidable Refunds of Project Investment Reimbursements)** consists of avoidable refund amounts of Project Investment Reimbursements payable by a Generation Owner to PJM under Part V, Section 118 of this Tariff or avoidable refund amounts of project investment reimbursements payable by a Generation Owner to PJM under a Cost of Service Recovery Rate filed under Part V, Section 119 of the Tariff and approved by the Commission.

(b) For the purpose of determining an Avoidable Cost Rate, avoidable expenses are incremental expenses directly required to operate a Generation Capacity Resource that a Generation Owner would not incur if such generating unit did not operate in the Delivery Year or meet Availability criteria during Peak-Hour Periods during the Delivery Year.

(c) For the purpose of determining an Avoidable Cost Rate, avoidable expenses shall exclude variable costs recoverable under cost-based offers to sell energy from operating capacity on the PJM Interchange Energy Market under the Operating Agreement.

(d) Projected PJM Market Revenues for any Generation Capacity Resource to which the Avoidable Cost Rate is applied shall include all actual unit-specific revenues from PJM energy markets, ancillary services, and unit-specific bilateral contracts from such Generation Capacity Resource, net of marginal costs for providing such energy (i.e., costs allowed under cost-based offers pursuant to Section 6.4 of Schedule 1 of the Operating Agreement) and ancillary services from such resource.

(i) For the first three BRAs (for Delivery Years 2007-08, 2008-09, 2009-10), the calculation of Projected PJM Market Revenues shall be equal to the simple average of such net revenues as described above for calendar years 2001-2006; and

(ii) For the fourth BRA (delivery year 2010-11) and thereafter, the calculation of Projected PJM Market Revenues shall be equal to the rolling simple average of such net revenues as described above from the three most recent whole calendar years prior to the year in which the BRA is conducted.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because the Generation Capacity Resource was not integrated into PJM during the full period, then the Projected PJM Market Revenues shall be calculated using only those whole calendar years within the full period in which such Resource received PJM market revenues.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because it was not in commercial operation during the entire period, or if data is not available to the Capacity Market Seller for the entire period, despite the good faith efforts of such seller to obtain such data, then the Projected PJM Market Revenues shall be calculated based upon net revenues received over the entire period by comparable units, to be developed by the MMU and the Capacity Market Seller.

## **7. GENERATION RESOURCE RATING TEST FAILURE CHARGE**

### **7.1 Generation Resource Rating Test Failure Charges**

A Generation Resource Rating Test Failure Charge shall be assessed on any Market Seller that commits a Generation Capacity Resource for a Delivery Year, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, if such resource fails a generation resource capacity test, as provided herein.

#### **a) Generation Resource Fails Capacity Test in Delivery Year**

Each Generation Capacity Resource committed for a Delivery Year shall be obligated to complete a generation resource capacity test, as described in the PJM Manuals. The Market Seller that committed the resource, or Locational UCAP Seller that sold the resource, may perform an unlimited number of tests during each such period. If none of the tests during a testing period certify full delivery of the megawatt amount of installed capacity the Market Seller committed, or Locational UCAP Seller sold, for such Delivery Year, the Market Seller or Locational UCAP Seller shall be assessed a daily Generation Resource Rating Test Failure Charge for each day from the first day of the Summer or Winter Season in which such resource failed the rating test through the last day of such Delivery Year, provided, however, that such a seller that fails or is expected to fail a rating test may obtain and commit Unforced Capacity from a replacement Capacity Resource meeting the same locational requirements. Such Unforced Capacity may include uncommitted or uncleared Sell Offer blocks from Generation Capacity Resources that were otherwise committed. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection, and shall reduce the amount of installed capacity committed from the Generation Capacity Resource, that failed or was expected to fail such rating test, in accordance with the determination prescribed by subsection (b) below.

#### **b) Generation Resource Rating Test Failure Charge**

The Generation Resource Rating Test Failure Charge shall equal the Daily Deficiency Rate multiplied by the following megawatt quantity, converted to an Unforced Capacity basis using the Generation Capacity Resource's EFORD for the twelve months ending the September 30 last preceding the Delivery Year: (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the highest installed capacity rating determined for such resource in any test during the relevant testing period. The Daily Deficiency Rate shall equal the Capacity Resource Clearing Price (weighted as necessary to reflect the clearing prices in all RPM Auctions that resulted in installed capacity commitments from such resource), in \$/MW-day, applicable to the Generation Capacity Resource (for purposes of replacement capacity, including Locational UCAP transactions, the applicable Capacity Resource Clearing Price shall be the clearing price for the Locational

Deliverability Area in which such resource is located) plus the greater of (iii) 0.20 times such weighted average Capacity Resource Clearing Price; or (iv) \$20/MW-Day, provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller's cleared Sell Offer or Locational UCAP Seller's Locational UCAP sale due to derating, delay, or retirement, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a charge under section 8 for such unavailability; and provided further that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource capacity rating deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource capacity rating deficiency and Performance Shortfall. If a single resource is the basis for installed capacity commitments of multiple Capacity Market Sellers or Locational UCAP Sellers, the installed capacity shortfall determined under (i) and (ii) above shall be assessed upon such sellers on a pro-rata basis in accordance with the megawatts of capacity from such resource in their cleared Sell Offers, Locational UCAP sales, or other commitment as replacement capacity.

c) Allocation of Revenue Collected from Generation Resource Rating Test Failure Charges.

The revenue collected from Generation Resource Rating Test Failure Charges shall be distributed on a pro-rata basis to LSEs that were charged a Locational Reliability Charge for the Delivery Year for which the Generation Resource Rating Test Failure Charge was assessed. The charges shall be allocated on a pro-rata basis to LSEs based on their Daily Unforced Capacity Obligation.

## **8. CAPACITY RESOURCE DEFICIENCY CHARGE**

### **8.1**

A Capacity Resource Deficiency Charge shall be assessed on any Capacity Market Seller that commits a Capacity Resource, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, for a Delivery Year that is unable or unavailable to deliver Unforced Capacity for all or any part of such Delivery Year for any reason, including but not limited to the following, and that does not obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource) in the megawatt quantity required to satisfy the capacity committed from such resource by such seller as a result of all cleared Sell Offers from such seller based on such resource in any RPM Auctions for such Delivery Year, the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource:

a) Unit Derating – Such Capacity Resource is a Generation Capacity Resource and its capacity value is derated prior to or during the Delivery Year;

b) EFORD Increase – Such Capacity Resource is a Generation Capacity Resource and the EFORD value determined for such resource at least two (2) months prior to the Third Incremental Auction is higher than the EFORD value submitted in the Capacity Market Seller's cleared Sell Offer;

c) External Generation Resource – Such Capacity Resource is an Existing Generation Capacity Resource that is located outside of the PJM Control Area and arrangements for the firm delivery of the output of such resource to the interface with the PJM Region are not in place for such resource prior to the start of the Delivery Year;

d) Planned Generation Resource – Such Capacity Resource is a Planned Generation Capacity Resource and Interconnection Service has not commenced as to such resource prior to the start of the Delivery Year;

e) Planned Demand Resource - Such Capacity Resource is a Planned Demand Resource or an Energy Efficiency Resource and the associated demand response program or energy efficiency measure is not installed prior to the start of the Delivery Year; or

f) Existing Demand Resource – Such Capacity Resource is an existing Demand Resource or Energy Efficiency Resource and, subject to section 8.4, is not capable of providing the megawatt quantity of load response specified in the cleared Sell Offer for the time periods of availability associated with the product type.

### **8.2. Capacity Resource Deficiency Charge**

The Capacity Resource Deficiency Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the megawatt quantity of deficiency below the level of capacity committed in such Capacity Market Seller's Sell Offer(s) or bilateral capacity commitments, or Locational UCAP Seller's Locational UCAP sale for each day such seller is deficient, provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource deficiency and Performance Shortfall.

### **8.3. Allocation of Revenue Collected from Capacity Resource Deficiency Charges**

The revenue collected from the assessment of a Capacity Resource Deficiency Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

### **8.4 Relief from Charges**

A Capacity Market Seller or Locational UCAP Seller that is otherwise subject to the Capacity Resource Deficiency Charge solely as a result of section 8.1(f) may receive relief from such Charge if it demonstrates that the inability to provide the level of demand response specified in its Sell Offer is due to the permanent departure (due to plant closure, efficiency gains, or similar reasons) from the Transmission System of load that was relied upon for load response in such Sell Offer; provided, however, that such seller must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief. Such seller shall receive no RPM Auction Credit for the amount of reduction in the committed Existing Demand Resources.

## **9. PEAK SEASON MAINTENANCE COMPLIANCE PENALTY CHARGE.**

### a) Purpose

To preserve and maintain the reliability of the PJM Region and to recognize the impact of planned outages and maintenance outages of Generation Capacity Resources during the Peak Season, each Capacity Market Seller that commits a Generation Capacity Resource for a Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for a Delivery Year, must ensure that such Generation Capacity Resource has available sufficient Unforced Capacity during the Peak Season to satisfy the megawatt amount committed from such resource as a result of all Sell Offers by such seller based on such resource in any RPM Auctions for such Delivery Year the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource.

### b) Peak Season Requirement

To the extent the Generation Capacity Resource will not be available due to a planned or maintenance outage that occurs during the Peak Season without the approval of the Office of the Interconnection, the Capacity Market Seller or Locational UCAP Seller must obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) from a Capacity Resource that is not already committed for such Delivery Year and that meets all characteristics specified in the Sell Offer or Locational UCAP transaction, including the megawatt quantity of Unforced Capacity committed for such Delivery Year (with such Unforced Capacity, in the case of a Generation Capacity Resource, determined on the basis of such Generation Capacity Resource's EFORD for the twelve months ending on the September 30 last preceding the Delivery Year), or otherwise, for Delivery Years through May 31, 2018, pay a Peak Season Maintenance Compliance Penalty Charge. The Capacity Market Seller or Locational UCAP Seller shall commit such replacement Capacity Resource in accordance with the procedure set forth in the PJM Manuals.

### c) Peak Season Planned and Maintenance Outages

The Office of the Interconnection shall adopt and maintain rules and procedures for determining the allowable Peak Season planned and maintenance outages.

### d) Peak Season Maintenance Compliance Penalty Charge

The Peak Season Maintenance Compliance Penalty Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the unforced value of a positive shortfall calculated for the capacity committed for each day during the Peak Season that such resource is out-of-service on a maintenance outage that is not authorized by the Office of the Interconnection. The shortfall shall equal (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and



for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the summer net dependable rating minus the amount of capacity out-of-service on unapproved planned or maintenance outage on a peak season day.

e) Allocation of Revenue Collected from Peak Season Maintenance Compliance Penalty Charges

The revenue collected from assessment of a Peak Season Maintenance Compliance Penalty Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which the Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to all such LSEs based on their Daily Unforced Capacity Obligation.

## 10. PEAK-HOUR-PERIOD AVAILABILITY CHARGES AND CREDITS

(a) To preserve and maintain the reliability of the PJM Region and to encourage Capacity Market Sellers and Locational UCAP Sellers to maintain the availability of Generation Capacity Resources during critical peak hours of the Delivery Year, each Capacity Market Seller that commits a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, shall be credited or charged to the extent the critical peak-period availability of its committed Generation Capacity Resources exceeds or falls short, respectively, of the expected availability of such resources. Charges and credits hereunder shall not apply to wind or solar resources.

(b) Critical peak periods for purposes of this assessment (“Peak-Hour Periods”) shall be the hour ending 1500 local prevailing time through the hour ending 1900 local prevailing time on any day during the calendar months of June through August that is not a Saturday, Sunday, or federal holiday, and the hour ending 800 local prevailing time through the hour ending 900 local prevailing time and the hour ending 1900 local prevailing time through the hour ending 2000 local prevailing time on any day during the calendar months of January and February that is not a Saturday, Sunday or federal holiday.

(c) Peak-Period Equivalent Forced Outage Rate and Peak-Period Capacity Calculations

The Peak-Period Equivalent Forced Outage Rate shall be calculated for Peak-Hour Periods based on the following formula:

$$\text{EFORP (\%)} = (\text{FOH} + \text{EFPOH}) / (\text{SH} + \text{FOH})$$

where

FOH = full forced outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below);

EFPOH = equivalent forced partial outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below); and

SH = service hours as defined pursuant to NERC GADS standards.

The Peak-Period Capacity of a Generation Capacity Resource shall be calculated as follows:

$$\text{PCAP} = \text{ICAP} * (1.0 - \text{EFOR}_p)$$

where

ICAP = the installed capacity rating of such Generation Capacity Resource

(d) Determination of Expected EFOR<sub>P</sub> and PCAP for Generation Capacity Resources

For each Delivery Year, the expected EFOR<sub>P</sub> and PCAP of each Generation Capacity Resource committed to serve load in such Delivery Year shall be the EFORD and UCAP, respectively, calculated on a rolling-average basis using such resource's service history during the five consecutive annual periods of twelve consecutive months ending September 30 last preceding such Delivery Year. Such EFOR<sub>D</sub> and UCAP shall be determined in accordance with Schedule 5 of the Reliability Assurance Agreement, which excludes (for purposes of Capacity Resource UCAP calculations) outages deemed outside management control in accordance with the standards and guidelines of NERC, as defined in the Generating Availability Data System, Data Reporting Instructions in Attachment K or its successor ("Outside Plant Management Control" or "OMC").

(e) For each Delivery Year, the actual EFOR<sub>P</sub> and PCAP of each Generation Capacity Resource shall be calculated during the Peak-Hour Periods of such Delivery Year, provided however, that such calculation shall not include any day such a resource was unavailable if such unavailability resulted in a charge or penalty due to delay, cancellation, retirement, de-rating, or rating test failure. The full or partial forced outage hours when called upon shall be those outage hours during which the cost-based offer for energy from the resource would have been less than the applicable Locational Marginal Price for such resource, or when the Office of the Interconnection would have called upon the resource (absent the outage) for Operating Reserves, in both cases as determined by the Office of the Interconnection in accordance with the procedures specified in the PJM Manuals (including, without limitation, respecting such unit's current operating constraints). In addition, for single-fueled, natural gas-fired units, a failure to perform during the winter Peak-Hour Period shall be excused for purposes of this section if the Capacity Market Seller, or Locational UCAP Seller, as applicable, can demonstrate to the Office of the Interconnection that such failure was due to non-availability of gas to supply the unit.

(f) If the calculation under subsection (e) for any Generation Capacity Resource for a Delivery Year results in fewer than fifty total Service Hours during Peak Hours, then the actual EFOR<sub>P</sub> for purposes of such calculation shall be the lower of the resource's EFOR<sub>D</sub> (based on Delivery Year outage data) and its EFOR<sub>P</sub> and the actual PCAP for purposes of such calculation shall be, respectively, the resource's UCAP or its PCAP.

(g) For each Delivery Year, the excess or shortfall in Peak-Hour Period availability for each Generation Capacity Resource shall be determined by comparing such resource's expected and actual PCAP, subject to the limitation under subsection (i) below. The net Peak-Hour Period availability shortfall or excess for each Capacity Market Seller and FRR Entity in each Locational Deliverability Area shall be the net of the shortfalls and excesses of all Generation Capacity Resources in such Locational Deliverability Area committed by such Capacity Market Seller or Locational UCAP Seller for such Delivery Year. If there is a net positive Peak Hour Period availability shortfall in the LDA for such committed resources in the LDA, the sum of the excesses of all Generation Capacity Resources in such Locational Deliverability Area owned or controlled by such Capacity Market Seller, available for the Delivery Year but not committed for such Delivery Year, and satisfying all obligations of a

committed Capacity Resource for such Delivery Year shall be used to reduce the net positive Peak Hour Period availability shortfall in the LDA of committed resources by the amount of the sum of the excesses of such available uncommitted resources; however, such reduction shall not result in a net Peak Hour Period availability excess in the LDA.

(h) As to any Generation Capacity Resource experiencing or expected to experience a full or partial outage during any Peak-Hour Period that would or could result in a shortfall under subsection (g) above, a Capacity Market Seller or Locational UCAP Seller may obtain and commit Unforced Capacity from a replacement Capacity Resource (not previously committed) meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) as such resource. Such Unforced Capacity shall be recognized for purposes of this section prospectively from the effective date of commitment of such replacement resource, and to the extent such replacement Unforced Capacity thereafter is available during Peak-Hour Periods, any shortfall that otherwise would have been calculated shall be reduced to that extent. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection.

(i) The shortfall determined for any Generation Capacity Resource shall not exceed an amount equal to 0.50 times the Unforced Capacity of such resource; provided, however, that if such limitation is triggered as to any Generation Capacity Resource for a Delivery Year, then the decimal multiplier for this calculation as to such resource in the immediately succeeding Delivery Year shall be increased to 0.75, and if such limitation again is triggered in such succeeding Delivery Year, then the multiplier shall be increased to 1.00. The multiplier shall remain at either such elevated level for each succeeding Delivery Year until the shortfall experienced by such resource is less than 0.50 times the Unforced Capacity of such resource for three consecutive Delivery Years.

(j) A Peak-Hour Period Availability Charge shall be assessed on each Capacity Market Seller or Locational UCAP Seller with a net shortfall in PCAP in an LDA, where such charge is equal to such shortfall times the Capacity Resource Clearing Price determined for such Locational Deliverability Area for such Delivery Year.

(k) The revenues from such charges shall be distributed to the Capacity Market Sellers, Locational UCAP Sellers, and FRR Entities that committed Generation Capacity Resources, in such Locational Deliverability Area that have net excess PCAP for such Delivery Year, provided however that any such seller shall be paid no more than the product of such seller's net excess PCAP times the Capacity Clearing Price determined for such Locational Deliverability Area for such Delivery Year. Any excess revenues remaining after such distribution shall be distributed on a pro-rata basis to all LSEs in the Zone that were charged the same Locational Reliability Charge for the Delivery Year for which the Peak Hour Availability Charge was assessed, and to all FRR Entities in the Zone that are LSEs and whose FRR Capacity Plan resources over-performed in the Delivery Year, on a pro-rata basis in accordance with each LSE's Daily Unforced Capacity Obligation.

(l) The Office of the Interconnection shall provide estimated charges and credits based on the summer Peak-Hour Periods within three calendar months after the end of the

summer period. Final charges and credits for the Delivery Year shall be billed within three calendar months following the end of the Delivery Year.

## 10A. CHARGES FOR NON-PERFORMANCE AND CREDITS FOR PERFORMANCE

(a) For the 2018/2019 Delivery Year and any subsequent Delivery Year (and for certain purposes for the 2016/2017 and 2017/2018 Delivery Years as provided in subsections (h) and (i) hereof), each Capacity Market Seller that commits a Capacity Resource for a Delivery Year (whether through an RPM Auction, a bilateral transaction, or as Locational UCAP), and each Locational UCAP Seller that sells Locational UCAP from a Capacity Resource for a Delivery Year, shall be charged to the extent the performance of each of its committed Capacity Resources during all or any part of a clock-hour when an Emergency Action is in effect falls short of the expected performance of such resources (as determined herein) and the revenue from such charges shall be provided to Market Participants with generation or demand response resources that perform during such hour in excess of the level expected based on commitments (if any) of such resources.

(b) Performance shall be measured for purposes of this assessment during each Performance Assessment Hour.

(c) For each Performance Assessment Hour, the Office of the Interconnection shall determine whether, and the extent to which, the actual performance of each Capacity Resource and Locational UCAP has fallen short of the performance expected of such committed Capacity Resource, and the magnitude of any such shortfall, based on the following formula:

Performance Shortfall = Expected Performance - Actual Performance

Where the result of such formula is a positive number and where:

Expected Performance =

for Generation Capacity Resources and Capacity Storage Resources: [(Resource Committed Capacity / All Committed Generation and Storage Capacity) \* (All Actual Generation Performance, Storage Resource Performance, Net Energy Imports and Demand Response Bonus Performance)];

where

Resource Committed Capacity = the total megawatts of Unforced Capacity of the Capacity Resource committed by such Capacity Market Seller or Locational UCAP Seller;

All Committed Generation and Storage Capacity = the total megawatts of Unforced Capacity of all Generation Capacity Resources and all Capacity Storage Resources committed by all Capacity Market Sellers, FRR Entities, Locational UCAP Sellers;

All Actual Generation Performance and Storage Resource Performance = the total amount of Actual Performance for all generation resources and storage resources during the interval;

Net Energy Imports = the sum of interchange transactions importing energy into PJM not including those associated with external Capacity Resources and therefore included in All Actual Generation Performance minus the sum of interchange transactions exporting energy out of PJM, but not less than zero;

Demand Response Bonus Performance = the sum of Bonus performance provided by Demand Response resources as calculated in (g) below;

and for Demand Resources, Energy Efficiency Resources, and Qualifying Transmission Upgrades: Resource Committed Capacity;

where

Resource Committed Capacity = the total megawatts of capacity committed from such Capacity Resource committed capacity without making any adjustment for the Forecast Pool Requirement

and

Actual Performance =

for each generation resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each storage resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each Demand Resource, the demand response provided by such resource, plus such resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour, as established through the PJM demand response settlement procedure consistent with the standards specified in Schedule 6 of the RAA;

for each Energy Efficiency Resource, the load reduction quantity approved by PJM subsequent to the pre-delivery year submittal of a post-installation measurement and verification report; and

for each Qualified Transmission Upgrade, the megawatt quantity cleared by such Qualified Transmission Upgrade if it is in service during the Performance Assessment Hour, and zero if it is not in service during such Performance Assessment Hour.

Such calculation shall encompass all resources located in the area defined by the Emergency Action. For such purpose, Qualifying Transmission Upgrades shall be deemed to be located in

the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit, and a Qualifying Transmission Upgrade shall be included in calculations of Expected Performance and Actual Performance only if, and to the extent that, the declared Emergency Action encompasses the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit. The Performance Shortfall shall be calculated for each Performance Assessment Hour, and any committed Capacity Resource for which the above calculation produces a negative number for a Performance Assessment Hour shall not have a Performance Shortfall for such Performance Assessment Hour.

(d) Notwithstanding subsection (c) above, a Capacity Resource or Locational UCAP of a Capacity Market Seller or Locational UCAP Seller shall not be considered in the calculation of a Performance Shortfall for a Performance Assessment Hour to the extent such Capacity Resource or Locational UCAP was unavailable during such Performance Assessment Hour solely because the resource on which such Capacity Resource or Locational UCAP is based was on a Generator Planned Outage or Generator Maintenance Outage approved by the Office of the Interconnection, or was not scheduled to operate by the Office of the Interconnection, or was online but was scheduled down, by the Office of the Interconnection, for reasons other than (i) limitations specified by such seller in the resource operating parameters, or (ii) the submission by such seller of a market-based offer higher than its cost-based offer.

(e) Subject to the Non-Performance Charge Limit specified in subsection (f) hereof, each Capacity Market Seller and Locational UCAP Seller shall be assessed a Non-Performance Charge for each of its Capacity Resources or Locational UCAP that has a Performance Shortfall for a Performance Assessment Hour based on the following formula, applied to each such resource:

$$\text{Non-Performance Charge} = \text{Performance Shortfall} * \text{Non-Performance Charge Rate}$$

Where

For Capacity Performance Resources the Non-Performance Charge Rate = (Net Cost of New Entry (stated in terms of installed capacity) for the LDA and Delivery Year for which such calculation is performed \* (365 / 30)

and for Base Capacity Resources the Non-Performance Charge Rate = (Weighted Average Resource Clearing Price applicable to the resource \* (365 / 30)

(f) The Non-Performance Charge for each Capacity Performance Resource or (including Locational UCAP from such a resource) shall not exceed a Non-Performance Charge Limit equal to, for any calendar month of a Delivery Year, 0.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year, an amount equal to 1.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365. All references to Net Cost of New Entry in this section 10A shall be to the Net Cost of New Entry for the LDA and Delivery Year for which the calculation is performed. The Non-Performance Charge for each Base Capacity Resource (including Locational UCAP from such a resource) shall not exceed a Non-



Performance Charge Limit equal to, for a Delivery Year, an amount equal to the total payments due such Capacity Resource or Locational UCAP under section 5.14 of this Attachment DD for such Delivery Year.

(g) Revenues collected from assessment of Non-Performance Charges for a Performance Assessment Hour shall be distributed to each Market Participant, whether or not such Market Participant committed a Capacity Resource or Locational UCAP for a Performance Assessment Hour, that provided energy or load reductions above the levels expected for such resource during such hour. For purposes of this provision, the performance expected of a resource, and the revenue distribution payment, if any, for a resource, shall be determined in accordance with the following formulae:

Formula 1:  $\text{Market Participant Bonus Performance} = \text{Actual Performance} - \text{Expected Performance}$

And

Formula 2:  $\text{Performance Payment} = (\text{Market Participant Bonus Performance} / \text{All Market Participants Bonus Performance}) * \text{Non-Performance Charge Revenues}$ .

Where the result of Formula 1 is a positive number and where:

Actual Performance is as defined in subsection (c), provided, however, that Actual Performance for purposes of this calculation shall not exceed the megawatt level at which such resource was scheduled by the Office of the Interconnection during the Performance Assessment Hours;

Expected Performance is as defined in subsection (c), provided, however, that for purposes of this calculation, Expected Performance shall be zero for any resource that is not a Capacity Resource or Locational UCAP, or that is a Capacity Resource or Locational UCAP, but for which the Performance Assessment Hour occurs outside the resource's capacity obligation period, including, without limitation, a Base Capacity Demand Resource providing demand response during non-summer months; and

All Market Participants Bonus Performance is the sum of the results of calculating Formula 1 of this subsection (g) for all Market Participants that have Bonus Performance during such Performance Assessment Hour.

(h) The provisions of this section 10A shall apply during the 2016/2017 Delivery Year, provided that:

- (i) Non-Performance Charges shall be determined solely for and assessed solely on, Capacity Performance Resources committed for such Delivery Year;
- (ii) The Non-Performance Charge shall be 0.5 times the Non-Performance Charge calculated under subsection (e) hereof; and

- (iii) The Non-Performance Charge Limit for any calendar month shall be 0.25 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.75 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(i) The provisions of this section 10A shall apply during the 2017-2018 Delivery Year, provided that:

- (i) Non-Performance Charges shall be determined solely for, and assessed solely on, Capacity Performance Resources committed for such Delivery Year;
- (ii) The Non-Performance Charge shall be 0.6 times the Non-Performance Charge calculated under subsection (e) hereof; and
- (iii) The Non-Performance Charge Limit for any calendar month shall be 0.3 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.9 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(j) The Office of the Interconnection shall bill charges and credits for performance during Performance Assessment Hours within three calendar months after the calendar month that included such Performance Assessment Hours, provided, for any Non-Performance Charge, the amount shall be divided by the number of months remaining in the Delivery Year for which no invoice has been issued, and the resulting amount shall be invoiced each such remaining month in the Delivery Year.

## 11. DEMAND RESOURCE COMPLIANCE PENALTY CHARGE

(a) The Office of the Interconnection shall separately evaluate compliance of each Demand Resource committed for a Delivery Year, in accordance with procedures set forth in the PJM Manuals and, for Delivery Years through May 31, 2018, shall assess a Demand Resource Compliance Penalty Charge on Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time. The compliance is evaluated separately by Load Management Event in each CAA for Demand Resources dispatched by the Office of Interconnection. The Demand Resource Compliance Penalty Charges will not be assessed to resources that are dispatched on a subzonal basis for the 2012/2013 and 2013/2014 Delivery Years. For the 2014/2015 Delivery Year, the Demand Resource Compliance Penalty Charge will not be assessed to resources that are dispatched on a subzonal basis unless such subzone is defined and publically posted the day before the Load Management Event as set forth in the PJM Manuals. To the extent a Demand Resource cannot respond, another Demand Resource in the same geographic location defined by the PJM dispatch instruction with the same designated lead time and comparable capacity commitment may be substituted. Any Demand Resource used as a substitute during a Load Management Event will have the same obligation to respond to future Load Management Event(s) as if it did not respond to such Load Management Event. Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time based on the capacity commitment shall be assessed a Demand Resource Compliance Penalty Charge; provided, however, that such under compliance shall be determined on an aggregate basis for all dispatched Demand Resources committed by the same Capacity Market Seller or same Locational UCAP Seller in a CAA.

(b) The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the on-peak period, which includes all hours specified in the Reliability Assurance Agreement definition of the Limited Demand Resource, shall equal the lesser of (1/the number of Load Management Events during the on-peak period for which such Demand Resources were dispatched, or 0.50) times the weighted daily revenue rate for such seller resources dispatched, multiplied by the net under-compliance in such on-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. Net CAA under compliance for the Load Management Event will be prorated to individual under compliant registrations in the CAA based on performance of each registration in order to determine net under compliance(s). The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the off-peak period, which includes all hours specified in the Reliability Assurance Agreement definitions of Extended Summer Demand Resource or Annual Demand Resource, but does not include all hours in the on-peak period, shall equal 1/52 times the weighted daily revenue rate for resources dispatched for such seller, multiplied by the net undercompliance in such off-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such

CAA for each Load Management Event called by the Office of the Interconnection. If a Load Management Event is comprised of both an on-peak period and an off-peak period then such Demand Resource Compliance Penalty Charge will be the higher of the charges calculated under the prior two sentences. The total Compliance Penalty Charge for the Delivery Year is not to exceed the annual revenue received for such resources. The net CAA undercompliance for each such Load Management Event shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the megawatts of load reduction capability committed by such seller on the day of the Load Management Event for all dispatched resources minus (ii) the megawatts of load reduction actually provided by all such dispatched Demand Resources during such Load Management Event. A seller's net undercompliance in a CAA shall be reduced by the seller's total amount of Capacity Resource deficiency shortfalls on the day of the Load Management Event, determined pursuant to section 8 of Attachment DD of this Tariff, in a CAA for the seller's committed Demand Resources that are the same product(s) dispatched. The daily revenue rate for a Demand Resource shall be the Resource Clearing Price that the resource received in the auction in which it cleared, including any adjustment pursuant to Attachment DD-1, section C of this Tariff. The weighted daily revenue rate for a Capacity Market Seller shall be the average rate for all cleared Demand Resources, weighted by the megawatts cleared at each price. The total charge per megawatt that may be assessed on a Capacity Market Seller in a Delivery Year shall be capped at the weighted daily revenue rate the Capacity Market Seller would receive in the Delivery Year.

The Demand Resource Compliance Penalty Charges for a Load Management Event for Limited Demand Resources are assessed daily and initially billed by the later of the month of October during such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The initial billing for a Load Management Event for Limited Demand Resources will reflect the amounts due from the start of the Delivery Year to the last day that is reflected in the initial billing. The remaining charges for such Load Management Event will be assessed daily and billed monthly through the remainder of the Delivery Year. The Demand Resource Compliance Penalty Charges for a Load Management Event for Annual or Extended Summer Demand Resources are assessed daily and billed by the later of the month of June following such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The billing for the Load Management Event for Annual or Extended Summer Demand Resources will be in a lump sum and reflect the accrued charges for the entire Delivery Year.

c) Daily revenues from assessment of a Demand Resource Compliance Penalty Charge shall be distributed on a pro-rata basis to Demand Resource Providers and Locational UCAP Sellers that provided load reductions in excess of the amount such resources were committed to provide. Such revenue distribution, however, shall not exceed for any Capacity Market Seller the quantity of excess megawatts provided by such Capacity Market Seller during a single Load Management Event times 0.20 times the weighted daily revenue rate for such Capacity Market Seller for resources dispatched.

To the extent any such revenues remain after such distribution, the remaining revenues shall be distributed to LSEs based on each LSE's Daily Unforced Capacity Obligation.

## 11A DEMAND RESOURCES TEST FAILURE CHARGE

a) Beginning with the Delivery Year that commences on June 1, 2009, Capacity Market Sellers that commit Demand Resources may be charged to the extent their committed resources fail performance tests, as set forth herein.

b)

(i) For Delivery Years through May 31, 2018:

For Limited Demand Resources: If a registration for a Limited Demand Resource committed by a Capacity Market Seller is not dispatched by the Office of the Interconnection for a Load Management event prior to August 15 of the relevant Delivery Year, then such registration must demonstrate that it was tested as described below in (iii), in a zone for a one-hour period during any hour when a PJM Load Management event may be called between June 1 and September 30, inclusive. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between August 16 and September 30, no test will be required. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of Interconnection for a PJM Load Management event in a subzone between June 1 and September 30 of the 2012/2013 and 2013/2014 Delivery Years, and such registration performs at or above the nominated amount of capacity on the registration, no test will be required and no Demand Resources Test Failure Charges will be assessed for such registrations. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between June 1 and September 30, inclusive, then Demand Resources Test Failure Charges will not be assessed.

For Annual Demand Resources: if an Annual Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then the Annual Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Annual Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the

Interconnection for a Load Management event during the Delivery Year, then no test will be required.

For Extended Summer Demand Resources: if an Extended Summer Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through October or the following May, then the Extended Summer Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Extended Summer Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year.

- (ii) For the 2018/2019 Delivery Year and subsequent Delivery Years:

For Base Capacity Demand Resources: if an Base Capacity Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through September, then the Base Capacity Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Base Capacity Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through September of the relevant Delivery Year.

For Demand Resources that commit as Capacity Performance Resources: if a Demand Resource that is a Capacity Performance Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then that Demand Resource registration committed by a Capacity Market Seller must demonstrate that that Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the Interconnection for a Load Management event during the Delivery Year, then no test will be required.

- (iii) All registrations in a zone required to test must be tested simultaneously for each product except that, when less than 25 percent (by megawatts) of a provider's total resources in a zone fail a test, the provider may conduct a re-test limited to all registrations that failed the prior test, provided that such re-test must be at the same time of day and under approximately the same

weather conditions as the prior test, and provided further that all affiliated registrations must test simultaneously, where affiliated means registrations that have any ability to shift load and are owned or controlled by the same entity. If less than 25 percent of resources fail the test and the provider chooses to conduct a retest, the provider may elect to maintain the performance compliance result for registration(s) achieved during the test if provider: (1) notifies the Office of the Interconnection 48 hours prior to the retest under this election; and (2) the provider retests affiliated registrations under this election as set forth in the PJM Manual.

c) a Capacity Market Seller that committed Demand Resources shall be assessed a Demand Resources Test Failure Charge equal to the net capability testing shortfall for such products tested in a Zone during such test in the aggregate of all of such Seller's Demand Resources tested in such Zone times the Demand Resources Test Failure Charge Rate. The net capability testing shortfall in such Zone shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the summer daily average of the megawatts of load reduction capability committed by such seller in such Zone for such product(s) tested minus (ii) the megawatts of load reduction actually provided by all such Demand Resources in such Zone during such test. The net capability testing shortfall in such Zone for such product(s) tested shall be reduced by the provider's summer daily average of the Capacity Resource deficiency shortfalls, determined pursuant to section 8 of Attachment DD of this Tariff, in such Zone for all of the provider's committed Demand Resources that are of the same product(s) tested.

d) the Demand Resources Test Failure Charge Rate shall equal such Seller's Weighted Daily Revenue Rate in such Zone for the product(s) tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day). The Daily Demand Resources Test Failure Charge in a zone for the product(s) tested shall be equal to the net capability testing shortfall in such Zone for such product(s) tested times the Demand Resources Test Failure Charge Rate. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.

e) revenues collected from assessment of Demand Resources Test Failure Charges shall be distributed to Load Serving Entities that were charged a Locational Reliability Charge for the Delivery Year for which the Demand Resources Test Failure Charge was assessed, pro-rata based on such Load Serving Entities' Daily Unforced Capacity Obligations.



## **12. QUALIFYING TRANSMISSION UPGRADE COMPLIANCE PENALTY CHARGE**

If a Qualifying Transmission Upgrade forming the basis of a Sell Offer that cleared in the Base Residual Auction for a Delivery Year is not in service at the commencement of such Delivery Year, and the Capacity Market Seller does not obtain replacement Capacity Resources in the LDA for which such upgrade was to increase CETL, such seller shall pay a compliance penalty charge for each day such upgrade is delayed during such Delivery Year equal to the megawatt quantity of Import Capability cleared in the Base Residual Auction based on such upgrade, multiplied by the greater of: (i) 1.2 times the Capacity Resource Clearing Price of the LDA into which the Qualifying Transmission Upgrade is cleared, in \$/MW-day; or (ii) the Net Cost of New Entry; provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource delay addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource delay and Performance Shortfall. The revenue collected from the assessment of Qualifying Transmission Upgrade Compliance Penalty Charges shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

## ATTACHMENT DD-1

Preface: The provisions of this Attachment incorporate into the Tariff for ease of reference the provisions of Schedule 6 of the Reliability Assurance Agreement among Load Serving Entities in the PJM Region. As a result, this Attachment will be modified, subject to FERC approval, so that the terms and conditions set forth herein remain consistent with the corresponding terms and conditions of Schedule 6 of the RAA. Capitalized terms used herein that are not otherwise defined in Attachment DD or elsewhere in this Tariff have the meaning set forth in the RAA.

### PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource, or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance

with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

- 1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;
- 2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;
- 3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,
- 4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the

Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand

Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) **Summary Information.** The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) **Existing Demand Resources.** The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) **Planned Demand Resources.** The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

(i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:

- method(s) of achieving load reduction at customer site(s);
- equipment to be controlled or installed at customer site(s), if any;
- plan and ability to acquire customers;
- types of customer targeted;
- support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
- assumptions regarding regulatory approval of program(s), if applicable; and
- if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not

identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and
- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the current Delivery Year (at the time of plan submission) and two preceding Delivery Years;
- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.



C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.

D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.

E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.

F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.

G. PJM measures Demand Resources in the following four ways:

Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider's market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers

may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

**Firm Service Level (FSL)** – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

**Guaranteed Load Drop (GLD)** – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

**Customer Baseline Load (CBL)** - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:

- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
- Supplemental status reports, detailing Demand Resources available, as requested by PJM;
- Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
- Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for Provider-initiated events, in accordance with established reporting guidelines.
- Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.

I. The Nominated Value of each Demand Resource shall be determined consistent with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other

ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer's Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an "unrestricted" peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider's Demand Resources dispatched by the Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event

took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.

For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$$(PLC) - (Load * LF)$$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection, for at least 30 minutes of the clock hour (i.e., "partial dispatch compliance hour"). The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour and as defined in the Manuals. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for

all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer's Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer's retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or after June 1, 2012. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value.

- For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;

- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

- For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.

4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.

5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by

no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.

6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.

7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

Section(s) of the  
PJM Reliability Assurance Agreement  
(Clean Format)



## ARTICLE 1 – DEFINITIONS

Unless the context otherwise specifies or requires, capitalized terms used herein shall have the respective meanings assigned herein or in the Schedules hereto for all purposes of this Agreement (such definitions to be equally applicable to both the singular and the plural forms of the terms defined). Unless otherwise specified, all references herein to Articles, Sections or Schedules, are to Articles, Sections or Schedules of this Agreement. As used in this Agreement:

### **1.1 Agreement**

Agreement shall mean this Reliability Assurance Agreement, together with all Schedules hereto, as amended from time to time.

### **1.1A Annual Demand Resource**

Annual Demand Resource shall mean a resource that is placed under the direction of the Office of the Interconnection during the Delivery Year, and will be available for an unlimited number of interruptions during such Delivery Year by the Office of the Interconnection, and will be capable of maintaining each such interruption between the hours of 10:00AM to 10:00PM Eastern Prevailing Time for the months of June through October and the following May, and 6:00AM through 9:00PM Eastern Prevailing Time for the months of November through April unless there is an Office of the Interconnection approved maintenance outage during October through April. The Annual Demand Resource must be available in the corresponding Delivery year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Annual Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.1B Annual Energy Efficiency Resource**

Annual Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer and winter periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2 Applicable Regional Entity**

Applicable Regional Entity shall have the same meaning as in the PJM Tariff.

### **1.2A Base Capacity Demand Resource**

Base Capacity Demand Resource shall mean, for the 2018/2019 and 2019/2020 Delivery

Years, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through September of a Delivery Year, and will be available to the Office of the Interconnection for an unlimited number of interruptions during such months, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Base Capacity Demand Resource must be available June through September in the corresponding Delivery Year to be offered for sale or self-supplied in an RPM Auction, or included as an Base Capacity Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.2B Base Capacity Energy Efficiency Resource**

Base Capacity Energy Efficiency Resource shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer peak periods as described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Base Capacity Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2C Base Capacity Resource**

Base Capacity Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.3 Base Residual Auction**

Base Residual Auction shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.4 Behind The Meter Generation**

Behind The Meter Generation shall mean a generating unit that delivers energy to load without using the Transmission System or any distribution facilities (unless the entity that owns or leases the distribution facilities consented to such use of the distribution facilities and such consent has been demonstrated to the satisfaction of the Office of the Interconnection; provided, however, that Behind The Meter Generation does not include (i) at any time, any portion of such generating unit's capacity that is designated as a Capacity Resource or (ii) in any hour, any portion of the output of such generating unit that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market.

### **1.5 Black Start Capability**

Black Start Capability shall mean the ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the power system.

### **1.6 Capacity Emergency Transfer Objective (“CETO”)**

Capacity Emergency Transfer Objective (“CETO”) shall mean the amount of electric energy that a given area must be able to import in order to remain within a loss of load expectation of one event in 25 years when the area is experiencing a localized capacity emergency, as determined in accordance with the PJM Manuals. Without limiting the foregoing, CETO shall be calculated based in part on EFORD determined in accordance with Paragraph C of Schedule 5.

### **1.7 Capacity Emergency Transmission Limit (“CETL”)**

Capacity Emergency Transmission Limit (“CETL”) shall mean the capability of the transmission system to support deliveries of electric energy to a given area experiencing a localized capacity emergency as determined in accordance with the PJM Manuals.

#### **1.7A Capacity Import Limit**

Capacity Import Limit shall mean, (a) for the PJM Region, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines for each Delivery Year, through appropriate modeling and the application of engineering judgment, the transmission system can receive, in aggregate at the interface of the PJM Region with all external balancing authority areas and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus (2) the then-applicable Capacity Benefit Margin; and (b) for certain source zones identified in the PJM manuals as groupings of one or more balancing authority areas, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines the transmission system can receive at the interface of the PJM Region with each such source zone and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus the then-applicable Capacity Benefit Margin times (2) the ratio of the maximum import quantity from each such source zone divided by the PJM total maximum import quantity. As more fully set forth in the PJM Manuals, PJM shall make such determination based on the latest peak load forecast for the studied period, the same computer simulation model of loads, generation and transmission topography employed in the determination of Capacity Emergency Transmission Limit for such Delivery Year, including external facilities from an industry standard model of the loads, generation, and transmission topography of the Eastern Interconnection under peak conditions. PJM shall specify in the PJM Manuals the areas and minimum distribution factors for identifying monitored bulk electric system facilities that have an electrically significant response to such transfers on the PJM interface. Employing such tools, PJM shall model increased power transfers from external areas

into PJM to determine the transfer level at which one or more reliability criteria is violated on any monitored bulk electric system facilities that have an electrically significant response to such transfers. For the PJM Region Capacity Import Limit, PJM shall optimize transfers from other source areas not experiencing any reliability criteria violations as appropriate to increase the Capacity Import Limit. The aggregate megawatt quantity of transfers into PJM at the point where any increase in transfers on the interface would violate reliability criteria will establish the Capacity Import Limit. Notwithstanding the foregoing, a Capacity Resource located outside the PJM Region shall not be subject to the Capacity Import Limit if the Capacity Market Seller seeks an exception thereto by demonstrating to PJM, by no later than five (5) business days prior to the commencement of the offer period for the relevant RPM Auction, that such resource meets all of the following requirements:

(i) it has, at the time such exception is requested, met all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction, or the Capacity Market Seller has committed in writing that it will meet such requirements, unless prevented from doing so by circumstances beyond the control of the Capacity Market Seller, prior to the relevant Delivery Year;

(ii) at the time such exception is requested, it has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and

(iii) it is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions;

provided, however, that (a) the total megawatt quantity of all exceptions granted hereunder for a Delivery Year, plus the Capacity Import Limit for the applicable interface determined for such Delivery Year, may not exceed the total megawatt quantity of Network External Designated Transmission Service on such interface that PJM has confirmed for such Delivery Year; and (b) if granting a qualified exception would result in a violation of the rule in clause (a), PJM shall grant the requested exception but reduce the Capacity Import Limit by the quantity necessary to ensure that the total quantity of Network External Designated Transmission Service is not exceeded.

### **1.7B Capacity Performance Resource**

Capacity Performance Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.8 Capacity Resources**

Capacity Resources shall mean megawatts of (i) net capacity from Existing Generation Capacity Resources or Planned Generation Capacity Resources meeting the requirements of Schedules 9 and 10 that are or will be owned by or contracted to a Party and that are or will be committed to satisfy that Party's obligations under this Agreement, or to satisfy the reliability requirements of the PJM Region, for a Delivery Year; (ii) net capacity from Existing Generation

Capacity Resources or Planned Generation Capacity Resources not owned or contracted for by a Party which are accredited to the PJM Region pursuant to the procedures set forth in Schedules 9 and 10; and (iii) load reduction capability provided by Demand Resources or Energy Efficiency Resources that are accredited to the PJM Region pursuant to the procedures set forth in Schedule 6.

## **1.9 Capacity Transfer Right**

Capacity Transfer Right shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.9.1 Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall have the same meaning as in the PJM Tariff.

## **1.10 Control Area**

Control Area shall mean an electric power system or combination of electric power systems bounded by interconnection metering and telemetry to which a common generation control scheme is applied in order to:

- (a) match the power output of the generators within the electric power system(s) and energy purchased from entities outside the electric power system(s), with the load within the electric power system(s);
- (b) maintain scheduled interchange with other Control Areas, within the limits of Good Utility Practice;
- (c) maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice and the criteria of NERC and each Applicable Regional Entity;
- (d) maintain power flows on transmission facilities within appropriate limits to preserve reliability; and
- (e) provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practice.

### **1.11 Daily Unforced Capacity Obligation**

Daily Unforced Capacity Obligation shall have the meaning set forth in Schedule 8 or, as to an FRR Entity, in Schedule 8.1.

### **1.12 Delivery Year**

Delivery Year shall mean a Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Attachment DD to the Tariff or pursuant to an FRR Capacity Plan.

### **1.13 Demand Resource**

Demand Resource or “DR” shall mean a Limited Demand Resource, Extended Summer Demand Resource, Annual Demand Resource, or Base Capacity Demand Resource with a demonstrated capability to provide a reduction in demand or otherwise control load in accordance with the requirements of Schedule 6 that offers and that clears load reduction capability in a Base Residual Auction or Incremental Auction or that is committed through an FRR Capacity Plan.

#### **1.13A Demand Resource Officer Certification Form**

Demand Resource Officer Certification Form shall mean a certification as to an intended Demand Resource Sell Offer, in accordance with Schedules 6 and 8.1 of this Agreement and the PJM Manuals.

### **1.14 [Reserved for Future Use]**

#### **1.14A Demand Resource Sell Offer Plan**

Demand Resource Sell Offer Plan shall mean the plan required by Schedules 6 and 8.1 of this Agreement in support of an intended offer of Demand Resources in an RPM Auction, or an intended inclusion of Demand Resources in an FRR Capacity Plan.

### **1.15 DR Factor**

DR Factor shall mean, for Delivery Years through May 31, 2018, that factor approved from time to time by the PJM Board used to determine the unforced capacity value of a Demand Resource in accordance with Schedule 6.

### **1.16 [Reserved for Future Use]**

### **1.17 Electric Cooperative**

Electric Cooperative shall mean an entity owned in cooperative form by its customers that is engaged in the generation, transmission, and/or distribution of electric energy.

### **1.18 Electric Distributor**

Electric Distributor shall mean an entity that owns or leases with rights equivalent to ownership electric distribution facilities that are providing electric distribution service to electric load within the PJM Region.

## **1.19 Emergency**

Emergency shall mean (i) an abnormal system condition requiring manual or automatic action to maintain system frequency, or to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property; or (ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel; or (iii) a condition that requires implementation of emergency procedures as defined in the PJM Manuals.

## **1.20 End-Use Customer**

End-Use Customer shall mean a Member that is a retail end-user of electricity within the PJM Region.

### **1.20A Energy Efficiency Resource**

Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention. Annual Energy Efficiency Resources and Base Capacity Energy Efficiency Resources are types of Energy Efficiency Resources.

#### **1.20A.1 Existing Demand Resource**

Existing Demand Resource shall mean a Demand Resource for which the Demand Resource Provider has identified existing end-use customer sites that are registered for the current Delivery Year with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the Delivery Year for which such resource is offered.

#### **1.20B Existing Generation Capacity Resource**

Existing Generation Capacity Resource shall mean, for purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource that, as of the date on which bidding commences for such auction: (a) is in full commercial operation and for which Interconnection Service has ever commenced for resources located in the PJM Region), or if it is physically and electrically interconnected to an external Control Area and is in full commercial operation (for resources not located in the PJM Region. The additional megawatts of a Generation Capacity Resource that is being, or has been,

modified to increase the number of megawatts of available installed capacity thereof shall not be deemed to be an Existing Generation Capacity Resource until such time as those megawatts are in full commercial operation and Interconnection Service has commenced.

### **1.20C Extended Summer Demand Resource**

Extended Summer Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through October and the following May, and will be available for an unlimited number of interruptions during such months by the Office of the Interconnection, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Extended Summer Demand Resource must be available June through October and the following May in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Extended Summer Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.21 Facilities Study Agreement**

Facilities Study Agreement shall have the same meaning as in the PJM Tariff

### **1.22 FERC**

FERC shall mean the Federal Energy Regulatory Commission or any successor federal agency, commission or department.

### **1.23 Firm Point-To-Point Transmission Service**

Firm Point-To-Point Transmission Service shall mean Firm Transmission Service provided pursuant to the rates, terms and conditions set forth in Part II of the PJM Tariff.

### **1.24 Firm Transmission Service**

Firm Transmission Service shall mean transmission service that is intended to be available at all times to the maximum extent practicable, subject to an Emergency, an unanticipated failure of a facility, or other event beyond the control of the owner or operator of the facility or the Office of the Interconnection.

### **1.25 Fixed Resource Requirement Alternative or FRR Alternative**

Fixed Resource Requirement Alternative or FRR Alternative shall mean an alternative method for a Party to satisfy its obligation to provide Unforced Capacity hereunder, as set forth in Schedule 8.1 to this Agreement.

### **1.26 Forecast Pool Requirement**



Forecast Pool Requirement or FPR shall mean the amount equal to one plus the unforced reserve margin (stated as a decimal number) for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

**1.27 [Reserved]**

**1.28 [Reserved]**

**1.29 FRR Capacity Plan or FRR Plan**

FRR Capacity Plan or FRR Plan shall mean a long-term plan for the commitment of Capacity Resources to satisfy the capacity obligations of a Party that has elected the FRR Alternative, as more fully set forth in Schedule 8.1 to this Agreement.

**1.30 FRR Entity**

FRR Entity shall mean, for the duration of such election, a Party that has elected the FRR Alternative hereunder.

**1.31 FRR Service Area**

FRR Service Area shall mean (a) the service territory of an IOU as recognized by state law, rule or order; (b) the service area of a Public Power Entity or Electric Cooperative as recognized by franchise or other state law, rule, or order; or (c) a separately identifiable geographic area that is: (i) bounded by wholesale metering, or similar appropriate multi-site aggregate metering, that is visible to, and regularly reported to, the Office of the Interconnection, or that is visible to, and regularly reported to an Electric Distributor and such Electric Distributor agrees to aggregate the load data from such meters for such FRR Service Area and regularly report such aggregated information, by FRR Service Area, to the Office of the Interconnection; and (ii) for which the FRR Entity has or assumes the obligation to provide capacity for all load (including load growth) within such area. In the event that the service obligations of an Electric Cooperative or Public Power Entity are not defined by geographic boundaries but by physical connections to a defined set of customers, the FRR Service Area in such circumstances shall be defined as all customers physically connected to transmission or distribution facilities of such Electric Cooperative or Public Power Entity within an area bounded by appropriate wholesale aggregate metering as described above.

**1.32 Full Requirements Service**

Full Requirements Service shall mean wholesale service to supply all of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

**1.33 Generation Capacity Resource**

Generation Capacity Resource shall mean a generation unit, or the contractual right to capacity from a specified generation unit, that meets the requirements of Schedules 9 and 10 of this Agreement, and, for generation units that are committed to an FRR Capacity Plan, that meets the requirements of Schedule 8.1 of this Agreement. A Generation Capacity Resource may be an Existing Generation Capacity Resource or a Planned Generation Capacity Resource.

#### **1.34 Generation Owner**

Generation Owner shall mean a Member that owns or leases with rights equivalent to ownership, facilities for the generation of electric energy that are located within the PJM Region. Purchasing all or a portion of the output of a generation facility shall not be sufficient to qualify a Member as a Generation Owner.

#### **1.35 Generator Forced Outage**

Generator Forced Outage shall mean an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the PJM Manuals. A reduction in output or removal from service of a generating unit in response to changes in market conditions shall not constitute a Generator Forced Outage.

#### **1.36 Generator Maintenance Outage**

Generator Maintenance Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit in order to perform repairs on specific components of the facility, if removal of the facility qualifies as a maintenance outage pursuant to the PJM Manuals.

#### **1.37 Generator Planned Outage**

Generator Planned Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit for inspection, maintenance or repair with the approval of the Office of the Interconnection in accordance with the PJM Manuals.

#### **1.38 Good Utility Practice**

Good Utility Practice shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region.

#### **1.39 [Reserved]**

#### **1.40 Incremental Auction**

Incremental Auction shall mean the First Incremental Auction, the Second Incremental Auction, the Third Incremental Auction, or the Conditional Incremental Auction, each as defined in Attachment DD to the PJM Tariff.

#### **1.41 Interconnection Agreement**

Interconnection Agreement shall have the same meaning as in the PJM Tariff.

#### **1.42 [Reserved]**

#### **1.43 IOU**

IOU shall mean an investor-owned utility with substantial business interest in owning and/or operating electric facilities in any two or more of the following three asset categories: generation, transmission, distribution.

#### **1.43A Limited Demand Resource**

Limited Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will, at a minimum, be available for interruption for at least 10 Load Management Events during the summer period of June through September in the Delivery Year, and will be capable of maintaining each such interruption for at least a 6-hour duration. At a minimum, the Limited Demand Resource shall be available for such interruptions on weekdays, other than NERC holidays, from 12:00PM (noon) to 8:00PM Eastern Prevailing Time. The Limited Demand Resource must be available during the summer period of June through September in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as a Limited Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

#### **1.44 Load Serving Entity or LSE**

Load Serving Entity or LSE shall mean any entity (or the duly designated agent of such an entity), including a load aggregator or power marketer, (i) serving end-users within the PJM Region, and (ii) that has been granted the authority or has an obligation pursuant to state or local law, regulation or franchise to sell electric energy to end-users located within the PJM Region. Load Serving Entity shall include any end-use customer that qualifies under state rules or a utility retail tariff to manage directly its own supply of electric power and energy and use of transmission and ancillary services.

#### **1.45 Locational Reliability Charge**

Locational Reliability Charge shall mean the charge determined pursuant to Schedule 8.

#### **1.46 Markets and Reliability Committee**

Markets and Reliability Committee shall mean the committee established pursuant to the Operating Agreement as a Standing Committee of the Members Committee.

#### **1.46A Maximum Emergency Service Level**

Maximum Emergency Service Level or MESL of Price Responsive Demand shall mean the level, determined at a PRD Substation level, to which Price Responsive Demand shall be reduced during the Delivery Year when a Maximum Generation Emergency is declared and the Locational Marginal Price exceeds the price associated with such Price Responsive Demand identified by the PRD Provider in its PRD Plan.

#### **1.47 Member**

Member shall mean an entity that satisfies the requirements of Sections 1.24 and 11.6 of the PJM Operating Agreement. In accordance with Article 4 of this Agreement, each Party to this Agreement also is a Member.

#### **1.48 Members Committee**

Members Committee shall mean the committee specified in Section 8 of the PJM Operating Agreement composed of the representatives of all the Members.

#### **1.49 NERC**

NERC shall mean the North American Electric Reliability Council or any successor thereto.

#### **1.49A Network External Designated Transmission Service**

Network External Designated Transmission Service shall mean the quantity of network transmission service confirmed by PJM for use by a market participant to import power and energy from an identified Generation Capacity Resource located outside the PJM Region, upon demonstration by such market participant that it owns such Generation Capacity Resource, has an executed contract to purchase power and energy from such Generation Capacity Resource, or has a contract to purchase power and energy from such Generation Capacity Resource contingent upon securing firm transmission service from such resource.

#### **1.50 Network Resources**

Network Resources shall have the meaning set forth in the PJM Tariff.

#### **1.51 Network Transmission Service**

Network Transmission Service shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Part III of the PJM Tariff or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner (as that term is defined in the PJM Tariff).

#### **1.51A Nominal PRD Value**

Nominal PRD Value shall mean, as to any PRD Provider, an adjustment, determined in accordance with Schedule 6.1 of this Agreement, to the peak-load forecast used to determine the quantity of capacity sought through an RPM Auction, reflecting the aggregate effect of Price Responsive Demand on peak load resulting from the Price Responsive Demand to be provided by such PRD Provider.

#### **1.52 Nominated Demand Resource Value**

Nominated Demand Resource Value shall have the meaning specified in Attachment DD to the PJM Tariff.

#### **1.53 [Reserved]**

#### **1.54 Non-Retail Behind the Meter Generation**

Non-Retail Behind the Meter Generation shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, and electric distribution companies to serve load.

#### **1.55 Obligation Peak Load**

Obligation Peak Load shall have the meaning specified in Schedule 8 of this Agreement.

#### **1.56 Office of the Interconnection**

Office of the Interconnection shall mean the employees and agents of PJM Interconnection, L.L.C., subject to the supervision and oversight of the PJM Board, acting pursuant to the Operating Agreement.

#### **1.57 Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement**

Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement shall mean that certain agreement, dated April 1, 1997 and as amended and restated June 2, 1997 and as amended from time to time thereafter, among the members of the PJM Interconnection, L.L.C.

#### **1.57A Operating Day**

Operating Day shall have the same meaning as provided in the Operating Agreement.

### **1.58 Operating Reserve**

Operating Reserve shall mean the amount of generating capacity scheduled to be available for a specified period of an Operating Day to ensure the reliable operation of the PJM Region, as specified in the PJM Manuals.

### **1.59 Other Supplier**

Other Supplier shall mean a Member that is (i) a seller, buyer or transmitter of electric capacity or energy in, from or through the PJM Region, and (ii) is not a Generation Owner, Electric Distributor, Transmission Owner or End-Use Customer.

### **1.60 Partial Requirements Service**

Partial Requirements Service shall mean wholesale service to supply a specified portion, but not all, of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

### **1.60A Performance Assessment Hour**

Performance Assessment Hour shall have the meaning specified in Attachment DD of the PJM Tariff.

### **1.61 Percentage Internal Resources Required**

Percentage Internal Resources Required shall mean, for purposes of an FRR Capacity Plan, the percentage of the LDA Reliability Requirement for an LDA that must be satisfied with Capacity Resources located in such LDA.

### **1.62 Party**

Party shall mean an entity bound by the terms of this Agreement.

### **1.63 PJM**

PJM shall mean the PJM Board and the Office of the Interconnection.

### **1.64 PJM Board**

PJM Board shall mean the Board of Managers of the PJM Interconnection, L.L.C., acting pursuant to the Operating Agreement.

### **1.65 PJM Manuals**

PJM Manuals shall mean the instructions, rules, procedures and guidelines established by the Office of the Interconnection for the operation, planning and accounting requirements of the PJM Region.

#### **1.66 PJM Open Access Transmission Tariff or PJM Tariff**

PJM Open Access Transmission Tariff or PJM Tariff shall mean the tariff for transmission service within the PJM Region, as in effect from time to time, including any schedules, appendices, or exhibits attached thereto.

#### **1.67 PJM Region**

PJM Region shall have the same meaning as provided in the Operating Agreement.

#### **1.68 PJM Region Installed Reserve Margin**

PJM Region Installed Reserve Margin shall mean the percent installed reserve margin for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

#### **1.69 Planned Demand Resource**

Planned Demand Resource shall mean any Demand Resource that does not currently have the capability to provide a reduction in demand or to otherwise control load, but that is scheduled to be capable of providing such reduction or control on or before the start of the Delivery Year for which such resource is to be committed, as determined in accordance with the requirements of Schedule 6. As set forth in Schedules 6 and 8.1 of this Agreement, a Demand Resource Provider submitting a DR Sell Offer Plan shall identify as Planned Demand Resources in such plan all Demand Resources in excess of those that qualify as Existing Demand Resources.

#### **1.69A Planned External Generation Capacity Resource**

Planned External Generation Capacity Resource shall mean a proposed Generation Capacity Resource, or a proposed increase in the capability of a Generation Capacity Resource, that (a) is to be located outside the PJM Region, (b) participates in the generation interconnection process of a Control Area external to PJM, (c) is scheduled to be physically and electrically interconnected to the transmission facilities of such Control Area on or before the first day of the Delivery Year for which such resource is to be committed to satisfy the reliability requirements of the PJM Region, and (d) is in full commercial operation prior to the first day of such Delivery Year, such that it is sufficient to provide the Installed Capacity set forth in the Sell Offer forming the basis of such resource's commitment to the PJM Region. Prior to participation in any Base Residual Auction for such Delivery Year, the Capacity Market Seller must demonstrate that it has a fully executed system impact study agreement or other documentation which is (functionally equivalent to a System Impact Study Agreement under the PJM Tariff or, for resources which are greater than 20MWs participating in a Base Residual Auction for the

2019/2020 Delivery Year and subsequent Delivery Years, an agreement or other documentation which is functionally equivalent to a Facilities Study Agreement under the PJM Tariff), with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as applicable, the transmission provider. Prior to participating in any Incremental Auction for such Delivery Year, the Capacity Market Seller must demonstrate it has entered into an interconnection agreement, or such other documentation that is functionally equivalent to an Interconnection Service Agreement under the PJM Tariff, with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as applicable, the transmission provider. A Planned External Generation Capacity Resource must provide evidence to PJM that it has been studied as a Network Resource, or such other similar interconnection product in such external Control Area, must provide contractual evidence that it has applied for or purchased transmission service to be deliverable to the PJM border, and must provide contractual evidence that it has applied for transmission service to be deliverable to the bus at which energy is to be delivered, the agreements for which must have been executed prior to participation in any Reliability Pricing Model Auction for such Delivery Year. Any such resource shall cease to be considered a Planned External Generation Capacity Resource as of the date that interconnection service commences as to such resource in which case it shall become an Existing Generation Capacity Resource for purposes of the mitigation of offers for any RPM Auction for all subsequent Delivery Years.

#### **1.70 Planned Generation Capacity Resource**

Planned Generation Capacity Resource shall mean a Generation Capacity Resource, or additional megawatts to increase the size of a Generation Capacity Resource that is being or has been modified to increase the number of megawatts of available installed capacity thereof, participating in the generation interconnection process under Part IV, Subpart A of the PJM Tariff, as applicable, for which: (i) Interconnection Service is scheduled to commence on or before the first day of the Delivery Year for which such resource is to be committed to RPM or to an FRR Capacity Plan; (ii) for any such resource seeking to offer into a Base Residual Auction, or for any such resource of 20 MWs or less seeking to offer into a Base Residual Auction, a System Impact Study Agreement (or, for resources for which a System Impact Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a System Impact Study Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; (iii) for any such resource of more than 20 MWs seeking to offer into a Base Residual Auction for the 2019/2020 Delivery Year and subsequent Delivery Years, a Facilities Study Agreement (or, for resources for which a Facilities Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a Facility Studies Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; and (iv) an Interconnection Service Agreement has been executed prior to any Incremental Auction for such Delivery Year in which such resource plans to participate. For purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource shall cease to be considered a Planned Generation Capacity Resource as of the date that the resource is in full commercial operation and Interconnection Service commences as to such resource, in which case it shall become an Existing Generation Capacity Resource.



## **1.71 Planning Period**

Planning Period shall mean the 12 months beginning June 1 and extending through May 31 of the following year, or such other period approved by the Members Committee.

### **1.71A PRD Curve**

PRD Curve shall mean a price-consumption curve at a PRD Substation level, if available, and otherwise at a Zonal (or sub-Zonal LDA, if applicable) level, that details the base consumption level of Price Responsive Demand and the decreasing consumption levels at increasing prices.

### **1.71B PRD Provider**

PRD Provider shall mean (i) a Load Serving Entity that provides PRD; or (ii) an entity without direct load serving responsibilities that has entered contractual arrangements with end-use customers served by a Load Serving Entity that satisfy the eligibility criteria for Price Responsive Demand.

### **1.71C PRD Provider's Zonal Expected Peak Load Value of PRD**

PRD Provider's Zonal Expected Peak Load Value of PRD shall mean the expected contribution to Delivery Year peak load of a PRD Provider's Price Responsive Demand, were such demand not to be reduced in response to price, based on the contribution of the end-use customers comprising such Price Responsive Demand to the most recent prior Delivery Year's peak demand, escalated to the Delivery Year in question, as determined in a manner consistent with the Office of the Interconnection's load forecasts used for purposes of the RPM Auctions.

### **1.71D PRD Reservation Price**

PRD Reservation Price shall mean an RPM Auction clearing price identified in a PRD Plan for Price Responsive Demand load below which the PRD Provider desires not to commit the identified load as Price Responsive Demand.

### **1.71E PRD Substation**

PRD Substation shall mean an electrical substation that is located in the same Zone or in the same sub-Zonal LDA as the end-use customers identified in a PRD Plan or PRD registration and that, in terms of the electrical topography of the Transmission Facilities comprising the PJM Region, is as close as practicable to such loads.

### **1.71F Price Responsive Demand**

Price Responsive Demand or PRD shall mean end-use customer load registered by a PRD Provider pursuant to Schedule 6.1 of the PJM Reliability Assurance Agreement that have, as set forth in more detail in the PJM Manuals, the metering capability to record electricity

consumption at an interval of one hour or less, Supervisory Control capable of curtailing such load (consistent with applicable RERRA requirements) at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency declared by the Office of the Interconnection, and a retail rate structure, or equivalent contractual arrangement, capable of changing retail rates as frequently as an hourly basis, that is linked to or based upon changes in real-time Locational Marginal Prices at a PRD Substation level and that results in a predictable automated response to varying wholesale electricity prices.

#### **1.71G Price Responsive Demand Credit**

Price Responsive Demand Credit shall mean a credit, based on committed Price Responsive Demand, as determined under Schedule 6.1 of this Agreement.

#### **1.71H Price Responsive Demand Plan or PRD Plan**

Price Responsive Demand Plan or PRD Plan shall mean a plan, submitted by a PRD Provider and received by the Office of the Interconnection in accordance with Schedule 6.1 of this Agreement and procedures specified in the PJM Manuals, claiming a peak demand limitation due to Price Responsive Demand to support the determination of such PRD Provider's Nominal PRD Value.

#### **1.72 Public Power Entity**

Public Power Entity shall mean any agency, authority, or instrumentality of a state or of a political subdivision of a state, or any corporation wholly owned by any one or more of the foregoing, that is engaged in the generation, transmission, and/or distribution of electric energy.

#### **1.73 Qualifying Transmission Upgrades**

Qualifying Transmission Upgrades shall have the meaning specified in Attachment DD to the PJM Tariff.

#### **1.74 [Reserved for Future Use]**

#### **1.74A Relevant Electric Retail Regulatory Authority**

Relevant Electric Retail Regulatory Authority or RERRA shall have the meaning specified in the PJM Operating Agreement.

#### **1.75 Reliability Principles and Standards**

Reliability Principles and Standards shall mean the principles and standards established by NERC or an Applicable Regional Entity to define, among other things, an acceptable probability of loss of load due to inadequate generation or transmission capability, as amended from time to time.

**1.76 Required Approvals**

Required Approvals shall mean all of the approvals required for this Agreement to be modified or to be terminated, in whole or in part, including the acceptance for filing by FERC and every other regulatory authority with jurisdiction over all or any part of this Agreement.

**1.77 Self-Supply**

Self-Supply shall have the meaning provided in Attachment DD to the PJM Tariff.

**1.77A Small Commercial Customer**

“Small Commercial Customer” shall have the same meaning as in the PJM Tariff.

**1.78 [Reserved for Future Use]****1.79 [Reserved for Future Use]****1.80 State Consumer Advocate**

State Consumer Advocate shall mean a legislatively created office from any State, all or any part of the territory of which is within the PJM Region, and the District of Columbia established, inter alia, for the purpose of representing the interests of energy consumers before the utility regulatory commissions of such states and the District of Columbia and the FERC.

**1.81 State Regulatory Structural Change**

State Regulatory Structural Change shall mean as to any Party, a state law, rule, or order that, after September 30, 2006, initiates a program that allows retail electric consumers served by such Party to choose from among alternative suppliers on a competitive basis, terminates such a program, expands such a program to include classes of customers or localities served by such Party that were not previously permitted to participate in such a program, or that modifies retail electric market structure or market design rules in a manner that materially increases the likelihood that a substantial proportion of the customers of such Party that are eligible for retail choice under such a program (a) that have not exercised such choice will exercise such choice; or (b) that have exercised such choice will no longer exercise such choice, including for example, without limitation, mandating divestiture of utility-owned generation or structural changes to such Party’s default service rules that materially affect whether retail choice is economically viable.

**1.81A Supervisory Control**

Supervisory Control shall mean the capability to curtail, in accordance with applicable RERRA requirements, load registered as Price Responsive Demand at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency

declared by the Office of the Interconnection. Except to the extent automation is not required by the provisions of this Agreement, the curtailment shall be automated, meaning that load shall be reduced automatically in response to control signals sent by the PRD Provider or its designated agent directly to the control equipment where the load is located without the requirement for any action by the end-use customer.

### **1.82 Threshold Quantity**

Threshold Quantity shall mean, as to any FRR Entity for any Delivery Year, the sum of (a) the Unforced Capacity equivalent (determined using the Pool-Wide Average EFORD) of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan for such Delivery Year, plus (b) the lesser of (i) 3% of the Unforced Capacity amount determined in (a) above or (ii) 450 MW. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base FRR Scaling Factor (as determined in accordance with Schedule 8.1).

### **1.83 Transmission Facilities**

Transmission Facilities shall mean facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC's Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.

### **1.84 Transmission Owner**

Transmission Owner shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

### **1.85 Transmission Owners Agreement**

Transmission Owners Agreement shall mean that certain Consolidated Transmission Owners Agreement, dated as of December 15, 2005 and as amended from time to time, among transmission owners within the PJM Region.

### **1.86 Unforced Capacity**

Unforced Capacity shall mean installed capacity rated at summer conditions that is not on average experiencing a forced outage or forced derating, calculated for each Capacity Resource on the 12-month period from October to September without regard to the ownership of or the contractual rights to the capacity of the unit.

**1.87 [Reserved for Future Use]**

**1.88 Zonal Capacity Price**

Zonal Capacity Price shall mean the price of Unforced Capacity in a Zone that an LSE that has not elected the FRR Alternative is obligated to pay for a Delivery Year as determined pursuant to Attachment DD to the PJM Tariff.

**1.89 Zone or Zonal**

Zone or Zonal shall refer to an area within the PJM Region, as set forth in Schedule 15, or as such areas may be (i) combined as a result of mergers or acquisitions or (ii) added as a result of the expansion of the boundaries of the PJM Region. A Zone shall include any Non-Zone Network Load (as defined in the PJM Tariff) located outside the PJM Region that is served from such Zone under Schedule H-A of the PJM Tariff.

## SCHEDULE 5

### FORCED OUTAGE RATE CALCULATION

- A. The equivalent demand forced outage rate ("EFOR<sub>D</sub>") shall be calculated as follows:

$$\text{EFOR}_D (\%) = \{(f_f * \text{FOH} + f_p * \text{EFPOH}) / (\text{SH} + f_f * \text{FOH})\} * 100$$

where

$f_f$  = full outage factor

$f_p$  = partial outage factor

FOH = full forced outage hours

EFPOH = equivalent forced partial outage hours

SH = service hours

- B. Calculation of EFOR<sub>D</sub> for individual Generation Capacity Resources.

For each Delivery Year, EFOR<sub>D</sub> shall be calculated at least one month prior to the start of the Third Incremental Auction for: (i) each Generation Capacity Resource for which a sell offer will be submitted in such Third Incremental Auction; and (ii) each Generation Capacity Resource previously committed to serve load in such Delivery Year pursuant to an FRR Capacity Plan or prior auctions for such Delivery Year. Such calculation shall be based upon such resource's service history in the twelve (12) consecutive months ending September 30 last preceding such auction. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments approved by the Members Committee to adjust the parameters of a designated unit. For purposes of the calculations under this Paragraph B, for Delivery Years through May 31, 2018, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered.

1. The EFOR<sub>D</sub> of a unit in service twelve or more full calendar months prior to the calculation month shall be the average rate experienced by such unit during the twelve-month period specified above. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals.
2. The EFOR<sub>D</sub> of a unit in service at least one full calendar month but less than the twelve-month period specified above shall be the average of the EFOR<sub>D</sub> experienced by the unit weighted by full months of service, and the class average rate for units with that capability and of that type weighted by a factor of [(twelve) minus (the number of months the unit was in service)]. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals.

### C. Calculation of average EFOR<sub>D</sub> for the PJM Region

The forecast average EFOR<sub>D</sub> for the PJM Region in a Delivery Year shall be the average of the forced outage rates, weighted for unit capability and expected time in service, attributable to all of the Generation Capacity Resources within the PJM Region, that are planned to be in service during the Delivery Year, including Generation Capacity Resources purchased from specified units and excluding Generation Capacity Resources sold outside the PJM Region from specified units. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments developed by the Office of Interconnection and maintained in the PJM Manuals to adjust the parameters of a designated unit when such parameters are or will be used to determine a future PJM Region reserve requirement and such adjustment is required to more accurately predict the future performance of such unit in light of extraordinary circumstances. For the purposes of this Schedule, the average EFOR<sub>D</sub> shall be the average of the capacity-weighted EFOR<sub>D</sub>s of all units committed to serve load in the PJM Region; and for purposes of the EFOR<sub>D</sub> calculations under this Paragraph C for any Delivery Year beginning after May 31, 2010, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered. All rates shall be in percent.

1. The EFOR<sub>D</sub> of a unit not yet in service or which has been in service less than one full calendar year at the time of forecast shall be the class average rate for units with that capability and of that type, as estimated and used in the calculation of the Forecast Pool Requirement.
2. The EFOR<sub>D</sub> of a unit in service five or more full calendar years at the time of forecast shall be the average rate experienced by such unit during the five most recent calendar years. Historical data shall be based on official reports of the Parties under rules and practices developed by the Office of Interconnection and maintained in the PJM Manuals.
3. The EFOR<sub>D</sub> of a unit in service at least one full calendar year but less than five full calendar years at the time of the forecast shall be determined as follows:

Full Calendar  
Years of Service

- |   |  |
|---|--|
| 1 | One-fifth the rate experienced during the calendar year, plus four-fifths the class average rate.                  |
| 2 | Two-fifths the average rate experienced during the two calendar years, plus three-fifths the class average rate.   |
| 3 | Three-fifths the average rate experienced during the three calendar years, plus two-fifths the class average rate. |

4

Four-fifths the average rate experienced during the four calendar years, plus one-fifth the class average rate.



## SCHEDULE 6

### **PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY**

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically

incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;

2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;

3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,

4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) Summary Information. The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total

Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) Existing Demand Resources. The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) Planned Demand Resources. The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

(i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:

- method(s) of achieving load reduction at customer site(s);
- equipment to be controlled or installed at customer site(s), if any;
- plan and ability to acquire customers;
- types of customer targeted;
- support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
- assumptions regarding regulatory approval of program(s), if applicable; and
- if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall

preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and
- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the

current Delivery Year (at the time of plan submission) and two preceding Delivery Years;

- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the

threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource, times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.

C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified

in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.

- D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.
- E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.
- F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.
- G. PJM measures Demand Resources in the following four ways:
  - Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider's market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must



periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

Firm Service Level (FSL) – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

Guaranteed Load Drop (GLD) – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

Customer Baseline Load (CBL) - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

- H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:
- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
  - Supplemental status reports, detailing Demand Resources available, as requested by PJM;
  - Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
  - Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for Provider-initiated events, in accordance with established reporting guidelines.
  - Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.
- I. The Nominated Value of each Demand Resource shall be determined consistent with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer's Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

- J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an "unrestricted" peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

- K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider's Demand Resources dispatched by the Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.

For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$$(PLC) - (Load * LF)$$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection for at least 30 minutes of the clock hour (i.e., "partial dispatch compliance hour". The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour and as defined in the Manual. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer's Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer's retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.
2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or after June 1, 2011. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value,
  - For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June

- 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;
- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and
  - For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.
4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a

BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.

5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.
6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.
7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

## SCHEDULE 8

### DETERMINATION OF UNFORCED CAPACITY OBLIGATIONS

- A. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of a Party that has not elected the FRR Alternative for such Delivery Year shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = OPL x Final Zonal RPM Scaling Factor x FPR

Where:

OPL = Obligation Peak Load, defined as:

The Parties' share of the Zonal Obligation Peak Load as assigned by the EDC for the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal RPM Scaling Factor = the factor determined as set forth in sections B and C of this Schedule

FPR = the Forecast Pool Requirement

Netting of Behind the Meter Generation for a Party with regard to Non-Retail Behind the Meter Generation shall be subject to the following limitation:

For the 2006/2007 Planning Period, 100 percent of the operating Non-Retail Behind the Meter Generation shall be netted, provided that the total amount of Non-Retail Behind the Meter Generation in the PJM Region does not exceed 1500 megawatts ("Non-Retail Threshold"). For each Planning Period/Delivery Year thereafter, the Non-Retail threshold shall be proportionately increased based on load growth in the PJM Region but shall not be greater than 3000 megawatts. Load growth shall be determined by the Office of the Interconnection based on the most recent forecasted weather-adjusted coincident summer peak for the PJM Region divided by the weather-adjusted coincident peak for the previous summer for the same area. After the load growth factor is applied, the Non-Retail Threshold will be rounded up or down to the nearest whole megawatt and the rounded number shall be the Non-Retail Threshold for the current Planning Period and the base amount for calculating the Non-Retail Threshold for the succeeding planning period. If the Non-Retail Threshold is exceeded, the amount of operating Non-Retail Behind the Meter Generation that a Party may net shall be adjusted according to the following formula:

Party Netting Credit = (NRT/ PJM NRBTMG) \* Party Operating NRBTMG

Where: NRBTMG is Non-Retail Behind the Meter Generation

NRT is the Non-Retail Threshold

PJM NRBTMG is the total amount of Non-Retail Behind the Meter Generation in the PJM Region

The total amount of Non-Retail Behind the Meter Generation that is eligible for netting in the PJM Region is 3000 megawatts. Once this 3000 megawatt limit is reached, any additional Non-Retail Behind the Meter Generation which operates in the PJM Region will be ineligible for netting under this section.

In addition, the Party NRBTMG Netting Credit shall be adjusted pursuant to Schedule 16 of this Agreement, if applicable.

A Party shall be required to report to PJM such information as is required to facilitate the determination of its NRBTMG Netting Credit in accordance with the procedures set forth in the PJM Manuals.

B. Following the Base Residual Auction and each Incremental Auction for a Delivery Year, the Office of the Interconnection shall determine the RTO Unforced Capacity Obligation, as well as the Zonal RPM Scaling Factor and the Zonal Unforced Capacity Obligation for each Zone for such Delivery Year. The RTO Unforced Capacity Obligation for a Delivery Year shall be equal to the sum of the Unforced Capacity obligations satisfied through the Base Residual Auction and all Incremental Auctions conducted for such Delivery Year. The Unforced Capacity obligation satisfied in an Incremental Auction may be negative if capacity is decommitted in such auction.

For Delivery Years through May 31, 2018, the Zonal Obligation Peak Load for a Zone shall be equal to the weather-normalized summer peak for the Zone for the summer concluding prior to the most recent RPM Auction conducted for such Delivery Year; and, the Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro rata share of the RTO Unforced Capacity Obligation for the Delivery Year based on the Zonal Peak Load Forecast made one month prior to the most recent RPM Auction conducted for such Delivery Year. The Zonal RPM Scaling Factor shall be equal to the Zonal Unforced Capacity Obligation divided by (FPR times the Zonal Obligation Peak Load).

For the 2018/2019 Delivery Year and subsequent Delivery Years, the Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance



Assessment Hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 of the calendar year prior to the most recent RPM Auction conducted for such Delivery Year; and, the Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro-rata share of the RTO Unforced Capacity Obligation for the Delivery Year based on the Zonal Obligation Peak Load. The Zonal RPM Scaling Factor shall be equal to the Zonal Unforced Capacity Obligation divided by (FPR times the the Zonal Obligation Peak Load).

- C.
  1. No later than five months prior to the start of each Delivery Year, the Electric Distributor for a Zone shall allocate the most recent Zonal Obligation Peak Load for such Zone to determine the peak load contribution for each end-use customer within such Zone.
  2. During the Delivery Year, no later than 36 hours prior to the start of each Operating Day, the Electric Distributor shall provide to PJM for each Party to this Agreement serving load in such Electric Distributor's Zone the Obligation Peak Load. The Electric Distributor may submit corrections to the Obligation Peak Load data up to 12:00PM Eastern Prevailing Time of the next business day following the Operating Day.
  3. For purposes of such allocations, the daily sum of the Obligation Peak Loads of all Parties serving load in a Zone must equal the Zonal Obligation Peak Load for such Zone.

### **C. Election, and Termination of Election, of FRR Alternative**

1. No less than two months before the conduct of the Base Residual Auction for the first Delivery Year for which such election is to be effective, any Party seeking to elect the FRR Alternative shall notify the Office of the Interconnection in writing of such election. Such election shall be for a minimum term of five consecutive Delivery Years. No later than one month before such Base Residual Auction, such Party shall submit its FRR Capacity Plan demonstrating its commitment of Capacity Resources for the term of such election sufficient to meet such Party's Daily Unforced Capacity Obligation (and all other applicable obligations under this Schedule) for the load identified in such plan. At the same time an FRR Entity submits its (i) first FRR Capacity Plan (for FRR Entities electing the FRR Alternative to be effective starting with the 2018/2019 Delivery Year) or (ii) extended or updated FRR Capacity Plan (for FRR Entities which elected the FRR Alternative to be effective starting with Delivery Years prior the 2018/2019 Delivery Year), the FRR Entity must also elect whether it seeks to be subject to the Non-Performance Charge, as provided in section 10A of Attachment DD of the PJM Tariff, and described in section G.1 of this Schedule 8.1, or to physical non-performance assessments, as described in section G.2 of this Schedule 8.1. This is a one-time election that will apply for the remainder of the FRR Alternative commitment.

2. An FRR Entity may terminate its election of the FRR Alternative effective with the commencement of any Delivery Year following the minimum five Delivery Year commitment by providing written notice of such termination to the Office of the Interconnection no later than two months prior to the Base Residual Auction for such Delivery Year. An FRR Entity that has terminated its election of the FRR Alternative shall not be eligible to re-elect the FRR Alternative for a period of five consecutive Delivery Years following the effective date of such termination.

3. Notwithstanding subsections C.1 and C.2 of this Schedule, in the event of a State Regulatory Structural Change, a Party may elect, or terminate its election of, the FRR Alternative effective as to any Delivery Year by providing written notice of such election or termination to the Office of the Interconnection in good faith as soon as the Party becomes aware of such State Regulatory Structural Change but in any event no later than two months prior to the Base Residual Auction for such Delivery Year.

4. To facilitate the elections and notices required by this Schedule, the Office of the Interconnection shall post, in addition to the information required by Section 5.11(a) of Attachment DD to the PJM Tariff, the percentage of Capacity Resources required to be located in each Locational Deliverability Area by no later than one month prior to the deadline for a Party to provide such elections and notices.

## **D. FRR Capacity Plans**

1. Each FRR Entity shall submit its initial FRR Capacity Plan as required by subsection C.1 of this Schedule, and shall annually extend and update such plan by no later than one month prior to the Base Residual Auction for each succeeding Delivery Year in such plan. Each FRR Capacity Plan shall indicate the nature and current status of each resource, including the status of each Planned Generation Capacity Resource or Planned Demand Resource, the planned deactivation or retirement of any Generation Capacity Resource or Demand Resource, and the status of commitments for each sale or purchase of capacity included in such plan.

1.1 Beginning with the 2020/2021 Delivery Year and for all subsequent Delivery Years, the FRR Capacity Plan shall comprise only Capacity Performance Resources as defined in section 5.5A of Attachment DD of the PJM Tariff.

2. The FRR Capacity Plan of each FRR Entity that commits that it will not sell surplus Capacity Resources as a Capacity Market Seller in any auction conducted under Attachment DD of the PJM Tariff, or to any direct or indirect purchaser that uses such resource as the basis of any Sell Offer in such auction, shall designate Capacity Resources in a megawatt quantity no less than the Forecast Pool Requirement for each applicable Delivery Year times the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast for such Delivery Year, as determined in accordance with procedures set forth in the PJM Manuals. For the 2016/2017 Delivery Year and prior Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must meet the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation. For the 2017/2018 Delivery Year, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Limited Resource Constraints and the Sub-Annual Resource Constraints applicable to the FRR Entity's capacity obligation. For the 2018/2019 and 2019/2020 Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Base Capacity Resource Constraints and Base Capacity Demand Resource Constraints applicable to the FRR Entity's capacity obligation. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base Zonal FRR Scaling Factor. The FRR Capacity Plan of each FRR Entity that does not commit that it will not sell surplus Capacity Resources as set forth above shall designate Capacity Resources at least equal to the Threshold Quantity. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast exceeds the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan shall be updated to designate additional Capacity Resources in an amount no less than the Forecast Pool Requirement times such increase; provided, however, any excess megawatts of Capacity Resources included in such FRR Entity's previously designated Threshold Quantity, if any, may be used to satisfy the capacity obligation for such increased load. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast is less than the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan may be updated to release previously designated Capacity Resources in an amount no greater than the Forecast Pool Requirement times such decrease. Peak load values referenced in this section shall be adjusted as necessary to take into account any applicable Nominal PRD Values approved

pursuant to Schedule 6.1 of this Agreement. Any FRR Entity seeking an adjustment to peak load for Price Responsive Demand must submit a separate PRD Plan in compliance with Section 6.1 (provided that the FRR Entity shall not specify any PRD Reservation Price), and shall register all PRD-eligible load needed to satisfy its PRD commitment and be subject to compliance charges as set forth in that Schedule under the circumstances specified therein; provided that for non-compliance by an FRR Entity, the compliance charge rate shall be equal to 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the FRR Entity's Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in the RPM auctions for such Delivery Year; and provided further that an alternative PRD Provider may provide PRD in an FRR Service Area by agreement with the FRR Entity responsible for the load in such FRR Service Area, subject to the same terms and conditions as if the FRR Entity had provided the PRD.

3. For the Delivery Years through May 31, 2018, as to any FRR Entity, the Base Zonal FRR Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZWNSP$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZWNSP$  = Zonal Weather-Normalized Summer Peak Load for such Zone for the summer concluding four years prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and all subsequent Delivery Years, as to any FRR Entity, the Base Zonal FRR Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZOPL$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZOPL$  = the Preliminary Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single performance hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 four years prior to the commencement of such Delivery Year.

4. Capacity Resources identified and committed in an FRR Capacity Plan shall meet all requirements under this Agreement, the PJM Tariff, and the PJM Operating Agreement applicable to Capacity Resources, including, as applicable, requirements and milestones for Planned Generation Capacity Resources and Planned Demand Resources. A Capacity Resource submitted in an FRR Capacity Plan must be on a unit-specific basis, and may not include "slice of system" or similar agreements that are not unit specific. An FRR Capacity Plan may include bilateral transactions that commit capacity for less than a full Delivery Year only if the resources included in such plan in the aggregate satisfy all obligations for all Delivery Years. All demand response, load management, energy efficiency, or similar programs on which such FRR Entity intends to rely for a Delivery Year must be included in the FRR Capacity Plan, subject to the Base Capacity Demand Resource Constraint, submitted three years in advance of such Delivery

Year and must satisfy all requirements applicable to Demand Resources or Energy Efficiency Resources, as applicable, including, without limitation, those set forth in Schedule 6 to this Agreement and the PJM Manuals; provided, however, that previously uncommitted Unforced Capacity from such programs may be used to satisfy any increased capacity obligation for such FRR Entity resulting from a Final Zonal Peak Load Forecast applicable to such FRR Entity. Without limiting the generality of the foregoing, the FRR Entity must submit a Demand Resource Sell Offer Plan 15 business days before the deadline for submitting an FRR Capacity Plan as to any Demand Resources it intends to include in such FRR Capacity Plan and may only include in such FRR Capacity Plan Demand Resources that are approved by PJM following review of such Demand Resource Sell Offer Plan. The requirements, standards, and procedures for a Demand Resource Sell Offer Plan shall be as set forth in Schedule 6 of this Agreement, provided that all references (including deadlines) in Schedule 6, section A-1 to submission or clearing of a Demand Resource offer in an RPM Auction shall be understood for purposes of FRR Entities as referring to inclusion of a Demand Resource in an FRR Capacity Plan, and a distinct Demand Resource Officer Certification Form shall be applicable to FRR Entities, as shown in the PJM Manuals and provided on the PJM website.

5. For each LDA for which the Office of the Interconnection has established a separate Variable Resource Requirement Curve for any Delivery Year addressed by such FRR Capacity Plan, the plan must include a Percentage Internal Resources Required. For the 2018/2019 and 2019/2020 Delivery Years, the Percentage Internal Resources Required may be satisfied with one or more Capacity Performance Resources, Base Capacity Resources, Base Capacity Demand Resources, or Base Capacity Energy Efficiency Resources, subject to the Base Capacity Resource Constraint and Base Capacity Demand Response Constraint. The Percentage Internal Resources Required will be calculated as the LDA Reliability Requirement less the CETL for the Delivery Year, as determined by the RTEP process as set forth in the PJM Manuals. Such requirement shall be expressed as a percentage of the Unforced Capacity Obligation based on the Preliminary Zonal Peak Load Forecast multiplied by the Forecast Pool Requirement.

6. An FRR Entity may reduce the Percentage Internal Resources Required as to any LDA to the extent the FRR Entity commits to a transmission upgrade that increases the capacity emergency transfer limit for such LDA. Any such transmission upgrade shall adhere to all requirements for a Qualified Transmission Upgrade as set forth in Attachment DD to the PJM Tariff. The increase in CETL used in the FRR Capacity Plan shall be that approved by PJM prior to inclusion of any such upgrade in an FRR Capacity Plan. The FRR Entity shall designate specific additional Capacity Resources located in the LDA from which the CETL was increased, to the extent of such increase.

7. The Office of the Interconnection will review the adequacy of all submittals hereunder both as to timing and content. A Party that seeks to elect the FRR Alternative that submits an FRR Capacity Plan which, upon review by the Office of the Interconnection, is determined not to satisfy such Party's capacity obligations hereunder, shall not be permitted to elect the FRR Alternative. If a previously approved FRR Entity submits an FRR Capacity Plan that, upon review by the Office of the Interconnection, is determined not to satisfy such Party's capacity obligations hereunder, the Office of the Interconnection shall notify the FRR Entity, in writing, of the insufficiency within five (5) business days of the submittal of the FRR Capacity Plan. If

the FRR Entity does not cure such insufficiency within five (5) business days after receiving such notice of insufficiency, then such FRR Entity shall be assessed an FRR Commitment Insufficiency Charge, in an amount equal to two times the Cost of New Entry for the relevant location, in \$/MW-day, times the shortfall of Capacity Resources below the FRR Entity's capacity obligation (including any Threshold Quantity requirement) in such FRR Capacity Plan, for the remaining term of such plan.

8. In a state regulatory jurisdiction that has implemented retail choice, the FRR Entity must include in its FRR Capacity Plan all load, including expected load growth, in the FRR Service Area, notwithstanding the loss of any such load to or among alternative retail LSEs. In the case of load reflected in the FRR Capacity Plan that switches to an alternative retail LSE, where the state regulatory jurisdiction requires switching customers or the LSE to compensate the FRR Entity for its FRR capacity obligations, such state compensation mechanism will prevail. In the absence of a state compensation mechanism, the applicable alternative retail LSE shall compensate the FRR Entity at the capacity price in the unconstrained portions of the PJM Region, as determined in accordance with Attachment DD to the PJM Tariff, provided that the FRR Entity may, at any time, make a filing with FERC under Sections 205 of the Federal Power Act proposing to change the basis for compensation to a method based on the FRR Entity's cost or such other basis shown to be just and reasonable, and a retail LSE may at any time exercise its rights under Section 206 of the FPA.

9. Notwithstanding the foregoing, in lieu of providing the compensation described above, such alternative retail LSE may, for any Delivery Year subsequent to those addressed in the FRR Entity's then-current FRR Capacity Plan, provide to the FRR Entity Capacity Resources sufficient to meet the capacity obligation described in paragraph D.2 for the switched load. Such Capacity Resources shall meet all requirements applicable to Capacity Resources pursuant to this Agreement, the PJM Tariff, and the PJM Operating Agreement, all requirements applicable to resources committed to an FRR Capacity Plan under this Agreement, and shall be committed to service to the switched load under the FRR Capacity Plan of such FRR Entity. The alternative retail LSE shall provide the FRR Entity all information needed to fulfill these requirements and permit the resource to be included in the FRR Capacity Plan. The alternative retail LSE, rather than the FRR Entity, shall be responsible for any performance charges or compliance penalties related to the performance of the resources committed by such LSE to the switched load. For any Delivery Year, or portion thereof, the foregoing obligations apply to the alternative retail LSE serving the load during such time period. PJM shall manage the transfer accounting associated with such compensation and shall administer the collection and payment of amounts pursuant to the compensation mechanism.

Such load shall remain under the FRR Capacity Plan until the effective date of any termination of the FRR Alternative and, for such period, shall not be subject to Locational Reliability Charges under Section 7.2 of this Agreement.

## **E. Conditions on Purchases and Sales of Capacity Resources by FRR Entities**

1. An FRR Entity may not include in its FRR Capacity Plan for any Delivery Year any Capacity Resource that has cleared in any auction under Attachment DD of the PJM Tariff for such Delivery Year. Nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan any Capacity Resource that has not cleared such an auction for such Delivery Year. Furthermore, nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan a Capacity Resource obtained from a different FRR Entity, provided, however, that each FRR Entity shall be individually responsible for meeting its capacity obligations hereunder, and provided further that the same megawatts of Unforced Capacity shall not be committed to more than one FRR Capacity Plan for any given Delivery Year.

2. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may offer to sell Capacity Resources in excess of that needed for the Threshold Quantity in any auction conducted under Attachment DD of the PJM Tariff for such Delivery Year, but may not offer to sell Capacity Resources in the auctions for any such Delivery Year in excess of an amount equal to the lesser of (a) 25% times the Unforced Capacity equivalent of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan(s) for such Delivery Year, or (b) 1300 MW.

3. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may not offer to sell such resources in any Reliability Pricing Model auction, but may use such resources to meet any increased capacity obligation resulting from unanticipated growth of the loads in its FRR Capacity Plan(s), subject to the limitations described in Subsection D.2 above, or may sell such resources to serve loads located outside the PJM Region, or to another FRR Entity, subject to subsection E.1 above.

4. A Party that has selected the FRR Alternative for only part of its load in the PJM Region pursuant to Section B.2 of this Schedule that designates Capacity Resources as Self-Supply in a Reliability Pricing Model Auction to meet such Party's expected Daily Unforced Capacity Obligation under Schedule 8 shall not be required, solely as a result of such designation, to identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity; provided, however, that such Party may not so designate Capacity Resources in an amount in excess of the lesser of (a) 25% times such Party's total expected Unforced Capacity obligation (under both Schedule 8 and Schedule 8.1), or (b) 200 MW. A Party that wishes to avoid the foregoing limitation must identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity.

## **F. FRR Daily Unforced Capacity Obligations and Deficiency Charges**

1. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of an FRR Entity shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = [(OPL \* Final Zonal FRR Scaling Factor) – Nominal PRD Value committed by the FRR Entity] \* FPR

where:

For for Delivery Years through May 31, 2018,

OPL =Obligation Peak Load, defined as:

the daily summation of the weather-adjusted coincident summer peak, last preceding the Delivery Year, of the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals; and

Final Zonal FRR Scaling Factor = FZPLDY/FZWNSP;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZWNSP = Zonal Weather-Normalized Peak Load for the summer concluding prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and subsequent Delivery Years,

OPL =Obligation Peak Load, defined as:

for the 2018/2019 Delivery Year and subsequent Delivery Years, the Parties' share of the Final Zonal Obligation Peak Load as assigned by the EDC for the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal FRR Scaling Factor = FZPLDY/FZOPL;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZOPL = the Final Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance Assessment Hour from each day containing



Performance Assessment Hours), occurring in the twelve month period ending October 31 prior to the commencement of such Delivery Year.

2. An FRR Entity shall be assessed an FRR Capacity Deficiency Charge in each Zone addressed in such entity's FRR Capacity Plan for each day during a Delivery Year that it fails to satisfy its Daily Unforced Capacity Obligation in each Zone. Such FRR Capacity Deficiency Charge shall be in an amount equal to the deficiency below such FRR Entity's Daily Unforced Capacity Obligation for such Zone times (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions).

3. If an FRR Entity acquires load that is not included in the Preliminary Zonal Peak Load Forecast such acquired load shall be treated in the same manner as provided in Sections H.1 and H.2 of this Schedule.

4. The shortages in meeting the minimum requirement within the constrained zones and the shortage in meeting the total obligation are first calculated. The shortage in the unconstrained area is calculated as the total shortage less shortages in constrained zones and excesses in constrained zones (the shortage is zero if this is a negative number). The Capacity Deficiency Charge is charged to the shortage in each zone and in the unconstrained area separately. This procedure is used to allow the use of capacity excesses from constrained zones to reduce shortage in the unconstrained area and to disallow the use of capacity excess from unconstrained area to reduce shortage in constrained zones.

5. For Delivery Years during the period starting June 1, 2014 and ending May 31, 2017, the shortages in meeting the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation are calculated separately. For such period, the applicable penalty rate is calculated for Annual Resources, Extended Summer Demand Resources, and Limited Resources as (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions). For Delivery Years beginning June 1, 2017, the FRR Entity shall receive no credit for Limited Demand Resources to the extent committed in excess of the applicable Limited Resource Constraint and shall receive no credit for the sum of Limited Demand Resources and Extended Summer Demand Resources to the extent the sum of the Unforced Capacity of such resources exceeds the applicable Sub-Annual Resource Constraint.

## **G. Capacity Resource Performance**

1. Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in sections 7, 9, 10, 10A, 11, and 13 of Attachment DD to the PJM Tariff; provided, however: (i) the Daily Deficiency Rate under sections 7, 9, and 13 thereof shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); (ii) the charges set forth in section 10A of Attachment DD to the PJM Tariff shall apply only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1 and the charge rates under section 10A thereof for Base Capacity Resources shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above; and (iii) the charge rates under section 10 thereof, shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under sections 7, 9, 10, and 10A of Attachment DD to the PJM Tariff. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.

2. For any FRR Entity which opted to be subject to physical non-performance assessments under section C.1. of this Schedule 8.1, such FRR Entity will not be subject to charges under section 10A of Attachment DD of the PJM Tariff, but, rather, it will be required to update its FRR Capacity Plan with an additional 0.5 MW of Capacity Performance Resources for each megawatt of Performance Shortfall using the formulae contained in section 10A(c) of Attachment DD of the PJM Tariff. Such FRR Entity shall not be eligible for, or subject to, the revenue allocation described in section 10A(g) of Attachment DD of the PJM Tariff.

## **H. Annexation of service territory by Public Power Entity**

1. In the event a Public Power Entity that is an FRR Entity annexes service territory to include new customers on sites where no load had previously existed, then the incremental load on such a site shall be treated as unanticipated load growth, and such FRR Entity shall be required to commit sufficient resources to cover such obligation in the relevant Delivery Year.
2. In the event a Public Power Entity that is an FRR Entity annexes service territory to include load from a Party that has not elected the FRR Alternative, then:
  - a. For any Delivery Year for which a Base Residual Auction already has been conducted, such acquiring FRR Entity shall meet its obligations for the incremental load by paying PJM for incremental obligations (including any additional demand curve obligation) at the Capacity Resource Clearing Price for the relevant location. Any such revenues shall be used to pay Capacity Resources that cleared in the Base Residual Auction for that LDA.
  - b. For any Delivery Year for which a Base Residual Auction has not been conducted, such acquiring FRR Entity shall include such incremental load in its FRR Capacity Plan.
3. Annexation whereby a Party that has not elected the FRR Alternative acquires load from an FRR entity:
  - a. For any Delivery Year for which a Base Residual Auction already has been conducted, PJM would consider shifted load as unanticipated load growth for purposes of determining whether to hold a Second Incremental Auction. If a Second Incremental Auction is held, FRR entity would have a must offer requirement for sufficient capacity to meet the load obligation of such shifted load. If no Second Incremental Auction is conducted, the FRR Entity may sell the associated quantity of capacity into an RPM Auction or bilaterally.
  - b. For any Delivery Year for which a Base Residual Auction has not been conducted, the FRR Entity that lost such load would no longer include such load in its FRR Capacity Plan, and PJM would include such shifted load in future BRAs.

## ATTACHMENT C

Affidavit of Thomas A. Falin on Behalf of  
PJM Interconnection, L.L.C.

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

**PJM Interconnection, L.L.C.**

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**Docket No. ER15-\_\_\_\_-000**

**AFFIDAVIT OF THOMAS A. FALIN  
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

1. My name is Thomas A. Falin. My business address is 2750 Monroe Blvd., Audubon, Pennsylvania, 19403. I currently serve as the Manager of the Resource Adequacy Planning Department for PJM Interconnection, L.L.C. (“PJM”). I am submitting this affidavit on behalf of PJM in support of its filing in this proceeding to establish a new definition of the capacity product in PJM’s capacity market, while preserving, for a transitional period, the existing capacity product. Specifically, I will explain and support PJM’s proposed constraints on the clearing, in the capacity market auctions, of the existing product during the transition. I also describe PJM’s current efforts to improve its peak load forecast.

2. I have served in my current position since October, 2002. The Resource Adequacy Planning Department at PJM is responsible for assessing the long term resource adequacy of the PJM system by conducting reserve margin studies, evaluating generator performance and developing long-term load forecasts. Among other duties, the Resource Adequacy Planning Department is responsible for developing many of the key reliability metrics that are incorporated each year in PJM’s Reliability Pricing Model (“RPM”), including the installed reserve margin, peak load forecasts, Capacity Emergency Transfer Objectives, and equivalent demand forced outage rates for PJM generation facilities. In my capacity as Manager of that department, I oversee the development of these analyses every year. Prior to assuming my current position, I served as a senior engineer in the Capacity Adequacy Planning Department for three years, performing resource adequacy studies and serving as chair of several planning-related PJM stakeholder groups.

3. Prior to joining PJM, I worked for fourteen years in the System Planning Department at PECO Energy Company performing transmission and distribution studies and representing PECO on various PJM committees and working groups. I hold a Bachelor of Science Degree in Mechanical Engineering from Princeton University and a Master of Science Degree in Systems Engineering from the University of Pennsylvania. I am an active participant on several NERC and Reliability*First* planning groups and serve as chair of the PJM Resource Adequacy Analysis Subcommittee.

4. By its tariff change filing in this case, PJM is introducing a new capacity product, called “Capacity Performance,” that provides greater assurance of performance throughout the year, particularly during capacity emergencies. Capacity Performance Resources, including Demand Resources that qualify as Capacity Performance

Resources, must be available throughout the year, and are subject to a new Non-Performance Charge throughout the year. PJM is retaining, for a transitional period, the existing capacity product, which will be renamed “Base Capacity Resources.” While the Base Capacity product will be subject to a non-performance charge for the two-year transition, winter-time performance will not expose a Base Capacity Resource to the non-performance charge, and the charge will be capped at a substantially lower level for Base Capacity Resources than it will be for Capacity Performance Resources. In addition, Demand Resources that do not qualify as Capacity Performance Resources may offer as Base Capacity during the two-year transition (i.e., for the 2018/2019 and 2019/2020 Delivery Years). PJM proposes to define those Base Capacity Demand Resources as required to be available only during the months of June through September. PJM proposes similar treatment for Base Capacity Energy Efficiency Resources. These resources, however, may offer as Capacity Performance Resources if they qualify and can respond year-round, but can choose to offer as Base Capacity, on a summer-only basis, during the two-year transition.

5. Because limits on the availability of RPM’s current Demand and Energy Efficiency Resource products would raise reliability concerns if the PJM Region became over-reliant on those resources (to the exclusion of resources with no (or lesser) availability limits), PJM currently imposes constraints on the quantity of such resources that may clear an RPM auction for a Delivery Year. Specifically, PJM sets a constraint on the maximum permissible cleared quantity of Limited Demand Resources, which are available only for certain hours during the months of June through September, for no more than six hours when called upon, and for no more than ten calls per summer. PJM also sets a separate constraint on the maximum permissible clearing of the combined quantity of Limited Demand Resources and Extended Summer Demand Resources, which are available for certain hours during the months of May through October, for no more than ten hours when called upon, and with an unlimited number of calls. These constraints are based on the reliability concerns that arise directly from the specific availability limits on these products. The Limited Resource Constraint and Sub-Annual Resource Constraint allow for a quantity of these resources to commit that allows a 10 percent increase in the 1-in-10 loss of load expectation (“LOLE”) standard to a 1.1-in-LOLE. As approved by the Commission, the methodology for determining these constraints for each Delivery Year is specified in PJM’s tariff.

6. PJM’s proposal to transition to a single capacity product by June 1, 2020 will moot the issue of constraints on differing capacity products. But this issue will arise during the transition while some sellers will still have the option of offering capacity products with lesser availability or lower expected performance than Capacity Performance Resources. During the transition, PJM will still allow offers from the existing generation capacity product as a Base Capacity Resource, which was exposed as being subject to sub-par performance during last winter’s extreme weather, and which will *not* be subject in the winter to the new proposed Non-Performance Charge. I should note that PJM’s proposal in this case is that every generation resource in the region that is capable of offering as a Capacity Performance Resource is *required* to offer as a Capacity

Performance Resource.<sup>1</sup> To be excused from that obligation, the resource owner or operator will need to demonstrate to PJM and the Internal Market Monitor that its resource *will not be physically capable* in the relevant Delivery Year of satisfying the performance requirements of a Capacity Performance Resource. Therefore, for generators that are not categorically exempt from the offer requirement, the only way a generation resource can become eligible to offer as a Base Capacity Resource is by demonstrating that, for example, it cannot be relied upon to perform during winter peak-period emergencies. PJM also will still allow transition-period offers from Base Capacity Demand and Energy Efficiency Resources, which are not required to be available in the winter, and which also will not be subject to the new proposed Non-Performance Charge in the winter.

7. Just as with the current Limited Demand Resources and Extended Summer Demand resources, if the PJM Region became too dependent on the subset of generation resources that have shown they are not capable of responding adequately to the region's emergency needs, or on Base Capacity Demand and/or Energy Efficiency Resources that are only required to be available part of the year, then reliability would suffer. The question, then, is how dependent is *too* dependent. That is the question addressed by the methodologies that the Commission has approved to define the constraints on Limited Demand Resources and Extended Summer Demand Resources, and it is the question that must be addressed for generation Base Capacity Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources during the transition.

8. To help understand the reliability concerns with the differing capacity products, I prepared the graphic below, which illustrates the relative availability (or relative expected performance) of these products. As can be seen, Base Capacity Demand and Energy Efficiency Resources are only required to be available in the summer, meaning that for resource planning purposes, they are assumed to *not* be available at any other time of year.<sup>2</sup> Generation resources are required to be available throughout the year, but history has shown that some share of that total generation portfolio in fact will not perform during certain emergency conditions, such as the extreme winter peak in the region last January (when load peaked at a level that is only expected in 10% of years). And as I explained above, generation resources can offer as Base Capacity during the two transition years only if they demonstrate that they are not reasonably expected to be capable of performing during all emergencies (whenever they occur) during the Delivery Year. The graphic illustrates this shortcoming in generation Base Capacity Resources by showing a sharp drop in resource availability at the winter

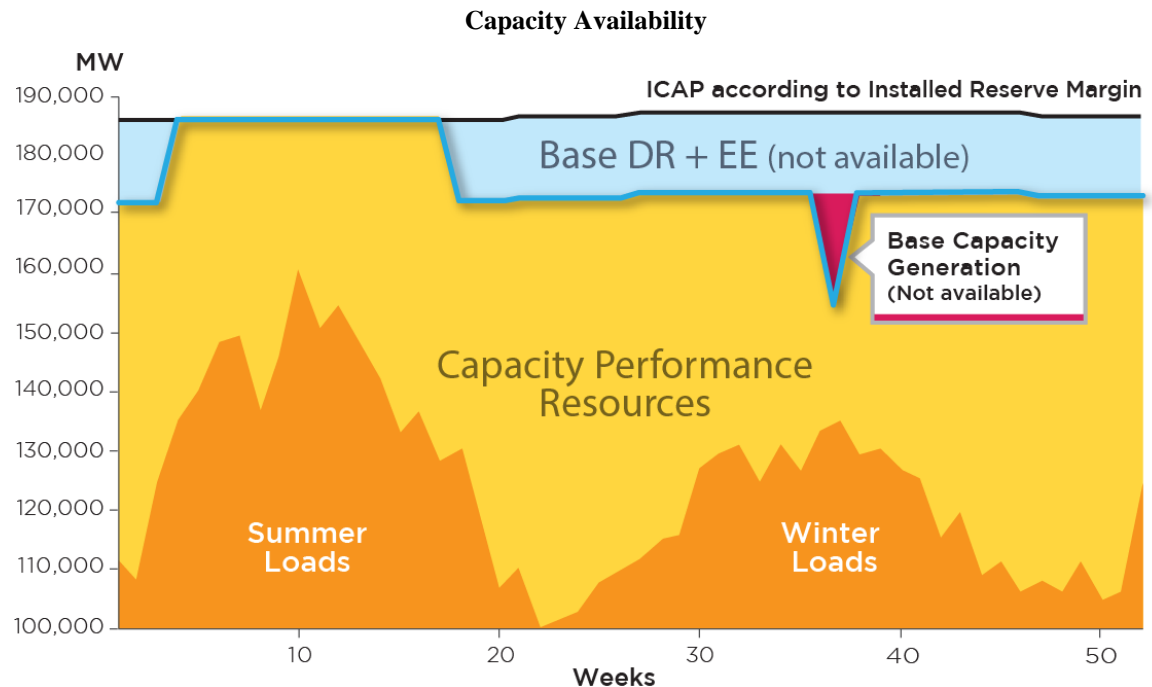
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<sup>1</sup> Certain generation-based resource types, i.e., intermittent generation and storage, are categorically exempt from the mandate to offer as a Capacity Performance Resource.

<sup>2</sup> The quantity of Base Capacity Demand and Energy Efficiency Resources will depend on how much of those resources clear the RPM Auctions or is otherwise committed for the relevant Delivery Year. For this illustration, I assumed that those resources comprise 8.3% of the PJM annual peak load.

peak. Finally, Capacity Performance Resources are shown as being available every day of the year.

9. The graphic below therefore frames the question to be addressed here: at what point do the light blue (Base Capacity DR and EE) and red (Base Capacity generation) areas become so large, thereby reducing the yellow area reflecting the resources that can be counted upon to perform, that PJM cannot be expected (on a planning basis) to meet applicable reliability standards. The Base Capacity Demand Resource Constraint will define the maximum acceptable size of the light blue area, and the overall Base Capacity Resource Constraint will define the maximum size of the combined light blue and red areas.



10. Accordingly, in the following discussion, I will: 1) describe PJM's analyses of the reliability impacts of reliance on Base Capacity Resources; 2) show, and provide an example of, the procedures and calculations PJM will use to set targets each year for the maximum quantity of total Base Capacity, and the maximum quantity of Base Capacity Demand Resources and Energy Efficiency Resources, that are compatible with reliability; and 3) explain that such maximum quantities will comprise constraints on the amount of total Base Capacity, and the amount of Base Capacity Demand Resources and Energy Efficiency Resources, that may clear in an RPM Auction.

11. In addition, I will explain adjustments to PJM's load forecast methodology that will better account for changes in energy usage trends and advancements in energy efficiency and also correct possible sources of error or bias.

### Proposed Resource Constraints

12. Like the existing limited-availability resource constraints which allow a



10% increase in system LOLE, and consistent with the Commission's express approval of a 90 percent confidence level for such a constraint,<sup>3</sup> PJM proposes to use the 10% system LOLE increase threshold to determine the amount of Base Capacity Resource commitment that raises reliability concerns. As PJM explained in Docket Nos. ER11-2288 and ER13-486, a 10% tolerance is widely used in statistical studies and commonly recognized as a reasonable standard to apply when interpreting results from probabilistic studies. For at least the past twenty years, PJM has used "90/10" load forecasts—where a forecast has a 10 percent chance of being exceeded in any year—to design the transmission system.<sup>4</sup>

13. Accordingly, PJM proposes that the maximum amount of Base Capacity Resources, including Base Capacity Demand and Energy Efficiency Resources, that may be committed for any Delivery Year should be a level that yields no more than a 10 percent increase in the 1-in-10 LOLE. Specifically, PJM proposes that the Base Capacity Resource Constraint will determine the total commitment level of all types of Base Capacity Resources that provides a 10 percent increase in the risk of LOLE.

14. This leaves a question, however, of what commitment level of Base Capacity Demand and Energy Efficiency Resources, *within* that overall allowance for Base Capacity Resources, is consistent with maintenance of reliability. These types of resources present different reliability concerns. With summer-only demand response and energy efficiency, the concern is that if PJM commits too much of those resources, and too little of the year-round resources, then PJM could have insufficient year-round resources to manage an emergency arising outside the summer. For Base Capacity generation, which is obligated to respond any time of the year, but may have performance issues during an extreme winter peak (as seen in January 2014) the concern is that if PJM commits too much of those resources, and too little of the Capacity Performance Resources, then PJM could have insufficient Capacity Performance Resources that can be counted upon to perform during an extreme winter peak. Given the distinct reliability concerns that arise from the distinct characteristics of these products, PJM needs a distinct limit for the Base Capacity Demand and Energy Efficiency Resources.

15. To that end, PJM proposes that Base Capacity Demand and Energy Efficiency Resources should be allowed *half* of the overall tolerance for a 10 percent increase in LOLE increase from commitment of all types of Base Capacity Resources. Specifically, PJM proposes that Base Capacity Demand and Energy Efficiency Resources could commit at a quantity that results in a 5 percent increase in the risk of LOLE. The proposed Base Demand Resource Constraint will set that commitment level. This allocation to demand and energy efficiency resources of half the maximum acceptable

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<sup>3</sup> *PJM Interconnection, L.L.C.*, 134 FERC ¶ 61,066, at P 74 (2011).

<sup>4</sup> *See* FPA Section 205 Tariff Change Filing of PJM Interconnection, L.L.C., Docket No. ER11-2288-000 (Dec. 2, 2010); Answer of PJM Interconnection, L.L.C., Docket No. ER11-2288-000, at 24 (Jan. 7, 2011); FPA Section 205 Tariff Change Filing of PJM Interconnection, L.L.C., Docket No. ER11-2288-000, at 9 (Nov. 30, 2012).

increase in LOLE is reasonable because it allows the two product types to each degrade reliability equally so as to not favor one over the other. The details concerning the determination of this constraint are discussed in the following section.

16. Assuming acceptance of the tariff changes in this filing, PJM will calculate the constraints each year for total Base Capacity Resources and for Base Capacity Demand and Energy Efficiency Resources, for both the PJM Region as a whole and for Locational Deliverability Areas (“LDAs”) that typically bind in the RPM auctions. The procedures for determining the “Base Capacity Resource Constraints” and the “Base Demand Resource Capacity Constraints” will be applied in January 2015 to data for the 2018/2019 Delivery Year so that the constraints can be posted in February 2015 along with the other auction parameters for the May 2015 Base Residual Auction for that Delivery Year.

17. PJM’s analyses reasonably rely on models, assumptions and techniques that PJM also regularly uses for its transmission expansion and resource planning efforts. The probabilistic peak load model used in the analyses is also used by PJM for long-term load forecasting to ensure the transmission and resource adequacy of the region. The probabilistic capacity model that PJM will use to set the Base Capacity Resource Constraint and the Base Capacity Demand Resource Constraint is based on an approach that is widely used in the industry to perform Loss of Load Expectation (“LOLE”) studies. PJM has been using this capacity model for over thirty years to assess resource adequacy and to establish the installed reserve margin required to satisfy the “one day in ten years” LOLE standard.

#### *Base Capacity Demand Resource Constraint*

18. PJM’s Resource Adequacy Planning staff conducted analyses to determine the level of reliance on these limited-availability Base Capacity Demand and Energy Efficiency Resources that would not present unacceptable reliability risks, given that the Base Capacity Demand Resources are only obligated to respond during the summer period from June 1 through September 30 and Base Capacity Energy Efficiency Resources are only obligated to respond from June 1 through August 31. That analysis concludes that PJM can be reasonably confident that it would not need to call on Base Capacity Demand and Energy Efficiency Resources outside their summer-only window so long as the committed amount of Base Capacity Demand and Energy Efficiency Resources equates to no more than the percentage of the peak load determined by the Base Capacity Demand Resource Constraint.

19. Generally, the calculation method tracks the analyses described above for assessment of the reliability impacts of the availability limitations of the Base Capacity Demand and Energy Efficiency Resources products. PJM will determine the level of limited resources (as a percentage of peak load) at which there is an unacceptable LOLE risk increase (5% above 1 day in 10 years) due to these limited resources being unavailable outside their required availability period. The constraint will be expressed as a percentage of forecast peak load, and converted to an “unforced” basis so that it can be correctly deducted from the Reliability Requirement (which is on an unforced basis).

20. In other words, the “Base Capacity Demand Resource Constraint” is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, for the PJM Region or LDA, that produces no more than a five percent increase in the 1-in-10 LOLE, i.e., resulting in a 1.05-in-10 LOLE.

21. PJM’s Base Capacity Demand Resource Constraint analysis uses a methodology similar to that used to assess the reliability impacts of the availability limitations of Extended Summer Demand Resources. That Sub-Annual Resource Constraint employs a procedure using an LOLE model that considers distributions of load levels and generation availability to determine the probability that Extended Summer Demand Resources will need to be called upon outside their May-October period of required availability.

22. Thus, similar to that current constraint methodology, to establish the Base Capacity Demand Resource Constraint, PJM will initially determine a 1-in-10 annual LOLE assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. PJM will then use a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). PJM proposes the same procedures for the LDA constraint values, but for those LDA analyses, the loads would not be iteratively shifted (because LDA reserves are not adjusted to meet the Installed Reserve Margin, see ¶ 27 below) and the weekly capacity distributions would be adjusted to reflect the Capacity Emergency Transfer Limits (“CETL”) for the Delivery Year in question.

23. Once the load and capacity inputs, as described above, are set, PJM will then model the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed Capacity Performance generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year and calculate the LOLE at each of the Base Capacity Demand Resource and Base Capacity Energy Efficiency Resource levels. The result of this modeling is the amount, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE. PJM will then convert that percentage to an Unforced Capacity value by multiplying the reliability target percentage times the Forecast Pool Requirement times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative]. In short, similar to the previously approved Sub-Annual Resource Constraint, the Base Demand Resource Capacity Constraint will set the maximum amount of Base Capacity Demand and Energy Efficiency Resources that can be reliably procured for a Delivery Year, assuming PJM procures resources in the auction equal to

the level of its Reliability Requirement (as defined in the PJM tariff).<sup>5</sup>

*Base Capacity Resource Constraint*

24. Similar to the Base Capacity Demand Resource Constraint, PJM will determine the Base Capacity Resource Constraint for the 2018/2019 and 2019/2020 Delivery Years, for both the PJM Region and relevant LDAs, in accordance with the procedure outlined in the tariff definition. To determine the constraint, PJM will use the weekly capacity distribution and load model developed for the Installed Reserve Margin study for the Delivery Year in question. PJM will then establish a base case that fixes the installed reserve margin at the PJM Board-approved installed reserve margin. PJM will model the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed Capacity Performance generation). PJM will model generation Base Capacity Resources in the base case as a resource that is unavailable during the peak winter week and available the rest of the year. PJM will then vary the level of generation Base Capacity Resources committed, and correspondingly reduce the level of Capacity Performance Resources committed, and calculate the impact on system LOLE.

25. The Base Capacity Resource Constraint thus represents the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources, and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, i.e., an LOLE of 1.1-in-10. The Base Capacity Resource Constraint will be stated as a percentage of the forecasted peak load and will be converted to an Unforced Capacity value by multiplying the reliability target percentage times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

26. As shown on the table below, the Resource Adequacy Planning Staff has preliminarily applied this calculation procedure for the 2018/2019 Delivery Year, using the 2014 Installed Reserve Margin Study. The calculations in the table will be updated based on the 2015 Load Forecast and updated Capacity Emergency Transfer Limits (“CETLs”) established for each LDA. The preliminary calculation indicates that Base Capacity Resources (including Base Capacity Demand and Energy Efficiency Resources) can comprise 18.9 percent of PJM’s peak load (assuming the auction clears at the IRM) without increasing the PJM system risk of a loss of load event by more than 10 percent, i.e., to a 1.1-in-10 LOLE. Using the same data, PJM has preliminarily calculated the separate target (as a subset of the larger constraint) for the maximum level of Base Capacity Demand and Energy Efficiency Resources for the 2018/2019 Delivery Year. The preliminary calculation indicates that Base Capacity Demand and Energy Efficiency Resources can comprise 8.3 percent of PJM’s peak load (assuming the auction clears at the IRM) without increasing the PJM system risk of a loss of load event by more than 5 percent, i.e., to a 1.05-in-10 LOLE.

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<sup>5</sup> See proposed Tariff, Attachment DD, section 2.2B.

27. PJM follows the same procedures to calculate these two constraints for each of the LDAs with one exception. Rather than being modeled at the Board-approved installed reserve margin, each LDA is modeled at a reserve margin based on the sum of the generation internal to that LDA and the LDA's CETL. This change is necessary because the IRM is applicable to the PJM Region as a whole and not to any individual LDA. The sum of an LDA's internal generation and its CETL represents the maximum amount of resources that will be available to serve load within that LDA. As shown on the table, the Base Capacity Demand Resource Constraint for the MAAC, Eastern MAAC, and Southwestern MAAC LDAs, for example, for the 2018/2019 Delivery Year is preliminarily estimated to be 17.6%, 16.5%, and 6.9%, respectively; and the Base Capacity Resource Constraint for those three LDAs is preliminarily estimated to be 29.1%, 44.7%, and 20.1%, respectively.

**Estimated Constraint Values for the 2018/2019 Delivery Year Base Residual Auction based on 2014 IRM Study and 2014 CETLs**

AREA	CETL	Base DR+EE	Base	Winter Peak to Summer Peak		Base Capacity Resource Cap
		Cap	GEN	Ratio		
PLGRP	4336	9.7	3.5	1.019		13.2
PJMRTO	0	8.3	10.6	0.843		18.9
PEPCO	5359	4.9	16.1	0.819		21.0
BGE	6217	8.3	12.1	0.812		20.4
DPLS	1869	10.4	9.2	0.816		19.6
SPJMMA	8053	6.9	13.2	0.816		20.1
CLEV	4940	16.5	11.5	0.798		28.0
ATSI	8470	14.1	12.3	0.798		26.4
PJMMA	7393	17.6	11.5	0.783		29.1
EPJMMA	9315	16.5	28.2	0.686		44.7
COMED	7020	13.4	40.4	0.679		53.8
PS	6700	9.4	34.4	0.634		43.8
PSN	2795	4.1	30.0	0.634		34.1

28. This concludes my affidavit.

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

PJM Interconnection, L.L.C.

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Docket No. ER15-\_\_-000

Thomas A. Falin, being first duly sworn, deposes and states that he is the Thomas A. Falin referred to in the document entitled "Affidavit of Thomas A. Falin," that he has read the same and is familiar with the contents thereof, and that the facts set forth therein are true and correct to the best of his knowledge, information, and belief in this proceeding.

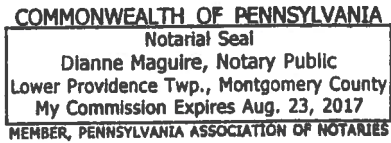


Subscribed and sworn to before me, the undersigned notary public, this 11<sup>th</sup> day of December, 2014.



Notary Public

My Commission expires: 8/23/2017



FERC rendition of the electronically filed tariff records in Docket No. ER15-00623-000

Filing Data:

CID: C000030

Filing Title: Revisions to the OATT and RAA re Capacity Performance

Company Filing Identifier: 1517

Type of Filing Code: 10

Associated Filing Identifier:

Tariff Title: Intra-PJM Tariffs

Tariff ID: 23

Payment Confirmation:

Suspension Motion:

Tariff Record Data:

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT Q, OATT ATTACHMENT Q, 22.0.0, A

Record Narrative Name: ATTACHMENT Q - PJM CREDIT POLICY

Tariff Record ID: 957

Tariff Record Collation Value: 642447391 Tariff Record Parent Identifier: 357

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **ATTACHMENT Q**

### **PJM CREDIT POLICY**

#### **POLICY STATEMENT:**

It is the policy of PJM Interconnection, LLC (“PJM”) that prior to an entity participating in the PJM Markets, or in order to take Transmission Service, the entity must demonstrate its ability to meet PJMSettlement’s credit requirements.

Prior to becoming a Market Participant, Transmission Customer, and/or Member of PJM, PJMSettlement must accept and approve a Credit Application (including Credit Agreement) from such entity and establish a Working Credit Limit with PJMSettlement. PJMSettlement shall approve or deny an accepted Credit Application on the basis of a complete credit evaluation including, but not be limited to, a review of financial statements, rating agency reports, and other pertinent indicators of credit strength.

#### **POLICY INTENT:**

This credit policy describes requirements for: (1) the establishment and maintenance of credit by Market Participants, Transmission Customers, and entities seeking either such status (collectively “Participants”), pursuant to one or more of the Agreements, and (2) forms of security that will be deemed acceptable (hereinafter the “Financial Security”) in the event that the Participant does not satisfy the financial or other requirements to establish Unsecured Credit.

This policy also sets forth the credit limitations that will be imposed on Participants in order to minimize the possibility of failure of payment for services rendered pursuant to the Agreements, and conditions that will be considered an event of default pursuant to this policy and the Agreements.

These credit rules may establish certain set-asides of credit for designated purposes (such as for FTR or RPM activity). Such set-asides shall be construed to be applicable to calculation of credit requirements only, and shall not restrict PJMSettlement's ability to apply such designated credit to any obligation(s) in case of a default.

PJMSettlement may post on PJM's web site, and may reference on OASIS, a supplementary document which contains additional business practices (such as algorithms for credit scoring) that are not included in this document. Changes to the supplementary document will be subject to stakeholder review and comment prior to implementation. PJMSettlement may specify a required compliance date, not less than 15 days from notification, by which time all Participants must comply with provisions that have been revised in the supplementary document.

### **APPLICABILITY:**

This policy applies to all Participants.

### **IMPLEMENTATION:**

#### **I. CREDIT EVALUATION**

Each Participant will be subject to a complete credit evaluation in order for PJMSettlement to determine creditworthiness and to establish an **Unsecured Credit Allowance**, if applicable; provided, however, that a Participant need not provide the information specified in section I.A or I.B if it notifies PJMSettlement in writing that it does not seek any Unsecured Credit Allowance. PJMSettlement will identify any necessary Financial Security requirements and establish a Working Credit Limit for each Participant. In addition, PJMSettlement will perform follow-up credit evaluations on at least an annual basis.

If a **Corporate Guaranty** is being utilized to establish credit for a Participant, the guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

PJMSettlement will provide a Participant, upon request, with a written explanation for any change in credit levels or collateral requirements. PJMSettlement will provide such explanation within ten Business Days.

If a Participant believes that either its level of unsecured credit or its collateral requirement has been incorrectly determined, according to this credit policy, then the Participant may send a request for reconsideration in writing to PJMSettlement. Such a request should include:

- A citation to the applicable section(s) of the PJMSettlement credit policy along with an explanation of how the respective provisions of the credit policy were not carried out in the determination as made



- A calculation of what the Participant believes should be the correct credit level or collateral requirement, according to terms of the credit policy

PJMSettlement will reconsider the determination and will provide a written response as promptly as practical, but no longer than ten Business Days of receipt of the request. If the Participant still feels that the determination is incorrect, then the Participant may contest that determination. Such contest should be in written form, addressed to PJMSettlement, and should contain:

- ◆ A complete copy of the Participant's earlier request for reconsideration, including citations and calculations
- ◆ A copy of PJMSettlement's written response to its request for reconsideration
- ◆ An explanation of why it believes that the determination still does not comply with the credit policy

PJMSettlement will investigate and will respond to the Participant with a final determination on the matter as promptly as practical, but no longer than 20 Business Days.

Neither requesting reconsideration nor contesting the determination following such request shall relieve or delay Participant's responsibility to comply with all provisions of this credit policy.

#### **A. Initial Credit Evaluation**

In completing the initial credit evaluation, PJMSettlement will consider:

##### **1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

##### **2) Financial Statements and Related Information**

Each Participant must submit with its application audited financial statements for the most recent fiscal quarter, as well as the most recent three fiscal years, or the period of existence of the Participant, if shorter. All financial and related information considered for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any.

- b. If privately held:
- i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### **3) References**

PJMSettlement may request Participants to provide with their applications at least one (1) bank and three (3) utility credit references. In the case where a Participant does not have the required utility references, trade payable vendor references may be substituted.

### **4) Litigation, Commitments and Contingencies**

Each Participant is also required to provide with its application information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJMSettlement or are applying for membership with PJMSettlement. Each Participant is also required to disclose the existence of any ongoing investigations by the Securities and Exchange Commission ("SEC"), Federal Energy Regulatory Commission ("FERC"), Commodity Futures Trading Commission ("CFTC"), or any other governing, regulatory, or standards body. These disclosures shall be made upon application, upon initiation or change, and at least annually thereafter, or as requested by PJMSettlement.

## **B. Ongoing Credit Evaluation**

On at least an annual basis, PJMSettlement will perform follow-up credit evaluations on all Participants. In completing the credit evaluation, PJMSettlement will consider:

**1) Rating Agency Reports**

In evaluating credit strength, PJMSettlement will review rating agency reports from Standard & Poor's, Moody's Investors Service, Fitch Ratings, or other nationally known rating agencies. The focus of the review will be on senior unsecured debt ratings; however, PJMSettlement will consider other ratings if senior unsecured debt ratings are not available.

**2) Financial Statements and Related Information**

Each Participant must submit audited annual financial statements as soon as they become available and no later than 120 days after fiscal year end. Each Participant is also required to provide PJMSettlement with quarterly financial statements promptly upon their issuance, but no later than 60 days after the end of each quarter. All financial and related information considered for a Credit Score must be audited by an outside entity, and must be accompanied by an unqualified audit letter acceptable to PJMSettlement. If financial statements are not provided within the timeframe required, the Participant may not be granted an Unsecured Credit Allowance.

The information should include, but not be limited to, the following:

- a. If publicly traded:
  - i. Annual and quarterly reports on Form 10-K and Form 10-Q, respectively.
  - ii. Form 8-K reports disclosing Material changes, if any, immediately upon issuance.
- b. If privately held:
  - i. Management's Discussion & Analysis
  - ii. Report of Independent Accountants
  - iii. Financial Statements, including:
    - Balance Sheet
    - Income Statement
    - Statement of Cash Flows
    - Statement of Stockholder's Equity
  - iv. Notes to Financial Statements

If the above information is available on the Internet, the Participant may provide a letter stating where such statements may be located and retrieved by PJMSettlement. For certain Participants, some of the above financial submittals may not be applicable, and alternate requirements may be specified by PJMSettlement.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

### 3) Material Changes

Each Participant is responsible for informing PJMSettlement immediately, in writing, of any Material change in its financial condition. However, PJMSettlement may also independently establish from available information that a Participant has experienced a Material change in its financial condition without regard to whether such Participant has informed PJMSettlement of the same.

For the purpose of this policy, a Material change in financial condition may include, but not be limited to, any of the following:

- a. a downgrade of any debt rating by any rating agency;
- b. being placed on a credit watch with negative implications by any rating agency;
- c. a bankruptcy filing;
- d. insolvency;
- e. a report of a quarterly or annual loss or a decline in earnings of ten percent or more compared to the prior period;
- f. restatement of prior financial statements;
- g. the resignation of key officer(s);
- h. the filing of a lawsuit that could adversely impact any current or future financial results by ten percent or more;
- i. financial default in another organized wholesale electric market futures exchange or clearing house;
- j. revocation of a license or other authority by any Federal or State regulatory agency; where such license or authority is necessary or important to the Participants continued business for example, FERC market-based rate authority, or State license to serve retail load; or
- k. a significant change in credit default spreads, market capitalization, or other market-based risk measurement criteria, such as a recent increase in Moody's KMV Expected Default Frequency (EDF<sup>tm</sup>) that is noticeably greater than the increase in its peers' EDF<sup>tm</sup> rates, or a collateral default swap (CDS) premium normally associated with an entity rated lower than investment grade.

If PJMSettlement determines that a Material change in the financial condition of the Participant has occurred, it may require the Participant to provide Financial Security within two Business Days, in an amount and form approved by PJMSettlement. If the Participant fails to provide the required Financial Security, the Participant shall be in default under this credit policy.

In the event that PJMSettlement determines that a Material change in the financial condition of a Participant warrants a requirement to provide Financial Security, PJMSettlement shall provide the Participant with a written explanation of why such determination was made. However, under no circumstances shall the requirement that a Participant provide the requisite Financial Security be deferred pending the issuance of such written explanation.

### 4) Litigation, Commitments, and Contingencies

Each Participant is also required to provide information as to any known Material litigation, commitments or contingencies as well as any prior bankruptcy declarations or Material defalcations by the Participant or its predecessors, subsidiaries or Affiliates, if any. These disclosures shall be made upon initiation or change or as requested by PJMSettlement.

### **5) Other Disclosures**

Each Participant is required to disclose any Affiliates that are currently Members of PJM or are applying for membership within PJM. Each Participant is also required to disclose the existence of any ongoing investigations by the SEC, FERC, CFTC or any other governing, regulatory, or standards body. These disclosures shall be made upon initiation or change, or as requested by PJMSettlement.

### **C. Corporate Guaranty**

If a Corporate Guaranty is being utilized to establish credit for a Participant, the Guarantor will be evaluated and the Unsecured Credit Allowance or Financial Security requirement will be based on the financial strength of the Guarantor.

An irrevocable and unconditional Corporate Guaranty may be utilized as part of the credit evaluation process, but will not be considered a form of Financial Security. The Corporate Guaranty will be considered a transfer of credit from the Guarantor to the Participant. The Corporate Guaranty must guarantee the (i) full and prompt payment of all amounts payable by the Participant under the Agreements, and (ii) performance by the Participant under this policy.

The Corporate Guaranty should clearly state the identities of the “Guarantor,” “Beneficiary” (PJMSettlement) and “Obligor” (Participant). The Corporate Guaranty must be signed by an officer of the Guarantor, and must demonstrate that it is duly authorized in a manner acceptable to PJMSettlement. Such demonstration may include either a Corporate Seal on the Guaranty itself, or an accompanying executed and sealed Secretary’s Certificate noting that the Guarantor was duly authorized to provide such Corporate Guaranty and that the person signing the Corporate Guaranty is duly authorized, or other manner acceptable to PJMSettlement.

A Participant supplying a Corporate Guaranty must provide the same information regarding the Guarantor as is required in the “Initial Credit Evaluation” §I.A. and the “Ongoing Evaluation” §I.B. of this policy, including providing the Rating Agency Reports, Financial Statements and Related Information, References, Litigation Commitments and Contingencies, and Other Disclosures. A Participant supplying a Foreign or Canadian Guaranty must also satisfy the requirements of §I.C.1 or §I.C.2, as appropriate.

If there is a Material change in the financial condition of the Guarantor or if the Corporate Guaranty comes within 30 days of expiring without renewal, the Participant will be required to provide Financial Security either in the form of a cash deposit or a letter of credit. Failure to provide the required Financial Security within two Business Days after request by PJMSettlement will constitute an event of default under this credit policy. A Participant may request PJMSettlement to perform a credit evaluation in order to determine creditworthiness and

to establish an Unsecured Credit Allowance, if applicable. If PJMSettlement determines that a Participant does qualify for a sufficient Unsecured Credit Allowance, then Financial Security will not be required.

The PJMSettlement Credit Application contains an acceptable form of Corporate Guaranty that should be utilized by a Participant choosing to establish its credit with a Corporate Guaranty. If the Corporate Guaranty varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a Corporate Guaranty and meeting the policy provisions are the responsibility of the Participant.

### 1) Foreign Guaranties

A Foreign Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in a country other than the United States or Canada. The entity providing a Foreign Guaranty on behalf of a Participant is a Foreign Guarantor. A Participant may provide a Foreign Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met:

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Foreign Guaranty at any time, including for material adverse circumstances or occurrences.

- a. A Foreign Guaranty:
- i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  - iv. Will not be accepted towards a Participant's Unsecured Credit Allowance for more than the following limits, depending on the Foreign Guarantor's credit rating:

Rating of Foreign Guarantor	Maximum Accepted Guaranty if Country Rating is AAA	Maximum Accepted Guaranty if Country Rating is AA+
A- and above	USD50,000,000	USD30,000,000
BBB+	USD30,000,000	USD20,000,000
BBB	USD10,000,000	USD10,000,000
BBB- or below	USD 0	USD 0

- v. May not exceed 50% of the Participant's total credit, if the Foreign Grantor is rated less than BBB+.
- b. A Foreign Guarantor:
- i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.

- ii. Must be an Affiliate of the Participant.
- iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
- iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Foreign Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
- v. Must have a Senior Unsecured (or equivalent, in PJMSettlement's sole discretion) rating of BBB (one notch above BBB-) or greater by any and all agencies that provide rating coverage of the entity.
- vi. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance
- vii. Must provide a Secretary's Certificate certifying the adoption of Corporate Resolutions:
  - 1. Authorizing and approving the Guaranty; and
  - 2. Authorizing the Officers to execute and deliver the Guaranty on behalf of the Guarantor.
- viii. Must be domiciled in a country with a minimum long-term sovereign (or equivalent) rating of AA+/Aa1, with the following conditions:
  - 1. Sovereign ratings must be available from at least two rating agencies acceptable to PJMSettlement (e.g. S&P, Moody's, Fitch, DBRS).
  - 2. Each agency's sovereign rating for the domicile will be considered to be the lowest of: country ceiling, senior unsecured government debt, long-term foreign currency sovereign rating, long-term local currency sovereign rating, or other equivalent measures, at PJMSettlement's sole discretion.
  - 3. Whether ratings are available from two or three agencies, the lowest of the two or three will be used.
- ix. Must be domiciled in a country that recognizes and enforces judgments of US courts.
- x. Must demonstrate financial commitment to activity in the United States as evidenced by one of the following:
  - 1. American Depositary Receipts (ADR) are traded on the New York Stock Exchange, American Stock Exchange, or NASDAQ.
  - 2. Equity ownership worth over USD100,000,000 in the wholly-owned or majority owned subsidiaries in the United States.
- xi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this credit policy.
- xii. Must pay for all expenses incurred by PJMSettlement related to reviewing and accepting a foreign guaranty beyond nominal in-house credit and legal review.
- xiii. Must, at its own cost, provide PJMSettlement with independent legal opinion from an attorney/solicitor of PJMSettlement's choosing and licensed to practice law in the United States and/or Guarantor's domicile, in form and substance

acceptable to PJMSettlement in its sole discretion, confirming the enforceability of the Foreign Guaranty, the Guarantor's legal authorization to grant the Guaranty, the conformance of the Guaranty, Guarantor, and Guarantor's domicile to all of these requirements, and such other matters as PJMSettlement may require in its sole discretion.

## **2) Canadian Guaranties**

A Canadian Guaranty is a Corporate Guaranty that is provided by an Affiliate entity that is domiciled in Canada and satisfies all of the provisions below. The entity providing a Canadian Guaranty on behalf of a Participant is a Canadian Guarantor. A Participant may provide a Canadian Guaranty in satisfaction of part of its credit obligations or voluntary credit provision at PJMSettlement provided that all of the following conditions are met.

PJMSettlement reserves the right to deny, reject, or terminate acceptance of any Canadian Guaranty at any time for reasonable cause, including adverse material circumstances.

- a. A Canadian Guaranty:
  - i. Must contain provisions equivalent to those contained in PJMSettlement's standard form of Foreign Guaranty with any modifications subject to review and approval by PJMSettlement counsel.
  - ii. Must be denominated in US currency.
  - iii. Must be written and executed solely in English, including any duplicate originals.
  
- b. A Canadian Guarantor:
  - i. Must satisfy all provisions of the PJM credit policy applicable to domestic Guarantors.
  - ii. Must be an Affiliate of the Participant.
  - iii. Must maintain an agent for acceptance of service of process in the United States; such agent shall be situated in the Commonwealth of Pennsylvania, absent legal constraint.
  - iv. Must be rated by at least one Rating Agency acceptable to PJMSettlement; the credit strength of a Canadian Guarantor may not be determined based on an evaluation of its financials without an actual credit rating as well.
  - v. Must provide financials in GAAP format or other format acceptable to PJMSettlement with clear representation of net worth, intangible assets, and any other information PJMSettlement may require in order to determine the entity's Unsecured Credit Allowance.
  
  - vi. Must satisfy all other applicable provisions of the PJM Tariff and/or Operating Agreement, including this Credit Policy.

### **Ia. MINIMUM PARTICIPATION REQUIREMENTS**

#### **A. PJM Market Participation Eligibility Requirements**



To be eligible to transact in PJM Markets, a Market Participant must demonstrate in accordance with the Risk Management and Verification processes set forth below that it qualifies in one of the following ways:

1. an “appropriate person,” as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act, or;
2. an “eligible contract participant,” as that term is defined in Section 1a(18), or successor provision, of the Commodity Exchange Act, or;
3. a business entity or person who is in the business of: (1) generating, transmitting, or distributing electric energy, or (2) providing electric energy services that are necessary to support the reliable operation of the transmission system, or;
4. a Market Participant seeking eligibility as an “appropriate person” providing an unlimited Corporate Guaranty in a form acceptable to PJMSettlement as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty, or;
5. a Market Participant providing a letter of credit of at least \$5 million to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Market Participant acknowledges is separate from, and cannot be applied to meet, its credit requirements to PJMSettlement.

If, at any time, a Market Participant cannot meet the eligibility requirements set forth above, it shall immediately notify PJMSettlement and immediately cease conducting transactions in the PJM Markets. PJMSettlement shall terminate a Market Participant’s transaction rights in the PJM Markets if, at any time, it becomes aware that the Market Participant does not meet the minimum eligibility requirements set forth above.

In the event that a Market Participant is no longer able to demonstrate it meets the minimum eligibility requirements set forth above, and possesses, obtains or has rights to possess or obtain, any open or forward positions in PJM’s Markets, PJMSettlement may take any such action it deems necessary with respect to such open or forward positions, including, but not limited to, liquidation, transfer, assignment or sale; provided, however, that the Market Participant will, notwithstanding its ineligibility to participate in the PJM Markets, be entitled to any positive market value of those positions, net of any obligations due and owing to PJM and/or PJMSettlement.

## **B. Risk Management and Verification**

All Participants shall provide to PJMSettlement an executed copy of the annual certification set forth in Appendix 1 to this Attachment Q. This certification shall be provided before an entity is eligible to participate in the PJM Markets and shall be initially submitted to PJMSettlement together with the entity’s Credit Application. Thereafter, it shall be submitted each calendar year

by all Participants during a period beginning on January 1 and ending April 30, except that new Participants who became eligible to participate in PJM markets during the period of January through April shall not be required to resubmit such certification until the following calendar year. Except for certain FTR Participants (discussed below) or in cases of manifest error, PJMSettlement will accept such certifications as a matter of course and Participants will not need further notice from PJMSettlement before commencing or maintaining their eligibility to participate in PJM markets. A Participant that fails to provide its annual certification by April 30 shall be ineligible to transact in the PJM markets and PJM will disable the Participant's access to the PJM markets until such time as PJMSettlement receives the Participant's certification.

Participants acknowledge and understand that the annual certification constitutes a representation upon which PJMSettlement will rely. Such representation is additionally made under the PJM Tariff, filed with and accepted by FERC, and any inaccurate or incomplete statement may subject the Participant to action by FERC. Failure to comply with any of the criteria or requirements listed herein or in the certification may result in suspension of a Participant's transaction rights in the PJM markets.

Certain FTR Participants (those providing representations found in paragraph 3.b of the annual certification set forth in Appendix 1 to this Attachment Q) are additionally required to submit to PJMSettlement (at the time they make their annual certification) a copy of their current governing risk control policies, procedures and controls applicable to their FTR trading activities, except that if no substantive changes have been made to such policies, practices and/or controls applicable to their FTR trading activities, they may instead submit to PJMSettlement a certification stating that no changes have been made. PJMSettlement will review such documentation to verify that it appears generally to conform to prudent risk management practices for entities trading in FTR-type markets. If principles or best practices relating to risk management in FTR-type markets are published, as may be modified from time to time, by a third-party industry association, such as the Committee of Chief Risk Officers, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the fundamental sufficiency of the FTR Participant's risk controls. Those FTR Participants subject to this provision shall make a one-time payment of \$1,000.00 to PJMSettlement to cover costs associated with review and verification. Thereafter, if such FTR Participant's risk policies, procedures and controls applicable to its FTR trading activities change substantively, it shall submit such modified documentation, without charge, to PJMSettlement for review and verification at the time it makes its annual certification. Such FTR Participant's continued eligibility to participate in the PJM FTR markets is conditioned on PJMSettlement notifying such FTR Participant that its annual certification, including the submission of its risk policies, procedures and controls, has been accepted by PJMSettlement. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph, however, in all circumstances, PJMSettlement and any third-party it may retain will treat as confidential the documentation provided by an FTR Participant under this paragraph, consistent with the applicable provisions of PJM's Operating Agreement.

An FTR Participant that makes the representation in paragraph 3.a of the annual certification understand that PJMSettlement, given the visibility it has over a Participant's overall market

activity in performing billing and settlement functions, may at any time request the FTR Participant provide additional information demonstrating that it is in fact eligible to make the representation in paragraph 3.a of the annual certification. If such additional information is not provided or does not, in PJMSettlement's judgment, demonstrate eligibility to make the representation in paragraph 3.a of the annual certification, PJMSettlement will require the FTR Participant to instead make the representations required in paragraph 3.b of the annual certification, including representing that it has submitted a copy of its current governing risk control policies, procedures and controls applicable to its FTR trading activities. If the FTR Participant cannot or does not make those representations as required in paragraph 3.b of the annual certification, then PJM will terminate the FTR Participant's rights to purchase FTRs in the FTR market and may terminate the FTR Participant's rights to sell FTRs in the PJM FTR market.

PJMSettlement shall also conduct a periodic compliance verification process to review and verify, as applicable, Participants' risk management policies, practices, and procedures pertaining to the Participants' activities in the PJM markets. Such review shall include verification that:

1. The risk management framework is documented in a risk policy addressing market, credit and liquidity risks.
2. The Participant maintains an organizational structure with clearly defined roles and responsibilities that clearly segregates trading and risk management functions.
3. There is clarity of authority specifying the types of transactions into which traders are allowed to enter.
4. The Participant has requirements that traders have adequate training relative to their authority in the systems and PJM markets in which they transact.
5. As appropriate, risk limits are in place to control risk exposures.
6. Reporting is in place to ensure that risks and exceptions are adequately communicated throughout the organization.
7. Processes are in place for qualified independent review of trading activities.
8. As appropriate, there is periodic valuation or mark-to-market of risk positions.

If principles or best practices relating to risk management in PJM-type markets are published, as may be modified from time to time, by a third-party industry association, PJMSettlement may, following stakeholder discussion and with no less than six months prior notice to stakeholders, apply such principles or best practices in determining the sufficiency of the Participant's risk controls. PJMSettlement may select Participants for review on a random basis and/or based on identified risk factors such as, but not limited to, the PJM markets in which the Participant is transacting, the magnitude of the Participant's transactions in the PJM markets, or the volume of the Participant's open positions in the PJM markets. Those Participants notified by

PJMSettlement that they have been selected for review shall, upon 14 calendar days notice, provide a copy of their current governing risk control policies, procedures and controls applicable to their PJM market activities and shall also provide such further information or documentation pertaining to the Participants' activities in the PJM markets as PJMSettlement may reasonably request. Participants selected for risk management verification through a random process and satisfactorily verified by PJMSettlement shall be excluded from such verification process based on a random selection for the subsequent two years. PJMSettlement shall annually randomly select for review no more than 20% of the Participants in each member sector.

Each selected Participant's continued eligibility to participate in the PJM markets is conditioned upon PJMSettlement notifying the Participant of successful completion of PJMSettlement's verification of the Participant's risk management policies, practices and procedures, as discussed herein. However, if PJMSettlement notifies the Participant in writing that it could not successfully complete the verification process, PJMSettlement shall allow such Participant 14 calendar days to provide sufficient evidence for verification prior to declaring the Participant as ineligible to continue to participate in PJM's markets, which declaration shall be in writing with an explanation of why PJMSettlement could not complete the verification. If, prior to the expiration of such 14 calendar days, the Participant demonstrates to PJMSettlement that it has filed with the Federal Energy Regulatory Commission an appeal of PJMSettlement's risk management verification determination, then the Participant shall retain its transaction rights, pending the Commission's determination on the Participant's appeal. PJMSettlement may retain outside expertise to perform the review and verification function described in this paragraph. PJMSettlement and any third party it may retain will treat as confidential the documentation provided by a Participant under this paragraph, consistent with the applicable provisions of the Operating Agreement. If PJMSettlement retains such outside expertise, a Participant may direct in writing that PJMSettlement perform the risk management review and verification for such Participant instead of utilizing a third party, provided however, that employees and contract employees of PJMSettlement and PJM shall not be considered to be such outside expertise or third parties.

Participants are solely responsible for the positions they take and the obligations they assume in PJM markets. PJMSettlement hereby disclaims any and all responsibility to any Participant or PJM Member associated with Participant's submitting or failure to submit its annual certification or PJMSettlement's review and verification of an FTR Participant's risk policies, procedures and controls. Such review and verification is limited to demonstrating basic compliance by an FTR Participant with the representation it makes under paragraph 3.b of its annual certification showing the existence of written policies, procedures and controls to limit its risk in PJM's FTR markets and does not constitute an endorsement of the efficacy of such policies, procedures or controls.

### **C. Capitalization**

In addition to the Annual Certification requirements in Appendix 1 to this Attachment Q, a Participant must demonstrate that it meets the minimum financial requirements appropriate for the PJM market(s) in which it transacts by satisfying either the Minimum Capitalization or the

Provision of Collateral requirements listed below:

### 1. Minimum Capitalization

FTR Participants must demonstrate a tangible net worth in excess of \$1 million or tangible assets in excess of \$10 million. Other Participants must demonstrate a tangible net worth in excess of \$500,000 or tangible assets in excess of \$5 million.

- a. In either case, consideration of “tangible” assets and net worth shall exclude assets (net of any matching liabilities, assuming the result is a positive value) which PJM Settlement reasonably believes to be restricted, highly risky, or potentially unavailable to settle a claim in the event of default. Examples include, but are not limited to, restricted assets and Affiliate assets, derivative assets, goodwill, and other intangible assets.
- b. Demonstration of “tangible” assets and net worth may be satisfied through presentation of an acceptable Corporate Guaranty, provided that both:
  - (i) the guarantor is an affiliate company that satisfies the tangible net worth or tangible assets requirements herein, and;
  - (ii) the Corporate Guaranty is either unlimited or at least \$500,000.

If the Corporate Guaranty presented by the Participant to satisfy these Capitalization requirements is limited in value, then the Participant’s resulting Unsecured Credit Allowance shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this Credit Policy, or:
- (2) the face value of the Corporate Guaranty, reduced by \$500,000 and further reduced by 10%. (For example, a \$10.5 million Corporate Guaranty would be reduced first by \$500,000 to \$10 million and then further reduced 10% more to \$9 million. The resulting \$9 million would be the Participant’s Unsecured Credit Allowance available through the Corporate Guaranty).

In the event that a Participant provides collateral in addition to a limited Corporate Guaranty to increase its available credit, the value of such collateral shall be reduced by 10%. This reduced value shall be deemed Financial Security and available to satisfy

the requirements of this Credit Policy.

Demonstrations of capitalization must be presented in the form of audited financial statements for the Participant's most recent fiscal year.

## **2. Provision of Collateral**

If a Participant does not demonstrate compliance with its applicable Minimum Capitalization Requirements above, it may still qualify to participate in PJM's markets by posting additional collateral, subject to the terms and conditions set forth herein.

Any collateral provided by a Participant unable to satisfy the Minimum Capitalization Requirements above will be restricted in the following manner:

- i. Collateral provided by FTR Participants shall be reduced by \$500,000 and then further reduced by 10%. This reduced amount shall be considered the Financial Security provided by the Participant and available to satisfy requirements of this Credit Policy.
- ii. Collateral provided by other Participants that engage in Virtual Transactions or Export Transactions shall be reduced by \$200,000 and then further reduced by 10%. This reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.
- iii. Collateral provided by other Participants that do not engage in Virtual Transactions or Export Transactions shall be reduced by 10%, and this reduced value shall be considered Financial Security available to satisfy requirements of this Credit Policy.

In the event a Participant that satisfies the Minimum Participation Requirements through provision of collateral also provides a Corporate Guaranty to increase its available credit, then the Participant's resulting Unsecured Credit Allowance conveyed through such Guaranty shall be the lesser of:

- (1) the applicable Unsecured Credit Allowance available to the Participant by the Corporate Guaranty pursuant to the creditworthiness provisions of this credit policy, or,
- (2) the face value of the Guaranty, reduced by 10%.

## **II. CREDIT ALLOWANCE AND WORKING CREDIT LIMIT**

PJMSettlement's credit evaluation process will include calculating a Credit Score for each Participant. The credit score will be utilized to determine a Participant's Unsecured Credit Allowance.

Participants who do not qualify for an Unsecured Credit Allowance will be required to provide Financial Security based on their Peak Market Activity, as provided below.

A corresponding Working Credit Limit will be established based on the Unsecured Credit Allowance and/or the Financial Security provided.

Where Participant of PJM are considered Affiliates, Unsecured Credit Allowances and Working Credit Limits will be established for each individual Participant, subject to an aggregate maximum amount for all Affiliates as provided for in §II.F of this policy.

In its credit evaluation of Cooperatives and Municipalities, PJMSettlement may request additional information as part of the overall financial review process and may also consider qualitative factors in determining financial strength and creditworthiness.

#### **A. Credit Score**

For participants with credit ratings, a Credit Score will be assigned based on their senior unsecured credit rating and credit watch status as shown in the table below. If an explicit senior unsecured rating is not available, PJMSettlement may impute an equivalent rating from other ratings that are available. For Participants without a credit rating, but who wish to be considered for unsecured Credit, a Credit Score will be generated from PJMSettlement's review and analysis of various factors that are predictors of financial strength and creditworthiness. Key factors in the scoring process include, financial ratios, and years in business. PJMSettlement will consistently apply the measures it uses in determining Credit Scores. The credit scoring methodology details are included in a supplementary document available on OASIS.

#### **Rated Entities Credit Scores**

Rating	Score	Score Modifier	
		Credit Watch Negative	Credit Watch Positive
AAA	100	-1.0	0.0
AA+	99	-1.0	0.0
AA	99	-1.0	0.0
AA-	98	-1.0	0.0
A+	97	-1.0	0.0
A	96	-2.0	0.0
A-	93	-3.0	1.0
BBB+	88	-4.0	2.0
BBB	78	-4.0	2.0
BBB-	65	-4.0	2.0
BB+ and below	0	0.0	0.0

#### **B. Unsecured Credit Allowance**

PJMSettlement will determine a Participant's Unsecured Credit Allowance based on its Credit Score and the parameters in the table below. The maximum Unsecured Credit Allowance is the

lower of:

- 1) A percentage of the Participant's Tangible Net Worth, as stated in the table below, with the percentage based on the Participant's credit score; and
- 2) A dollar cap based on the credit score, as stated in the table below:

<b>Credit Score</b>	<b>Tangible Net Worth Factor</b>	<b>Maximum Unsecured Credit Allowance</b> <b>(\$ Million)</b>
91-100	2.125 – 2.50%	\$50
81-90	1.708 – 2.083%	\$42
71-80	1.292 – 1.667%	\$33
61-70	0.875 – 1.25%	\$7
51-60	0.458 – 0.833%	\$0-\$2
50 and Under	0%	\$0

If a Corporate Guaranty is utilized to establish an Unsecured Credit Allowance for a Participant, the value of a Corporate Guaranty will be the lesser of:

- The limit imposed in the Corporate Guaranty;
- The Unsecured Credit Allowance calculated for the Guarantor; and
- A portion of the Unsecured Credit Allowance calculated for the Guarantor in the case of Affiliated Participants.

PJMSettlement has the right at any time to modify any Unsecured Credit Allowance and/or require additional Financial Security as may be deemed reasonably necessary to support current market activity. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

PJMSettlement will maintain a posting of each Participant's unsecured Credit Allowance, along with certain other credit related parameters, on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

### **C. Seller Credit**

Participants that have maintained a Net Sell Position for each of the prior 12 months are eligible for Seller Credit, which is an additional form of Unsecured Credit. A Participant's Seller Credit will be equal to sixty percent of the Participant's thirteenth smallest weekly Net Sell Position invoiced in the past 52 weeks.

Each Participant receiving Seller Credit must maintain both its Seller Credit and its Total Net



Sell Position equal to or greater than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided.

For Participants receiving Seller Credit, PJMSettlement may forecast the Participant's Total Net Sell Position considering the Participant's current Total Net Sell Position, recent trends in the Participant's Total Net Sell Position, and other information available to PJMSettlement, such as, but not limited to, known generator outages, changes in load responsibility, and bilateral transactions impacting the Participant. If PJMSettlement's forecast ever indicates that the Participant's Total Net Sell Position may in the future be less than the Participant's aggregate credit requirements, less any Financial Security or other sources of credit provided, then PJMSettlement may require Financial Security as needed to cover the difference. Failure to pay the required amount of additional Financial Security within two Business Days shall be an event of default.

Any Financial Security required by PJMSettlement pursuant to these provisions for Seller Credit will be returned once the requirement for such Financial Security has ended. Seller Credit may not be conveyed to another entity through use of a guaranty. Seller Credit shall be subject to the cap on available Unsecured Credit set forth in Section II.F.

#### **D. Peak Market Activity and Financial Security Requirement**

A PJM Participant or Applicant that has an insufficient Unsecured Credit Allowance to satisfy its Peak Market Activity will be required to provide Financial Security such that its Unsecured Credit Allowance and Financial Security together are equal to its Peak Market Activity in order to secure its transactional activity in the PJM Market.

Peak Market Activity for Participants will be determined semi-annually beginning in the first complete billing week in the months of April and October. Peak Market Activity shall be the greater of the initial Peak Market Activity, as explained below, or the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two, or three week period, ending within a respective semi-annual period. However, Peak Market Activity shall not exceed the greatest amount invoiced for the Participant's transaction activity for all PJM markets and services in any rolling one, two or three week period in the prior 52 weeks.

Peak Market Activity shall exclude FTR Net Activity, Virtual Transactions Net Activity, and Export Transactions Net Activity.

The initial Peak Market Activity for Applicants will be determined by PJMSettlement based on a review of an estimate of their transactional activity for all PJM markets and services over the next 52 weeks, which the Applicant shall provide to PJMSettlement.

The initial Peak Market Activity for Participants, calculated at the beginning of each respective semi-annual period, shall be the three-week average of all non-zero invoice totals over the previous 52 weeks. This calculation shall be performed and applied within three business days following the day the invoice is issued for the first full billing week in the current semi-annual

period.

Prepayments shall not affect Peak Market Activity unless otherwise agreed to in writing pursuant to this Credit Policy.

All Peak Market Activity calculations shall take into account reductions of invoice values effectuated by early payments which are applied to reduce a Participant's Peak Market Activity as contemplated by other terms of the Credit Policy; provided that the initial Peak Market Activity shall not be less than the average value calculated using the weeks for which no early payment was made.

A Participant may reduce its Financial Security Requirement by agreeing in writing (in a form acceptable to PJMSettlement) to make additional payments, including prepayments, as and when necessary to ensure that such Participant's Total Net Obligation at no time exceeds such reduced Financial Security Requirement.

PJMSettlement may, at its discretion, adjust a Participant's Financial Security Requirement if PJMSettlement determines that the Peak Market Activity is not representative of such Participant's expected activity, as a consequence of known, measurable, and sustained changes. Such changes may include the loss (without replacement) of short-term load contracts, when such contracts had terms of three months or more and were acquired through state-sponsored retail load programs, but shall not include short-term buying and selling activities.

PJMSettlement may waive the Financial Security Requirement for a Participant that agrees in writing that it shall not, after the date of such agreement, incur obligations under any of the Agreements. Such entity's access to all electronic transaction systems administered by PJM shall be terminated.

PJMSettlement will maintain a posting of each Participant's Financial Security Requirement on the PJM web site in a secure, password-protected location. Such information will be updated at least weekly. Each Participant will be responsible for monitoring such information and recognizing changes that may occur.

#### **E. Working Credit Limit**

PJMSettlement will establish a Working Credit Limit for each Participant against which its **Total Net Obligation** will be monitored. The Working Credit Limit is defined as 75% of the Financial Security provided to PJMSettlement and/or 75% of the Unsecured Credit Allowance determined by PJMSettlement based on a credit evaluation, as reduced by any applicable credit requirement determinants defined in this policy. A Participant's Total Net Obligation should not exceed its Working Credit Limit.

Example: After a credit evaluation by PJMSettlement, a Participant is deemed able to support an Unsecured Credit Allowance of \$10.0 million. The Participant will be assigned a Working Credit Limit of \$8.5 million. PJMSettlement will monitor the Participant's Total Net Obligations against the Working Credit Limit.

A Participant with an Unsecured Credit Allowance may choose to provide Financial Security in order to increase its Working Credit Limit. A Participant with no Unsecured Credit Allowance may also choose to increase its Working Credit Limit by providing Financial Security in an amount greater than its Peak Market Activity.

If a Participant's Total Net Obligation approaches its Working Credit Limit, PJMSettlement may require the Participant to make an advance payment or increase its Financial Security in order to maintain its Total Net Obligation below its Working Credit Limit. Except as explicitly provided below, advance payments shall not serve to reduce the Participant's Peak Market Activity for the purpose of calculating credit requirements.

**Example:** After 10 days, and with 5 days remaining before the bill is due to be paid, a Participant approaches its \$4.0 million Working Credit Limit. PJMSettlement may require a prepayment of \$2.0 million in order that the Total Net Obligation will not exceed the Working Credit Limit.

If a Participant exceeds its Working Credit Limit or is required to make advance payments more than ten times during a 52-week period, PJMSettlement may require Financial Security in an amount as may be deemed reasonably necessary to support its Total Net Obligation.

A Participant receiving unsecured credit may make early payments up to ten times in a rolling 52-week period in order to reduce its Peak Market Activity for credit requirement purposes. Imputed Peak Market Activity reductions for credit purposes will be applied to the billing period for which the payment was received. Payments used as the basis for such reductions must be received prior to issuance or posting of the invoice for the relevant billing period. The imputed Peak Market Activity reduction attributed to any payment may not exceed the amount of Unsecured Credit for which the Participant is eligible.

## **F. Credit Limit Setting For Affiliates**

If two or more Participants are Affiliates and each is being granted an Unsecured Credit Allowance and a corresponding Working Credit Limit, PJMSettlement will consider the overall creditworthiness of the Affiliated Participants when determining the Unsecured Credit Allowances and Working Credit Limits in order not to grant more Unsecured Credit than the overall corporation could support.

**Example:** Participants A and B each have a \$10.0 million Corporate Guaranty from their common parent, a holding company with an Unsecured Credit Allowance calculation of \$12.0 million. PJMSettlement may limit the Unsecured Credit Allowance for each Participant to \$6.0 million, so the total Unsecured Credit Allowance does not exceed the corporate total of \$12.0 million.

PJMSettlement will work with Affiliated Participants to allocate the total Unsecured Credit Allowance among the Affiliates while assuring that no individual Participant, nor common guarantor, exceeds the Unsecured Credit Allowance appropriate for its credit strength. The aggregate Unsecured Credit for a Participant, including Unsecured Credit Allowance granted based on its own creditworthiness and any Unsecured Credit Allowance conveyed through a Guaranty shall not exceed \$50 million. The aggregate Unsecured Credit for a group of Affiliates shall not exceed \$50 million. A group of Affiliates subject to this cap shall request

PJMSettlement to allocate the maximum Unsecured Credit and Working Credit Limit amongst the group, assuring that no individual Participant or common guarantor, shall exceed the Unsecured Credit level appropriate for its credit strength and activity.

## **G. Working Credit Limit Violations**

### **1) Notification**

A Participant is subject to notification when its Total Net Obligation to PJMSettlement approaches the Participant's established Working Credit Limit.

### **2) Suspension**

A Participant that exceeds its Working Credit Limit is subject to suspension from participation in the PJM markets and from scheduling any future Transmission Service unless and until Participant's credit standing is brought within acceptable limits. A Participant will have two Business Days from notification to remedy the situation in a manner deemed acceptable by PJMSettlement. Additionally, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. Failure to comply with this policy will be considered an event of default under this credit policy.

## **H. PJM Administrative Charges**

Financial Security held by PJMSettlement shall also secure obligations to PJM for PJM administrative charges.

## **I. Pre-existing Financial Security**

PJMSettlement's credit requirements are applicable as of the effective date of the filing on May 5, 2010 by PJM and PJMSettlement of amendments to Attachment Q. Financial Security held by PJM prior to the effective date of such amendments shall be held by PJM for the benefit of PJMSettlement.

## **III. VIRTUAL TRANSACTION SCREENING**

### **A. Credit and Financial Security**

PJMSettlement does not require a Market Participant to establish separate or additional credit for submitting Virtual Transactions. If a Market Participant chooses to establish additional Financial Security and/or Unsecured Credit Allowance in order to increase its Credit Available for Virtual Transactions, the Market Participant's Working Credit Limit for Virtual Transactions shall be increased in accordance with the definition thereof. The Financial Security and/or Unsecured Credit Allowance available to increase a Market Participant's Credit Available for Virtual Transactions shall be the amount of Financial Security and/or Unsecured Credit Allowance available after subtracting any credit required for Minimum Participation

Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy, as applicable.

If a Market Participant chooses to provide additional Financial Security in order to increase its **Credit Available for Virtual Transactions PJMSettlement** may establish a reasonable timeframe, not to exceed three months, for which such Financial Security must be maintained. PJMSettlement will not impose such restriction on a deposit unless a Market Participant is notified prior to making the deposit. Such restriction, if applied, shall be applied to all future deposits by all Market Participants engaging in Virtual Transactions.

A Market Participant wishing to increase its Credit Available for Virtual Transactions by providing additional Financial Security may make the appropriate arrangements with PJMSettlement. PJMSettlement will make a good faith effort to make new Financial Security available as Credit Available for Virtual Transactions as soon as practicable after confirmation of receipt. In any event, however, Financial Security received and confirmed by noon on a business day will be applied (as provided under this policy) to Credit Available for Virtual Transactions no later than 10:00 am on the following business day. Receipt and acceptance of wired funds for cash deposit shall mean actual receipt by PJMSettlement's bank, deposit into PJMSettlement's customer deposit account, and confirmation by PJMSettlement that such wire has been received and deposited. Receipt and acceptance of letters of credit shall mean receipt of the original letter of credit or amendment thereto, and confirmation from PJMSettlement's credit and legal staffs that such letter of credit or amendment thereto conforms to PJMSettlement's requirements, which confirmation shall be made in a reasonable and practicable timeframe. To facilitate this process, bidders wiring funds for the purpose of increasing their Credit Available for Virtual Transactions are advised to specifically notify PJMSettlement that a wire is being sent for such purpose.

## **B. Virtual Transaction Screening Process**

All Virtual Transactions submitted to PJM shall be subject to a credit screen prior to acceptance in the Day-ahead Energy Market auction. The credit screen process will automatically reject Virtual Transactions submitted by the PJM market participant if the participant's Credit Available for Virtual Transactions is exceeded by the **Virtual Credit Exposure** that is calculated based on the participant's submitted Virtual Transactions as described below.

A Participant's Virtual Credit Exposure will be calculated on a daily basis for all Virtual Transactions submitted by the market participant for the next market day using the following equation:

Virtual Credit Exposure = INC and DEC Exposure + Up-to Congestion Exposure

Where:

1) INC and DEC Exposure is calculated as:

(a) ((the total MWh bid or offered, whichever is greater, hourly at each node) x the Nodal Reference Price x 1 day) summed over all nodes and all hours; plus (b) ((the difference between

the total bid MWh cleared and total offered MWh cleared hourly at each node) x Nodal Reference Price) summed over all nodes and all hours for the previous cleared Day-ahead Energy Market.

2) Up-to Congestion Exposure is calculated as:

(a) Total MWh bid hourly for each Up-to Congestion Transaction x (price bid – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours; plus (b) Total MWh cleared hourly for each Up-to Congestion Transaction x (cleared price – Up-to Congestion Reference Price) summed over all Up-to Congestion Transactions and all hours for the previous cleared Day-ahead Energy Market, provided that hours for which the calculation for an Up-to Congestion Transaction is negative, it shall be deemed to have a zero contribution to the sum.

If a Market Participant's Virtual Transactions are rejected as a result of the credit screen process, the Market Participant will be notified via an eMKT error message. A Market Participant whose Virtual Transactions are rejected may alter its Virtual Transactions so that its Virtual Credit Exposure does not exceed its Credit Available for Virtual Transactions, and may resubmit them. Virtual Transactions may be submitted in one or more groups during a day. If one or more groups of Virtual Transactions is submitted and accepted, and a subsequent group of submitted Virtual Transactions causes the total submitted Virtual Transactions to exceed the Virtual Credit Exposure, then only that subsequent set of Virtual Transactions will be rejected. Previously accepted Virtual Transactions will not be affected, though the Market Participant may choose to withdraw them voluntarily.

#### **IV. RELIABILITY PRICING MODEL AUCTION AND PRICE RESPONSIVE DEMAND CREDIT REQUIREMENTS**

Settlement during any Delivery Year of cleared positions resulting or expected to result from any Reliability Pricing Model Auction shall be included as appropriate in Peak Market Activity, and the provisions of this Attachment Q shall apply to any such activity and obligations arising therefrom. In addition, the provisions of this section shall apply to any entity seeking to participate in any RPM Auction, to address credit risks unique to such auctions. The provisions of this section also shall apply under certain circumstances to PRD Providers that seek to commit Price Responsive Demand pursuant to the provisions of the Reliability Assurance Agreement.

##### **A. Applicability**

A Market Seller seeking to submit a Sell Offer in any Reliability Pricing Model Auction based on any Capacity Resource for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before submitting such Sell Offer. A PRD Provider seeking to commit Price Responsive Demand for which there is a materially increased risk of non-performance must satisfy the credit requirement specified in section IV.B before it may commit the Price Responsive Demand. Credit must be maintained until such risk of non-performance is substantially eliminated, but may be reduced commensurate with the reduction in such risk, as set forth in Section IV.C.

For purposes of this provision, a resource for which there is a materially increased risk of non-performance shall mean: (i) a Planned Generation Capacity Resource; (ii) a Planned Demand Resource or an Energy Efficiency Resource; (iii) a Qualifying Transmission Upgrade; (iv) an existing or Planned Generation Capacity Resource located outside the PJM Region that at the time it is submitted in a Sell Offer has not secured firm transmission service to the border of the PJM Region sufficient to satisfy the deliverability requirements of the Reliability Assurance Agreement; or (v) Price Responsive Demand to the extent the responsible PRD Provider has not registered PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

## **B. Reliability Pricing Model Auction and Price Responsive Demand Credit Requirement**

Except as provided for Credit-Limited Offers below, for any resource specified in Section IV.A, other than Price Responsive Demand, the credit requirement shall be the RPM Auction Credit Rate, as provided in Section IV.D, times the megawatts to be offered for sale from such resource in a Reliability Pricing Model Auction. For Qualified Transmission Upgrades, the credit requirements shall be based on the Locational Deliverability Area in which such upgrade was to increase the Capacity Emergency Transfer Limit. The RPM Auction Credit Requirement for each Market Seller shall be the sum of the credit requirements for all such resources to be offered by such Market Seller in the auction or, as applicable, cleared by such Market Seller from the relevant auctions. For Price Responsive Demand specified in section IV.A, the credit requirement shall be based on the Nominal PRD Value (stated in Unforced Capacity terms) times the Price Responsive Demand Credit Rate as set forth in section IV.E.

Except for Credit-Limited Offers, the RPM Auction Credit Requirement for a Market Seller will be reduced for any Delivery Year to the extent less than all of such Market Seller's offers clear in the Base Residual Auction or any Incremental Auction for such Delivery Year. Such reduction shall be proportional to the quantity, in megawatts, that failed to clear in such Delivery Year.

A Sell Offer based on a Planned Generation Capacity Resource, Planned Demand Resource, or Energy Efficiency Resource may be submitted as a Credit-Limited Offer. A Market Seller electing this option shall specify a maximum amount of Unforced Capacity, in megawatts, and a maximum credit requirement, in dollars, applicable to the Sell Offer. A Credit-Limited Offer shall clear the RPM Auction in which it is submitted (to the extent it otherwise would clear based on the other offer parameters and the system's need for the offered capacity) only to the extent of the lesser of: (i) the quantity of Unforced Capacity that is the quotient of the division of the specified maximum credit requirement by the Auction Credit Rate resulting from section IV.D.b.; and (ii) the maximum amount of Unforced Capacity specified in the Sell Offer. For a Market Seller electing this alternative, the RPM Auction Credit Requirement applicable prior to the posting of results of the auction shall be the maximum credit requirement specified in its Credit-Limited Offer, and the RPM Auction Credit Requirement subsequent to posting of the results will be the Auction Credit Rate, as provided in Section IV.D.b, c. or d., as applicable, times the amount of Unforced Capacity from such Sell Offer that cleared in the auction. The availability and operational details of Credit-Limited Offers shall be as described in the PJM

Manuals.

As set forth in Section IV.D, a Market Seller's Auction Credit Requirement shall be determined separately for each Delivery Year.

### **C. Reduction in Credit Requirement**

As specified in Section IV.D, the RPM Auction Credit Rate may be reduced under certain circumstances after the auction has closed.

The Price Responsive Demand credit requirement shall be reduced as and to the extent the PRD Provider registers PRD-eligible load at a PRD Substation level to satisfy its Nominal PRD Value commitment, in accordance with Schedule 6.1 of the Reliability Assurance Agreement.

In addition, the RPM Auction Credit Requirement for a Participant for any given Delivery Year shall be reduced periodically, provided the Participant successfully meets progress milestones that reduce the risk of non-performance, as follows:

- a. For Planned Demand Resources and Energy Efficiency Resources, the RPM Auction Credit Requirement will be reduced in direct proportion to the megawatts of such Demand Resource that the Resource Provider qualifies as a Capacity Resource, in accordance with the procedures established under the Reliability Assurance Agreement.
- b. For Existing Generation Capacity Resources located outside the PJM Region that have not secured sufficient firm transmission to the border of the PJM Region prior to the auction in which such resource is first offered, the RPM Credit Requirement shall be reduced in direct proportion to the megawatts of firm transmission service secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement.
- c. For Planned Generation Capacity Resources, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of an Interconnection Service Agreement, and shall be reduced to zero on the date of commencement of Interconnection Service.
- d. For Planned Generation Capacity Resources located outside the PJM Region, the RPM Credit Requirement shall be reduced by 50% once the conditions in both b and c above are met, i.e., the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B when 1) the equivalent of an Interconnection Service Agreement becomes effective, and 2) 50% or more megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability requirements of the Reliability Assurance Agreement. The RPM Credit Requirement for a Planned Generation Capacity Resource located outside the PJM Region shall be reduced to zero when 1) the resource commences Interconnection Service and 2) 100% of the megawatts of firm transmission service have been secured by the Market Seller that qualify such resource under the deliverability



requirements of the Reliability Assurance Agreement.

e. For Qualifying Transmission Upgrades, the RPM Credit Requirement shall be reduced to 50% of the amount calculated under Section IV.B beginning as of the effective date of the latest associated Interconnection Service Agreement (or, when a project will have no such agreement, an Upgrade Construction Service Agreement), and shall be reduced to zero on the date the Qualifying Transmission Upgrade is placed in service. In addition, a Qualifying Transmission Upgrade will be allowed a reduction in its RPM Credit Requirement equal to the amount of collateral currently posted with PJM for the facility construction when the Qualifying Transmission Upgrade meets the following requirements: the Upgrade Construction Service Agreement has been fully executed, the full estimated cost to complete as most recently determined or updated by PJM has been fully paid or collateralized, and all regulatory and other required approvals (except those that must await construction completion) have been obtained. Such reduction in RPM Credit Requirement may not be transferred across different projects.

#### **D. RPM Auction Credit Rate**

As set forth in the PJM Manuals, a separate Auction Credit Rate shall be calculated for each Delivery Year prior to each Reliability Pricing Model Auction for such Delivery Year, as follows:

a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Auction Credit Rate shall be:

(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the greater of ((A) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) \$20 per MW-day) times the number of days in such Delivery Year.

b. Subsequent to the posting of the results from a Base Residual Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the (greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational

Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

c. For any resource not previously committed for a Delivery Year that seeks to participate in an Incremental Auction, the Auction Credit Rate shall be:

(i) For all Capacity Resources other than Capacity Performance Resources, (the greater of (A) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (B) 0.24 times the Capacity Resource Clearing Price in the Base Residual Auction for such Delivery Year for the Locational Deliverability Area within which the resource is located or (C) \$20 per MW-day) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the (greater of (A) 0.5 times Net Cost of New Entry or (B) \$20/MW-day) times the number of days in such Delivery Year.

d. Subsequent to the posting of the results of an Incremental Auction, the Auction Credit Rate used for ongoing credit requirements for supply committed in such auction shall be:

(i) For Base Capacity Resources: (the greater of (A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) times the number of days in such Delivery Year, but no greater than the Auction Credit Rate previously established for such resource's participation in such Incremental Auction pursuant to subsection (c) above) times the number of days in such Delivery Year; and

(ii) For Capacity Performance Resources, the greater of [(A) \$20/MW-day or (B) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located) or (C) the lesser of (i) 0.5 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in \$/MW-day or (ii) 1.5 times the Net Cost of New Entry (stated on an installed capacity basis) for the PJM Region for such Delivery Year, in \$/MW-day minus (the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the resource is located)] times the number of days in such Delivery Year).

## **E. Price Responsive Demand Credit Rate**

a. Prior to the posting of the results of a Base Residual Auction for a Delivery Year, the Price Responsive Demand Credit Rate shall be (the greater of (i) 0.3 times the Net Cost of New Entry for the PJM Region for such Delivery Year, in MW-day or (ii) \$20 per MW-day) times the

number of days in such Delivery Year;

b. Subsequent to the posting of the results from a Base Residual Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for Price Responsive Demand registered prior to such auction shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Capacity Resource Clearing Price in such auction for the Locational Deliverability Area within which the PRD load is located) times the number of days in such Delivery Year times a final price uncertainty factor of 1.05;

c. For any additional Price Responsive Demand that seeks to commit in a Third Incremental Auction in response to a qualifying change in the final LDA load forecast, the Price Responsive Demand Credit Rate shall be the same as the rate for Price Responsive Demand that had cleared in the Base Residual Auction;

d. Subsequent to the posting of the results of the Third Incremental Auction, the Price Responsive Demand Credit Rate used for ongoing credit requirements for all Price Responsive Demand, shall be (the greater of (i) \$20/MW-day or (ii) 0.2 times the Final Zonal Capacity Price for the Locational Deliverability Area within which the Price Responsive Demand is located) times the number of days in such Delivery Year, but no greater than the Price Responsive Demand Credit Rate previously established under subsections (a), (b), or (c) of this section for such Delivery Year.

#### **F. RPM Seller Credit - Additional Form of Unsecured Credit for RPM**

In addition to the forms of credit specified elsewhere in this Attachment Q, RPM Seller Credit shall be available to Market Sellers, but solely for purposes of satisfying RPM Auction Credit Requirements. If a supplier has a history of being a net seller into PJM markets, on average, over the past 12 months, then PJMSettlement will count as available Unsecured Credit twice the average of that participant's total net monthly PJMSettlement bills over the past 12 months. This RPM Seller Credit shall be subject to the cap on available Unsecured Credit as established in Section II.F.

#### **G. Credit Responsibility for Traded Planned RPM Capacity Resources**

PJMSettlement may require that credit and financial responsibility for planned RPM Capacity Resources that are traded remain with the original party (which for these purposes, means the party bearing credit responsibility for the planned RPM Capacity Resource immediately prior to trade) unless the receiving party independently establishes consistent with the PJM credit policy, that it has sufficient credit with PJMSettlement and agrees by providing written notice to PJMSettlement that it will fully assume the credit responsibility associated with the traded planned RPM Capacity Resource.

### **V. FINANCIAL TRANSMISSION RIGHT AUCTIONS**

#### **A. FTR Credit Limit.**

PJMSettlement will establish an FTR Credit Limit for each Participant. Participants must maintain their FTR Credit Limit at a level equal to or greater than their FTR Credit Requirement. FTR Credit Limits will be established only by a Participant providing Financial Security.

**B. FTR Credit Requirement.**

For each Participant with FTR activity, PJMSettlement shall calculate an FTR Credit Requirement based on FTR cost less a discounted historical value. FTR Credit Requirements shall be further adjusted by ARR credits available and by an amount based on portfolio diversification, if applicable. The requirement will be based on individual monthly exposures which are then used to derive a total requirement.

The FTR Credit Requirement shall be calculated by first adding for each month the FTR Monthly Credit Requirement Contribution for each submitted, accepted, and cleared FTR and then subtracting the prorated value of any ARRs held by the Participant for that month. The resulting twelve monthly subtotals represent the expected value of net payments between PJMSettlement and the Participant for FTR activity each month during the Planning Period. Subject to later adjustment by an amount based on portfolio diversification, if applicable, the FTR Credit Requirement shall be the sum of the individual positive monthly subtotals, representing months in which net payments to PJMSettlement are expected.

**C. Rejection of FTR Bids.**

Bids submitted into an auction will be rejected if the Participant's FTR Credit Requirement including such submitted bids would exceed the Participant's FTR Credit Limit, or if the Participant fails to establish additional credit as required pursuant to provisions related to portfolio diversification.

**D. FTR Credit Collateral Returns.**

A Market Participant may request from PJMSettlement the return of any collateral no longer required for the FTR auctions. PJMSettlement is permitted to limit the frequency of such requested collateral returns, provided that collateral returns shall be made by PJMSettlement at least once per calendar quarter, if requested by a Market Participant.

**E. Credit Responsibility for Traded FTRs.**

PJMSettlement may require that credit responsibility associated with an FTR traded within PJM's eFTR system remain with the original party (which for these purposes, means the party bearing credit responsibility for the FTR immediately prior to trade) unless and until the receiving party independently establishes, consistent with the PJM credit policy, sufficient credit with PJMSettlement and agrees through confirmation of the FTR trade within the eFTR system that it will meet in full the credit requirements associated with the traded FTR.

**F. Portfolio Diversification.**

Subsequent to calculating a tentative cleared solution for an FTR auction (or auction round), PJM shall both:

1. Determine the FTR Portfolio Auction Value, including the tentative cleared solution. Any Participants with such FTR Portfolio Auction Values that are negative shall be deemed FTR Flow Undiversified.
2. Measure the geographic concentration of the FTR Flow Undiversified portfolios by testing such portfolios using a simulation model including, one at a time, each planned transmission outage or other network change which would substantially affect the network for the specific auction period. A list of such planned outages or changes anticipated to be modeled shall be posted prior to commencement of the auction (or auction round). Any FTR Flow Undiversified portfolio that experiences a net reduction in calculated congestion credits as a result of any one or more of such modeled outages or changes shall be deemed FTR Geographically Undiversified.

For portfolios that are FTR Flow Undiversified but not FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to twice the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For Participants with portfolios that are both FTR Flow Undiversified and FTR Geographically Undiversified, PJMSettlement shall increment the FTR Credit Requirement by an amount equal to three times the absolute value of the FTR Portfolio Auction Value, including the tentative cleared solution. For portfolios that are FTR Flow Undiversified in months subsequent to the current planning year, these incremental amounts, calculated on a monthly basis, shall be reduced (but not below zero) by an amount up to 25% of the monthly value of ARR credits that are held by a Participant. Subsequent to the ARR allocation process preceding an annual FTR auction, such ARR credits shall be reduced to zero for months associated with that ARR allocation process. PJMSettlement may recalculate such ARR credits at any time, but at a minimum shall do so subsequent to each annual FTR auction. If a reduction in such ARR credits at any time increases the amount of credit required for the Participant beyond its credit available for FTR activity, the Participant must increase its credit to eliminate the shortfall.

If the FTR Credit Requirement for any Participant exceeds its credit available for FTRs as a result of these diversification requirements for the tentatively cleared portfolio of FTRs, PJMSettlement shall immediately issue a demand for additional credit, and such demand must be fulfilled before 4:00 p.m. on the business day following the demand. If any Participant does not timely satisfy such demand, PJMSettlement, in coordination with PJM, shall cause the removal that Participant's entire set of bids for that FTR auction (or auction round) and a new cleared solution shall be calculated for the entire auction (or auction round).

If necessary, PJM shall repeat the auction clearing calculation. PJM shall repeat these portfolio diversification calculations subsequent to any such secondary clearing calculation, and PJMSettlement shall require affected Participants to establish additional credit.

#### **G. FTR Administrative Charge Credit Requirement**

In addition to any other credit requirements, PJMSettlement may apply a credit requirement to cover the maximum administrative fees that may be charged to a Participant for its bids and offers.

#### **H. Long-Term FTR Credit Recalculation**

Long-term FTR Credit Requirement calculations shall be updated annually for known history, consistent with updating of historical values used for FTR Credit Requirement calculations in the annual auctions.

### **VI. EXPORT TRANSACTION SCREENING**

Export Transactions in the Real-time Energy Market shall be subject to Export Transaction Screening. Export Transaction Screening may be performed either for the duration of the entire Export Transaction, or separately for each time interval comprising an Export Transaction. PJM will deny or curtail all or a portion (based on the relevant time interval) of an Export Transaction if that Export Transaction, or portion thereof, would otherwise cause the Market Participant's Export Credit Exposure to exceed its Credit Available for Export Transactions. Export Transaction Screening shall be applied separately for each Operating Day and shall also be applied to each Export Transaction one or more times prior to the market clearing process for each relevant time interval. Export Transaction Screening shall not apply to transactions established directly by and between PJM and a neighboring Balancing Authority for the purpose of maintaining reliability.

A Market Participant's credit exposure for an individual Export Transaction shall be the MWh volume of the Export Transaction for each relevant time interval multiplied by each relevant Export Transaction Price Factor and summed over all relevant time intervals of the Export Transaction.

### **VII. FORMS OF FINANCIAL SECURITY**

Participants that provide Financial Security must provide the security in a PJMSettlement approved form and amount according to the guidelines below.

Financial Security which is no longer required to be maintained under provisions of the Agreements shall be returned at the request of a participant no later than two Business Days following determination by PJMSettlement within a commercially reasonable period of time that such collateral is not required.

Except when an event of default has occurred, a Participant may substitute an approved PJMSettlement form of Financial Security for another PJMSettlement approved form of Financial Security of equal value. The Participant must provide three (3) Business Days notice to PJMSettlement of its intent to substitute the Financial Security. PJMSettlement will release the replaced Financial Security with interest, if applicable, within (3) Business Days of receiving an approved form of substitute Financial Security.

## **A. Cash Deposit**

Cash provided by a Participant as Financial Security will be held in a depository account by PJMSettlement with interest earned at PJMSettlement's overnight bank rate, and accrued to the Participant. PJMSettlement also may establish an array of investment options among which a Participant may choose to invest its cash deposited as Financial Security. Such investment options shall be comprised of high quality debt instruments, as determined by PJMSettlement, and may include obligations issued by the federal government and/or federal government sponsored enterprises. These investment options will reside in accounts held in PJMSettlement's name in a banking or financial institution acceptable to PJMSettlement. Where practicable, PJMSettlement may establish a means for the Participant to communicate directly with the bank or financial institution to permit the Participant to direct certain activity in the PJMSettlement account in which its Financial Security is held. PJMSettlement will establish and publish procedural rules, identifying the investment options and respective discounts in collateral value that will be taken to reflect any liquidation, market and/or credit risk presented by such investments. PJMSettlement has the right to liquidate all or a portion of the account balances at its discretion to satisfy a Participant's Total Net Obligation to PJMSettlement in the event of default under this credit policy or one or more of the Agreements.

## **B. Letter Of Credit**

An unconditional, irrevocable standby letter of credit can be utilized to meet the Financial Security requirement. As stated below, the form, substance, and provider of the letter of credit must all be acceptable to PJMSettlement.

- The letter of credit will only be accepted from U.S.-based financial institutions or U.S. branches of foreign financial institutions ("financial institutions") that have a minimum corporate debt rating of "A" by Standard & Poor's or Fitch Ratings, or "A2" from Moody's Investors Service, or an equivalent short term rating from one of these agencies. PJMSettlement will consider the lowest applicable rating to be the rating of the financial institution. If the rating of a financial institution providing a letter of credit is lowered below A/A2 by any rating agency, then PJMSettlement may require the Participant to provide a letter of credit from another financial institution that is rated A/A2 or better, or to provide a cash deposit. If a letter of credit is provided from a U.S. branch of a foreign institution, the U.S. branch must itself comply with the terms of this credit policy, including having its own acceptable credit rating.
- The letter of credit shall state that it shall renew automatically for successive one-year periods, until terminated upon at least ninety (90) days prior written notice from the issuing financial institution. If PJM or PJMSettlement receives notice from the issuing financial institution that the current letter of credit is being cancelled, the Participant will be required to provide evidence, acceptable to PJMSettlement, that such letter of credit will be replaced with appropriate Financial Security, effective as of the cancellation date of the letter of credit, no later than thirty (30) days before the cancellation date of the letter of credit, and no later than ninety (90) days after the notice of cancellation. Failure to do so will constitute a default under this credit policy and one of more of the

## Agreements.

- The letter of credit must clearly state the full names of the "Issuer", "Account Party" and "Beneficiary" (PJMSettlement), the dollar amount available for drawings, and shall specify that funds will be disbursed upon presentation of the drawing certificate in accordance with the instructions stated in the letter of credit. The letter of credit should specify any statement that is required to be on the drawing certificate, and any other terms and conditions that apply to such drawings.
- The PJMSettlement Credit Application contains an acceptable form of a letter of credit that should be utilized by a Participant choosing to meet its Financial Security requirement with a letter of credit. If the letter of credit varies in any way from the PJMSettlement format, it must first be reviewed and approved by PJMSettlement. All costs associated with obtaining and maintaining a letter of credit and meeting the policy provisions are the responsibility of the Participant
- PJMSettlement may accept a letter of credit from a Financial Institution that does not meet the credit standards of this policy provided that the letter of credit has third-party support, in a form acceptable to PJMSettlement, from a financial institution that does meet the credit standards of this policy.

## **VIII. POLICY BREACH AND EVENTS OF DEFAULT**

A Participant will have two Business Days from notification of Breach (including late payment notice) or notification of a Collateral Call to remedy the Breach or satisfy the Collateral Call in a manner deemed acceptable by PJMSettlement. Failure to remedy the Breach or satisfy such Collateral Call within such two Business Days will be considered an event of default. If a Participant fails to meet the requirements of this policy but then remedies the Breach or satisfies a Collateral Call within the two Business Day cure period, then the Participant shall be deemed to have complied with the policy. Any such two Business Day cure period will expire at 4:00 p.m. eastern prevailing time on the final day.

Only one cure period shall apply to a single event giving rise to a breach or default. Application of Financial Security towards a non-payment Breach shall not be considered a satisfactory cure of the Breach if the Participant fails to meet all requirements of this policy after such application.

Failure to comply with this policy (except for the responsibility of a Participant to notify PJMSettlement of a Material change) shall be considered an event of default. Pursuant to § 15.1.3(a) of the Operating Agreement of PJM Interconnection, L.L.C. and § I.7.3 of the PJM Open Access Transmission Tariff, non-compliance with the PJMSettlement credit policy is an event of default under those respective Agreements. In event of default under this credit policy or one or more of the Agreements, PJMSettlement, in coordination with PJM, will take such actions as may be required or permitted under the Agreements, including but not limited to the termination of the Participant's ongoing Transmission Service and participation in PJM Markets. PJMSettlement has the right to liquidate all or a portion of a Participant's Financial Security at its discretion to satisfy Total Net Obligations to PJMSettlement in the event of default under this



credit policy or one or more of the Agreements.

PJMSettlement may hold a defaulting Participant's Financial Security for as long as such party's positions exist and consistent with the PJM credit policy in this Attachment Q, in order to protect PJM's membership from default.

No payments shall be due to a Participant, nor shall any payments be made to a Participant, while the Participant is in default or has been declared in Breach of this policy or the Agreements, or while a Collateral Call is outstanding. PJMSettlement may apply towards an ongoing default any amounts that are held or later become available or due to the defaulting Participant through PJM's markets and systems.

In order to cover Obligations, PJMSettlement may hold a Participant's Financial Security through the end of the billing period which includes the 90th day following the last day a Participant had activity, open positions, or accruing obligations (other than reconciliations and true-ups), and until such Participant has satisfactorily paid any obligations invoiced through such period. Obligations incurred or accrued through such period shall survive any withdrawal from PJM. In event of non-payment, PJMSettlement may apply such Financial Security to such Participant's Obligations, even if Participant had previously announced and effected its withdrawal from PJM.

## **IX. DEFINITIONS:**

All capitalized terms in this Attachment Q that are not otherwise defined herein shall have the same meaning as they are defined in the Agreements.

### **Affiliate**

Affiliate is defined in the PJM Operating Agreement, §1.2.

### **Agreements**

Agreements are the Operating Agreement of PJM Interconnection, L.L.C., the PJM Open Access Transmission Tariff, the Reliability Assurance Agreement, the Reliability Assurance Agreement – West, and/or other agreements between PJM Interconnection, L.L.C. and its Members.

### **Applicant**

Applicant is an entity desiring to become a PJM Member, or to take Transmission Service that has submitted the PJMSettlement Credit Application, PJMSettlement Credit Agreement and other required submittals as set forth in this policy.

### **Breach**

Breach is the status of a Participant that does not currently meet the requirements of this policy or other provisions of the Agreements.

### **Business Day**

A Business Day is a day in which the Federal Reserve System is open for business and is not a scheduled PJM holiday.

### **Canadian Guaranty**

Canadian Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in Canada, and meets all of the provisions of this credit policy.

### **Capacity**

Capacity is the installed capacity requirement of the Reliability Assurance Agreement or similar such requirements as may be established.

### **Collateral Call**

Collateral Call is a notice to a Participant that additional Financial Security, or possibly early payment, is required in order to remain in, or to regain, compliance with this policy.

### **Corporate Guaranty**

Corporate Guaranty is a legal document used by one entity to guaranty the obligations of another entity.

### **Credit Available for Export Transactions**

Credit Available for Export Transactions is a set-aside of credit to be used for Export Transactions that is allocated by each Market Participant from its Credit Available for Virtual Transactions, and which reduces the Market Participant's Credit Available for Virtual Transactions accordingly.

### **Credit Available for Virtual Transactions**

A Market Participant's Credit Available for Virtual Transactions is the Market Participant's Working Credit Limit for Virtual Transactions calculated on its credit provided in compliance with its Peak Market Activity requirement plus available credit submitted above that amount, less any unpaid billed and unbilled amounts owed to PJMSettlement, plus any unpaid unbilled amounts owed by PJMSettlement to the Market Participant, less any applicable credit required for Minimum Participation Requirements, FTR, Export Transactions, or other credit requirement determinants as defined in this policy.

### **Credit-Limited Offer**

Credit-Limited Offer shall mean a Sell Offer that is submitted by a Market Seller in an RPM Auction subject to a maximum credit requirement specified by such Market Seller.

### **Credit Score**

Credit Score is a composite numerical score scaled from 0-100 as calculated by PJMSettlement that incorporates various predictors of creditworthiness.

### **Export Credit Exposure**

Export Credit Exposure is determined for each Market Participant for a given Operating Day, and is the sum of credit exposures for the Market Participant's Export Transactions for that Operating Day and for the preceding Operating Day.

### **Export Nodal Reference Price**

The Export Nodal Reference Price at each location is the 97th percentile real-time hourly

integrated price experienced over the corresponding two-month period in the preceding calendar year, calculated separately for peak and off-peak time periods. The two-month time periods used in this calculation shall be January and February, March and April, May and June, July and August, September and October, and November and December.

### **Export Transaction**

An Export Transaction is a transaction by a Market Participant that results in the transfer of energy from within the PJM Control Area to outside the PJM Control Area. Coordinated External Transactions that result in the transfer of energy from the PJM Control Area to an adjacent Control Area are one form of Export Transaction.

### **Export Transactions Net Activity**

Export Transactions Net Activity shall mean the aggregate net total, resulting from Export Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Export Transactions Net Activity may be positive or negative.

### **Export Transaction Price Factor**

The Export Transaction Price Factor for a prospective time interval shall be the greater of (i) PJM's forecast price for the time interval, if available, or (ii) the Export Nodal Reference Price, but shall not exceed the Export Transaction's dispatch ceiling price cap, if any, for that time interval. The Export Transaction Price Factor for a past time interval shall be calculated in the same manner as for a prospective time interval, except that the Export Transaction Price Factor may use a tentative or final settlement price, as available. If an Export Nodal Reference Price is not available for a particular time interval, PJM may use an Export Transaction Price Factor for that time interval based on an appropriate alternate reference price.

### **Export Transaction Screening**

Export Transaction Screening is the process PJM uses to review the Export Credit Exposure of Export Transactions against the Credit Available for Export Transactions, and deny or curtail all or a portion of an Export Transaction, if the credit required for such transactions is greater than the credit available for the transactions.

### **Financial Security**

Financial Security is a cash deposit or letter of credit in an amount and form determined by and acceptable to PJMSettlement, provided by a Participant to PJMSettlement as security in order to participate in the PJM Markets or take Transmission Service.

### **Foreign Guaranty**

Foreign Guaranty is a Corporate Guaranty provided by an Affiliate of a Participant that is domiciled in a foreign country, and meets all of the provisions of this credit policy.

### **FTR Credit Limit**

FTR Credit Limit will be equal to the amount of credit established with PJMSettlement that a Participant has specifically designated to PJMSettlement to be set aside and used for FTR activity. Any such credit so set aside shall not be considered available to satisfy any other credit

requirement the Participant may have with PJMSettlement.

**FTR Credit Requirement**

FTR Credit Requirement is the amount of credit that a Participant must provide in order to support the FTR positions that it holds and/or is bidding for. The FTR Credit Requirement shall not include months for which the invoicing has already been completed, provided that PJMSettlement shall have up to two Business Days following the date of the invoice completion to make such adjustments in its credit systems.

**FTR Flow Undiversified**

FTR Flow Undiversified shall have the meaning established in section V.G of this Attachment Q.

**FTR Geographically Undiversified**

FTR Geographically Undiversified shall have the meaning established in section V.G of this Attachment Q.

**FTR Historical Value**

FTR Historical Value – For each FTR for each month, this is the historical weighted average value over three years for the FTR path using the following weightings: 50% - most recent year; 30% - second year; 20% - third year. FTR Historical Values shall be calculated separately for on-peak, off-peak, and 24-hour FTRs for each month of the year. FTR Historical Values shall be adjusted by plus or minus ten percent (10%) for cleared counterflow or normal flow FTRs, respectively, in order to mitigate exposure due to uncertainty and fluctuations in actual FTR value.

**FTR Monthly Credit Requirement Contribution**

FTR Monthly Credit Requirement Contribution - For each FTR for each month, this is the total FTR cost for the month, prorated on a daily basis, less the FTR Historical Value for the month. For cleared FTRs, this contribution may be negative; prior to clearing, FTRs with negative contribution shall be deemed to have zero contribution.

**FTR Net Activity**

FTR Net Activity shall mean the aggregate net value of the billing line items for auction revenue rights credits, FTR auction charges, FTR auction credits, and FTR congestion credits, and shall also include day-ahead and balancing/real-time congestion charges up to a maximum net value of the sum of the foregoing auction revenue rights credits, FTR auction charges, FTR auction credits and FTR congestion credits.

**FTR Participant**

FTR Participant shall mean any Market Participant that is required to provide Financial Security in order to participate in PJM's FTR auctions.

**FTR Portfolio Auction Value**

FTR Portfolio Auction Value shall mean for each Participant (or Participant account), the sum, calculated on a monthly basis, across all FTRs, of the FTR price times the FTR volume in MW.

### **Market Participant**

Market Participant shall have the meaning provided in the Operating Agreement.

### **Material**

For these purposes, material is defined in §I.B.3, Material Changes. For the purposes herein, the use of the term "material" is not necessarily synonymous with use of the term by governmental agencies and regulatory bodies.

### **Member**

Member shall have the meaning provided in the Operating Agreement.

### **Minimum Participation Requirements**

A set of minimum training, risk management, communication and capital or collateral requirements required for Participants in the PJM markets, as set forth herein and in the Form of Annual Certification set forth as Appendix 1 to this Attachment Q. Participants transacting in FTRs in certain circumstances will be required to demonstrate additional risk management procedures and controls as further set forth in the Annual Certification found in Appendix 1 to this Attachment Q.

### **Net Obligation**

Net Obligation is the amount owed to PJMSettlement and PJM for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services pursuant to the Agreements, after applying a deduction for amounts owed to a Participant by PJMSettlement as it pertains to monthly market activity and services. Should other markets be formed such that Participants may incur future Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

### **Net Sell Position**

Net Sell Position is the amount of Net Obligation when Net Obligation is negative.

### **Nodal Reference Price**

The Nodal Reference Price at each location is the 97th percentile price differential between hourly day-ahead and real-time prices experienced over the corresponding two-month reference period in the prior calendar year. In order to capture seasonality effects and maintain a two-month reference period, reference months will be grouped by two, starting with January (e.g., Jan-Feb, Mar-Apr, ... , Jul-Aug, ... Nov-Dec). For any given current-year month, the reference period months will be the set of two months in the prior calendar year that include the month corresponding to the current month. For example, July and August 2003 would each use July-August 2002 as their reference period.

### **Obligation**

Obligation is all amounts owed to PJMSettlement for purchases from the PJM Markets, Transmission Service, (under both Part II and Part III of the O.A.T.T.), and other services or obligations pursuant to the Agreements. In addition, aggregate amounts that will be owed to PJMSettlement in the future for Capacity purchases within the PJM Capacity markets will be added to this figure. Should other markets be formed such that Participants may incur future

Obligations in those markets, then the aggregate amount of those Obligations will also be added to the Net Obligation.

**Operating Agreement of PJM Interconnection, L.L.C., (“Operating Agreement”)**

The Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., dated as of June 2, 1997, on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Participant**

A Participant is a Market Participant and/or Transmission Customer and/or Applicant requesting to be an active Market Participant and/or Transmission Customer.

**Peak Market Activity**

Peak Market Activity is a measure of exposure for which credit is required, involving peak exposures in rolling three-week periods over a year timeframe, with two semi-annual reset points, pursuant to provisions of section II.D of this Credit Policy.

**PJM Markets**

The PJM Markets are the PJM Interchange Energy Market and the PJM Capacity markets as established by the Operating Agreement. Also any other markets that exist or may be established in the future wherein Participants may incur Obligations to PJMSettlement.

**PJM Open Access Transmission Tariff (“O.A.T.T.”)**

The Open Access Transmission Tariff of PJM Interconnection, L.L.C., on file with the Federal Energy Regulatory Commission, and as revised from time to time.

**Reliability Assurance Agreement (“R.A.A.”)**

See the definition of the Reliability Assurance Agreement (“R.A.A.”) in the Operating Agreement.

**RPM Seller Credit**

RPM Seller Credit is an additional form of Unsecured Credit defined in section IV of this document.

**Seller Credit**

A Seller Credit is a form of Unsecured Credit extended to Participants that have a consistent long-term history of selling into PJM Markets, as defined in this document.

**Tangible Net Worth**

Tangible Net Worth is all assets (not including any intangible assets such as goodwill) less all liabilities. Any such calculation may be reduced by PJMSettlement upon review of the available financial information.

**Total Net Obligation**

Total Net Obligation is all unpaid billed Net Obligations plus any unbilled Net Obligation incurred to date, as determined by PJMSettlement on a daily basis, plus any other Obligations

owed to PJMSettlement at the time.

**Total Net Sell Position**

Total Net Sell Position is all unpaid billed Net Sell Positions plus any unbilled Net Sell Positions accrued to date, as determined by PJMSettlement on a daily basis.

**Transmission Customer**

Transmission Customer is a Transmission Customer is an entity taking service under Part II or Part III of the O.A.T.T.

**Transmission Service**

Transmission Service is any or all of the transmission services provided by PJM pursuant to Part II or Part III of the O.A.T.T.

**Uncleared Bid Exposure**

Uncleared Bid Exposure is a measure of exposure from Increment Offers and Decrement Bids activity relative to a Participant's established credit as defined in this policy. It is used only as a pre-screen to determine whether a Participant's Increment Offers and Decrement Bids should be subject to Increment Offer and Decrement Bid Screening.

**Unsecured Credit**

Unsecured Credit is any credit granted by PJMSettlement to a Participant that is not secured by a form of Financial Security.

**Unsecured Credit Allowance**

Unsecured Credit Allowance is Unsecured Credit extended by PJMSettlement in an amount determined by PJMSettlement's evaluation of the creditworthiness of a Participant. This is also defined as the amount of credit that a Participant qualifies for based on the strength of its own financial condition without having to provide Financial Security. See also: "Working Credit Limit."

**Up-to Congestion Counterflow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Counterflow Transaction if the following value is negative: (a) when bidding, the lower of the bid price and the prior Up-to Congestion Historical Month's average real-time value for the transaction; or (b) for cleared Virtual Transactions, the cleared day-ahead price of the Virtual Transactions.

**Up-to Congestion Historical Month**

An Up-to Congestion Historical Month is a consistently-defined historical period nominally one month long that is as close to a calendar month as PJM determines is practical.

**Up-to Congestion Prevailing Flow Transaction**

An Up-to Congestion Transaction will be deemed an Up-to Congestion Prevailing Flow Transaction if it is not an Up-to Congestion Counterflow Transaction.

**Up-to Congestion Reference Price**

The Up-to Congestion Reference Price for an Up-to Congestion Transaction is the specified percentile price differential between source and sink (defined as sink price minus source price) for hourly real-time prices experienced over the prior Up-to Congestion Historical Month, averaged with the same percentile value calculated for the second prior Up-to Congestion Historical Month. Up-to Congestion Reference Prices shall be calculated using the following historical percentiles:

For Up-to Congestion Prevailing Flow Transactions: 30<sup>th</sup> percentile

For Up-to Congestion Counterflow Transactions when bid: 20<sup>th</sup> percentile

For Up-to Congestion Counterflow Transactions when cleared: 5<sup>th</sup> percentile

### **Virtual Credit Exposure**

Virtual Credit Exposure is the amount of potential credit exposure created by a market participant's bid submitted into the Day-ahead market, as defined in this policy.

### **Virtual Transaction Screening**

Virtual Transaction Screening is the process of reviewing the Virtual Credit Exposure of submitted Virtual Transactions against the Credit Available for Virtual Transactions. If the credit required is greater than credit available, then the Virtual Transactions will not be accepted.

### **Virtual Transactions Net Activity**

Virtual Transactions Net Activity shall mean the aggregate net total, resulting from Virtual Transactions, of (i) Spot Market Energy charges, (ii) Transmission Congestion Charges, and (iii) Transmission Loss Charges, calculated as set forth in Attachment K-Appendix. Virtual Transactions Net Activity may be positive or negative.

### **Working Credit Limit**

Working Credit Limit amount is 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement. The Working Credit Limit establishes the maximum amount of Total Net Obligation that a Market Participant may have outstanding at any time. The calculation of Working Credit Limit shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.

### **Working Credit Limit for Virtual Transactions**

The Working Credit Limit for Virtual Transactions shall be calculated as 75% of the Market Participant's Unsecured Credit Allowance and/or 75% of the Financial Security provided by the Market Participant to PJMSettlement when the Market Participant is at or below its Peak Market Activity credit requirements as specified in section II.D of this Credit Policy. When the Market Participant provides additional Unsecured Credit Allowance and/or Financial Security in excess of its Peak Market Activity credit requirements, such additional Unsecured Credit Allowance and/or Financial Security shall not be discounted by 25% when calculating the Working Credit Limit for Virtual Transactions. The Working Credit Limit for Virtual Transactions is a component in the calculation of Credit Available for Virtual Transactions. The calculation of Working Credit Limit for Virtual Transactions shall take into account applicable reductions for Minimum Participation Requirements, FTR, or other credit requirement determinants as defined in this policy.



**Appendix 1 to Attachment Q**

**PJM MINIMUM PARTICIPATION CRITERIA  
OFFICER CERTIFICATION FORM**

Participant Name: \_\_\_\_\_ ("Participant")

I, \_\_\_\_\_, a duly authorized officer of Participant, understanding that PJM Interconnection, L.L.C. and PJM Settlement, Inc. ("PJMSettlement") are relying on this certification as evidence that Participant meets the minimum requirements set forth in Attachment Q to the PJM Open Access Transmission Tariff ("PJM Tariff"), hereby certify that I have full authority to represent on behalf of Participant and further represent as follows, as evidenced by my initialing each representation in the space provided below:

1. All employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Amended and Restated Operating Agreement ("PJM Operating Agreement") on behalf of the Participant have received appropriate<sup>1</sup> training and are authorized to transact on behalf of Participant. \_\_\_\_\_
2. Participant has written risk management policies, procedures, and controls, approved by Participant's independent risk management function<sup>2</sup> and applicable to transactions in the PJM markets in which it participates and for which employees or agents transacting in markets or services provided pursuant to the PJM Tariff or PJM Operating Agreement have been trained, that provide an appropriate, comprehensive risk management framework that, at a minimum, clearly identifies and documents the range of risks to which Participant is exposed, including, but not limited to credit risks, liquidity risks and market risks. \_\_\_\_\_
3. An FTR Participant (as defined in Attachment Q to the PJM Tariff) must make either the following 3.a. or 3.b. additional representations, evidenced by the undersigned officer initialing either the one 3.a. representation or the six 3.b. representations in the spaces provided below:
  - 3.a. Participant transacts in PJM's FTR markets with the sole intent to hedge congestion risk in connection with either obligations Participant has to serve load or rights Participant has to generate electricity in the PJM Region ("physical

<sup>1</sup> As used in this representation, the term "appropriate" as used with respect to training means training that is (i) comparable to generally accepted practices in the energy trading industry, and (ii) commensurate and proportional in sophistication, scope and frequency to the volume of transactions and the nature and extent of the risk taken by the participant.

<sup>2</sup> As used in this representation, a Participant's "independent risk management function" can include appropriate corporate persons or bodies that are independent of the Participant's trading functions, such as a risk management committee, a risk officer, a Participant's board or board committee, or a board or committee of the Participant's

parent company.

transactions”) and monitors all of the Participant’s FTR market activity to endeavor to ensure that its FTR positions, considering both the size and pathways of the positions, are either generally proportionate to or generally do not exceed the Participant’s physical transactions, and remain generally consistent with the Participant’s intention to hedge its physical transactions. \_\_\_\_\_

- 3.b. On no less than a weekly basis, Participant values its FTR positions and engages in a probabilistic assessment of the hypothetical risk of such positions using analytically based methodologies, predicated on the use of industry accepted valuation methodologies. \_\_\_\_\_

Such valuation and risk assessment functions are performed either by persons within Participant’s organization independent from those trading in PJM’s FTR markets or by an outside firm qualified and with expertise in this area of risk management. \_\_\_\_\_

Having valued its FTR positions and quantified their hypothetical risks, Participant applies its written policies, procedures and controls to limit its risks using industry recognized practices, such as value-at-risk limitations, concentration limits, or other controls designed to prevent Participant from purposefully or unintentionally taking on risk that is not commensurate or proportional to Participant’s financial capability to manage such risk. \_\_\_\_\_

Exceptions to Participant’s written risk policies, procedures and controls applicable to Participant’s FTR positions are documented and explain a reasoned basis for the granting of any exception. \_\_\_\_\_

Participant has provided to PJMSettlement, in accordance with Section I A. of Attachment Q to the PJM Tariff, a copy of its current governing risk management policies, procedures and controls applicable to its FTR trading activities. \_\_\_\_\_

If the risk management policies, procedures and controls applicable to Participant’s FTR trading activities submitted to PJMSettlement were submitted prior to the current certification, Participant certifies that no substantive changes have been made to such policies, procedures and controls applicable to its FTR trading activities since such submission. \_\_\_\_\_

4. Participant has appropriate personnel resources, operating procedures and technical abilities to promptly and effectively respond to all PJM communications and directions. \_\_\_\_\_
5. Participant has demonstrated compliance with the Minimum Capitalization criteria set forth in Attachment Q of the PJM Open Access Transmission Tariff that are applicable to the PJM market(s) in which Participant transacts, and is not aware of any change having

occurred or being imminent that would invalidate such compliance. \_\_\_\_\_

6. All Participants must certify and initial in at least one of the four sections below:

- a. I certify that Participant qualifies as an “appropriate person” as that term is defined under Section 4(c)(3), or successor provision, of the Commodity Exchange Act or an “eligible contract participant” as that term is defined under Section 1a(18), or successor provision, of the Commodity Exchange Act. I certify that Participant will cease transacting in PJM’s Markets and notify PJMSettlement immediately if Participant no longer qualifies as an “appropriate person” or “eligible contract participant.” \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “appropriate person:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$5 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

If providing financial statements to support Participant’s certification of qualification as an “eligible contract participant:”

I certify, to the best of my knowledge and belief, that the financial statements provided to PJMSettlement present fairly, pursuant to such disclosures in such financial statements, the financial position of Participant as of the date of those financial statements. Further, I certify that Participant continues to maintain the minimum \$1 million total net worth and/or \$10 million total asset levels reflected in these financial statements as of the date of this certification. I acknowledge that both PJM and PJMSettlement are relying upon my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_

- b. I certify that Participant has provided an unlimited Corporate Guaranty in a form acceptable to PJM as described in Section I.C of Attachment Q from an issuer that has at least \$1 million of total net worth or \$5 million of total assets per Participant per Participant for which the issuer has issued an unlimited Corporate Guaranty. I certify that Participant will cease transacting PJM’s Markets and notify PJMSettlement immediately if issuer of the unlimited Corporate Guaranty for Participant no longer has at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. \_\_\_\_\_

I certify that the issuer of the unlimited Corporate Guaranty to Participant continues to have at least \$1 million of total net worth or \$5 million of total assets per Participant for which the issuer has issued an unlimited Corporate Guaranty. I acknowledge that PJM and PJMSettlement are relying upon my certifications to maintain compliance with federal regulatory requirements. \_\_\_\_\_

c. I certify that Participant fulfills the eligibility requirements of the Commodity Futures Trading Commission exemption order (78 F.R. 19880 – April 2, 2013) by being in the business of at least one of the following in the PJM Region as indicated below (initial those applicable):

1. Generating electric energy, including Participants that resell physical energy acquired from an entity generating electric energy: \_\_\_\_\_
2. Transmitting electric energy: \_\_\_\_\_
3. Distributing electric energy delivered under Point-to-Point or Network Integration Transmission Service, including scheduled import, export and wheel through transactions: \_\_\_\_\_
4. Other electric energy services that are necessary to support the reliable operation of the transmission system: \_\_\_\_\_

Description only if c(4) is initialed:

\_\_\_\_\_

Further, I certify that Participant will cease transacting in PJM's Markets and notify PJMSettlement immediately if Participant no longer performs at least one of the functions noted above in the PJM Region. I acknowledge that PJM and PJMSettlement are relying on my certification to maintain compliance with federal energy regulatory requirements. \_\_\_\_\_

- d. I certify that Participant has provided a letter of credit of \$5 million or more to PJMSettlement in a form acceptable to PJMSettlement as described in Section VI.B of Attachment Q that the Participant acknowledges cannot be utilized to meet its credit requirements to PJMSettlement. I acknowledge that PJM and PJMSettlement are relying on the provision of this letter of credit and my certification to maintain compliance with federal regulatory requirements. \_\_\_\_\_
7. I acknowledge that I have read and understood the provisions of Attachment Q of the PJM Tariff applicable to Participant's business in the PJM markets, including those provisions describing PJM's minimum participation requirements and the enforcement actions available to PJMSettlement of a Participant not satisfying those requirements. I acknowledge that the information provided herein is true and accurate to the best of my belief and knowledge after due investigation. In addition, by signing this Certification, I

acknowledge the potential consequences of making incomplete or false statements in this Certification. \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

OATT ATT DD.2, OATT ATTACHMENT DD.2 DEFINITIONS, 21.0.0, A

Record Narrative Name: OATT ATTACHMENT DD.2 DEFINITIONS

Tariff Record ID: 1139

Tariff Record Collation Value: 655319245 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## 2. DEFINITIONS

Definitions specific to this Attachment are set forth below. In addition, any capitalized terms used in this Attachment not defined herein shall have the meaning given to such terms elsewhere in this Tariff or in the Operating Agreement or RAA. References to section numbers in this Attachment DD refer to sections of this attachment, unless otherwise specified.

### 2.1 Annual Demand Resource

“Annual Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### 2.1A Annual Energy Efficiency Resource

“Annual Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### 2.1B Annual Resource

“Annual Resource” shall mean a Generation Capacity Resource, an Annual Energy Efficiency Resource or an Annual Demand Resource.

#### 2.1C Annual Resource Price Adder

“Annual Resource Price Adder” shall mean, for Delivery Years starting June 1, 2014 and ending May 31, 2017, an addition to the marginal value of Unforced Capacity and the Extended Summer Resource Price Adder as necessary to reflect the price of Annual Resources required to meet the applicable Minimum Annual Resource Requirement.

## **2.1D Annual Revenue Rate**

“Annual Revenue Rate” shall mean the rate employed to assess a compliance penalty charge on a Curtailment Service Provider under section 11.

## **2.2 Avoidable Cost Rate**

“Avoidable Cost Rate” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.2A Base Capacity Demand Resource**

“Base Capacity Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.2B Base Capacity Demand Resource Constraint**

“Base Capacity Demand Resource Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the Base Capacity Demand Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources (displacing otherwise committed generation) as interruptible from June 1 through September 30 and unavailable the rest of the Delivery Year in question and calculates the LOLE at each DR and EE level. The Base Capacity Demand Resource Constraint is the combined amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a five percent increase in the LOLE, compared to the reference value. The Base Capacity Demand Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or

such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## **2.2C Base Capacity Demand Resource Price Decrement**

“Base Capacity Demand Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources and the clearing price for Base Capacity Resources and Capacity Performance Resources, representing the cost to procure additional Base Capacity Resources or Capacity Performance Resources out of merit order when the Base Capacity Demand Resource Constraint is binding.

## **2.2D Base Capacity Energy Efficiency Resource**

“Base Capacity Energy Efficiency Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.2E Base Capacity Resource**

“Base Capacity Resource” shall mean a Capacity Resource as described in section 5.5A(b).

## **2.2F Base Capacity Resource Constraint**

“Base Capacity Resource Reliability Constraint” for the PJM Region or an LDA, shall mean, for the 2018/2019 and 2019/2020 Delivery Years, the maximum Unforced Capacity amount, determined by PJM, of Base Capacity Resources, including Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources, that is consistent with the maintenance of reliability. As more fully set forth in the PJM Manuals, PJM calculates the above Base Capacity Resource Constraint for the PJM Region or an LDA, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Base Capacity Resources, including no Base Capacity Demand Resources or Base Capacity Energy Efficiency Resources. The calculation for the PJM Region uses the weekly load distribution from the Installed Reserve Margin study for the Delivery Year in question (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a weekly load distribution (based on the Installed Reserve Margin study and the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question. Additionally, for the PJM Region and relevant LDA calculation, the weekly capacity distributions are adjusted



to reflect winter ratings.

For both the PJM Region and LDA analyses, PJM models the commitment of an amount of Base Capacity Demand Resources and Base Capacity Energy Efficiency Resources equal to the Base Capacity Demand Resource Constraint (displacing otherwise committed generation). PJM then models the commitment of varying amounts of Base Capacity Resources (displacing otherwise committed generation) as unavailable during the peak week of winter and available the rest of the Delivery Year in question and calculates the LOLE at each Base Capacity Resource level. The Base Capacity Resource Constraint is the combined amount of Base Capacity Demand Resources, Base Capacity Energy Efficiency Resources and Base Capacity Resources, stated as a percentage of the unrestricted annual peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Base Capacity Resource Constraint shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [one minus the pool-wide average EFORD] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

## **2.2G Base Capacity Resource Price Decrement**

“Base Capacity Resource Price Decrement” shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a difference between the clearing price for Base Capacity Resources and the clearing price for Capacity Performance Resources, representing the cost to procure additional Capacity Performance Resources out of merit order when the Base Capacity Resource Constraint is binding.

## **2.3 Base Load Generation Resource**

“Base Load Generation Resource” shall mean a Generation Capacity Resource that operates at least 90 percent of the hours that it is available to operate, as determined by the Office of the Interconnection in accordance with the PJM Manuals.

## **2.4 Base Offer Segment**

“Base Offer Segment” shall mean a component of a Sell Offer based on an existing Generation Capacity Resource, equal to the Unforced Capacity of such resource, as determined in accordance with the PJM Manuals. If the Sell Offers of multiple Market Sellers are based on a single Existing Generation Capacity Resource, the Base Offer Segments of such Market Sellers shall be determined pro rata based on their entitlements to Unforced Capacity from such resource.

## **2.5 Base Residual Auction**

“Base Residual Auction” shall mean the auction conducted three years prior to the start of the Delivery Year to secure commitments from Capacity Resources as necessary to satisfy any portion of the Unforced Capacity Obligation of the PJM Region not satisfied through Self-Supply.

## **2.6 Buy Bid**

“Buy Bid” shall mean a bid to buy Capacity Resources in any Incremental Auction.

### **2.6A Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall mean a geographic area of Zones or sub-Zones that are electrically-contiguous and experience for the relevant Delivery Year, based on Resource Clearing Prices of, for Delivery Years through May 31, 2018, Annual Resources and for the 2018/2019 Delivery Year and subsequent Delivery Years, Capacity Performance Resources, the same locational price separation in the Base Residual Auction, the same locational price separation in the First Incremental Auction, the same locational price separation in the Second Incremental Auction, or the same locational price separation in the Third Incremental Auction.

## **2.7 Capacity Credit**

“Capacity Credit” shall have the meaning specified in Schedule 11 of the Operating Agreement, including Capacity Credits obtained prior to the termination of such Schedule applicable to periods after the termination of such Schedule.

## **2.8 Capacity Emergency Transfer Limit**

“Capacity Emergency Transfer Limit” or “CETL” shall have the meaning provided in the Reliability Assurance Agreement.

## **2.9 Capacity Emergency Transfer Objective**

“Capacity Emergency Transfer Objective” or “CETO” shall have the meaning provided in the Reliability Assurance Agreement.

### **2.9A Capacity Export Transmission Customer**

“Capacity Export Transmission Customer” shall mean a customer taking point to point transmission service under Part II of this Tariff to export capacity from a generation resource located in the PJM Region that has qualified for an exception to the RPM must-offer requirement as described in section 6.6(g).

### **2.9B Capacity Import Limit**

“Capacity Import Limit” shall have the meaning provided in the Reliability Assurance

Agreement.

## **2.10 Capacity Market Buyer**

“Capacity Market Buyer” shall mean a Member that submits bids to buy Capacity Resources in any Incremental Auction.

## **2.11 Capacity Market Seller**

“Capacity Market Seller” shall mean a Member that owns, or has the contractual authority to control the output or load reduction capability of, a Capacity Resource, that has not transferred such authority to another entity, and that offers such resource in the Base Residual Auction or an Incremental Auction.

## **2.11A Capacity Performance Resource**

“Capacity Performance Resource” shall mean a Capacity Resource as described in section 5.5A(a).

## **2.11B Capacity Performance Transition Incremental Auction**

“Capacity Performance Transition Incremental Auction” shall have the meaning specified in section 5.14D.

## **2.12 Capacity Resource**

“Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.13 Capacity Resource Clearing Price**

“Capacity Resource Clearing Price” shall mean the price calculated for a Capacity Resource that offered and cleared in a Base Residual Auction or Incremental Auction, in accordance with Section 5.

## **2.13A Capacity Storage Resource**

“Capacity Storage Resource” shall mean any hydroelectric power plant, flywheel, battery storage, or other such facility solely used for short term storage and injection of energy at a later time to participate in the PJM energy and/or Ancillary Services markets and which participates in the Reliability Pricing Model.

## **2.14 Capacity Transfer Right**

“Capacity Transfer Right” shall mean a right, allocated to LSEs serving load in a Locational Deliverability Area, to receive payments, based on the transmission import capability into such Locational Deliverability Area, that offset, in whole or in part, the charges attributable to the

Locational Price Adder, if any, included in the Zonal Capacity Price calculated for a Locational Delivery Area.

#### **2.14A Conditional Incremental Auction**

“Conditional Incremental Auction” shall mean an Incremental Auction conducted for a Delivery Year if and when necessary to secure commitments of additional capacity to address reliability criteria violations arising from the delay in a Backbone Transmission upgrade that was modeled in the Base Residual Auction for such Delivery Year.

#### **2.15 CONE Area**

“CONE Area” shall mean the areas listed in section 5.10(a)(iv)(A) and any LDAs established as CONE Areas pursuant to section 5.10(a)(iv)(B).

#### **2.16 Cost of New Entry**

“Cost of New Entry” or “CONE” shall mean the nominal levelized cost of a Reference Resource, as determined in accordance with section 5.

#### **2.16A Credit-Limited Offer**

“Credit-Limited Offer” shall have the meaning provided in Attachment Q to this Tariff.

#### **2.17 Daily Deficiency Rate**

“Daily Deficiency Rate” shall mean the rate employed to assess certain deficiency charges under sections 7, 8, 9, or 13.

#### **2.18 Daily Unforced Capacity Obligation**

“Daily Unforced Capacity Obligation” shall mean the capacity obligation of a Load Serving Entity during the Delivery Year, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

#### **2.19 Delivery Year**

Delivery Year shall mean the Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Section 5.

#### **2.20 Demand Resource**

“Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.21 Demand Resource Factor or DR Factor**

“Demand Resource Factor” or “DR Factor” shall have the meaning specified in the Reliability Assurance Agreement.

## **2.22 [Reserved for Future Use]**

## **2.23 EFORD**

“EFORD” shall have the meaning specified in the PJM Reliability Assurance Agreement.

### **2.23A Emergency Action**

“Emergency Action” shall mean any emergency action for locational or system-wide capacity shortages that either utilizes pre-emergency mandatory load management reductions or other emergency capacity, or initiates a more severe action including, but not limited to, a Voltage Reduction Warning, Voltage Reduction Action, Manual Load Dump Warning, or Manual Load Dump Action.

## **2.24 Energy Efficiency Resource**

“Energy Efficiency Resource” shall have the meaning specified in the PJM Reliability Assurance Agreement.

### **2.24A Extended Summer Demand Resource**

“Extended Summer Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.24B Extended Summer Resource Price Adder**

“Extended Summer Resource Price Adder” shall mean, for Delivery Years through May 31, 2018, an addition to the marginal value of Unforced Capacity as necessary to reflect the price of Annual Resources and Extended Summer Demand Resources required to meet the applicable Minimum Extended Summer Resource Requirement.

### **2.24C Sub-Annual Resource Reliability Target**

“Sub-Annual Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of the combination of Extended Summer Demand Resources and Limited Demand Resources in Unforced Capacity determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity, that shall be used to calculate the Minimum Annual Resource Requirement for Delivery Years through May 31, 2017 and the Sub-Annual Resource Constraint for the 2017/2018 Delivery Year. As more fully set forth in the PJM Manuals, PJM calculates the Sub-Annual Resource Reliability Target, by first determining a reference annual loss of load expectation (“LOLE”) assuming no Demand Resources. The calculation for the unconstrained portion of the PJM Region uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast and iteratively shifting the load distributions to result in the Installed Reserve Margin established for the Delivery Year in

question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Installed Reserve Margin study for the Delivery Year in question). The calculation for each relevant LDA uses a daily distribution of loads under a range of weather scenarios (based on the most recent load forecast for the Delivery Year in question) and a weekly capacity distribution (based on the cumulative capacity availability distributions developed for the Capacity Emergency Transfer Objective study for the Delivery Year in question). For the relevant LDA calculation, the weekly capacity distributions are adjusted to reflect the Capacity Emergency Transfer Limit for the Delivery Year in question.

For both the PJM Region and LDA analyses, PJM then models the commitment of varying amounts of DR (displacing otherwise committed generation) as interruptible from May 1 through October 31 and unavailable from November 1 through April 30 and calculates the LOLE at each DR level. The Extended Summer DR Reliability Target is the DR amount, stated as a percentage of the unrestricted peak load, that produces no more than a ten percent increase in the LOLE, compared to the reference value. The Sub-Annual Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

## **2.25 Sub-Annual Resource Constraint**

“Sub-Annual Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region or for each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources and Extended Summer Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Sub-Annual Resource Reliability Target for the PJM Region or for such LDA, respectively, minus the Short-Term Resource Procurement Target for the PJM Region or for such LDA, respectively.

## **2.26 Final RTO Unforced Capacity Obligation**

“Final RTO Unforced Capacity Obligation” shall mean the capacity obligation for the PJM Region, determined in accordance with Schedule 8 of the Reliability Assurance Agreement.

### **2.26A [Reserved]**

## **2.27 First Incremental Auction**

“First Incremental Auction” shall mean an Incremental Auction conducted 20 months prior to the start of the Delivery Year to which it relates.

## **2.28 Forecast Pool Requirement**

“Forecast Pool Requirement” shall have the meaning specified in the Reliability Assurance

Agreement.

**2.29 [Reserved]**

**2.30 [Reserved]**

**2.31 Generation Capacity Resource**

“Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

**2.32 Generator Forced Outage**

“Generator Forced Outage” shall have the meaning specified in the Operating Agreement.

**2.33 Generator Maintenance Outage**

“Generator Maintenance Outage” shall have the meaning specified in the Operating Agreement.

**2.33A Generator Planned Outage**

“Generator Planned Outage” shall have the meaning specified in the Operating Agreement.

**2.34 Incremental Auction**

“Incremental Auction” shall mean any of several auctions conducted for a Delivery Year after the Base Residual Auction for such Delivery Year and before the first day of such Delivery Year, including the First Incremental Auction, Second Incremental Auction, Third Incremental Auction or Conditional Incremental Auction. Incremental Auctions (other than the Conditional Incremental Auction), shall be held for the purposes of:

(i) allowing Market Sellers that committed Capacity Resources in the Base Residual Auction for a Delivery Year, which subsequently are determined to be unavailable to deliver the committed Unforced Capacity in such Delivery Year (due to resource retirement, resource cancellation or construction delay, resource derating, EFORD increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences) to submit Buy Bids for replacement Capacity Resources; and

(ii) allowing the Office of the Interconnection to reduce or increase the amount of committed capacity secured in prior auctions for such Delivery Year if, as a result of changed circumstances or expectations since the prior auction(s), there is, respectively, a significant excess or significant deficit of committed capacity for such Delivery Year, for the PJM Region or for an LDA.

**2.35 Incremental Capacity Transfer Right**

“Incremental Capacity Transfer Right” shall mean a Capacity Transfer Right allocated to a Generation Interconnection Customer or Transmission Interconnection Customer obligated to fund a transmission facility or upgrade, to the extent such upgrade or facility increases the transmission import capability into a Locational Deliverability Area, or a Capacity Transfer Right allocated to a Responsible Customer in accordance with Schedule 12A of the Tariff.

### **2.36 Intermittent Resource**

“Intermittent Resource” shall mean a Generation Capacity Resource with output that can vary as a function of its energy source, such as wind, solar, run of river hydroelectric power and other renewable resources.

#### **2.36A Limited Demand Resource**

“Limited Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.36B Limited Demand Resource Reliability Target**

“Limited Demand Resource Reliability Target” for the PJM Region or an LDA, shall mean the maximum amount of Limited Demand Resources determined by PJM to be consistent with the maintenance of reliability, stated in Unforced Capacity that shall be used to calculate the Minimum Extended Summer Demand Resource Requirement for Delivery Years through May 31, 2017 and the Limited Resource Constraint for the 2017/2018 Delivery Year for the PJM Region or such LDA. As more fully set forth in the PJM Manuals, PJM calculates the Limited Demand Resource Reliability Target by first: i) testing the effects of the ten-interruption requirement by comparing possible loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using the cumulative capacity distributions employed in the Installed Reserve Margin study for the PJM Region and in the Capacity Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) more than ten times over those peak days; ii) testing the six-hour duration requirement by calculating the MW difference between the highest hourly unrestricted peak load and seventh highest hourly unrestricted peak load on certain high peak load days (e.g., the annual peak, loads above the weather normalized peak, or days where load management was called) in recent years, then dividing those loads by the forecast peak for those years and averaging the result; and (iii) (for the 2016/2017 and 2017/2018 Delivery Years) testing the effects of the six-hour duration requirement by comparing possible hourly loads on peak days under a range of weather conditions (from the daily load forecast distributions for the Delivery Year in question) against possible generation capacity on such days under a range of conditions (using a Monte Carlo model of hourly capacity levels that is consistent with the capacity model employed in the Installed Reserve Margin study for the PJM Region and in the Capacity



Emergency Transfer Objective study for the relevant LDAs for such Delivery Year) and, by varying the assumed amounts of DR that is committed and displaces committed generation, determines the DR penetration level at which there is a ninety percent probability that DR will not be called (based on the applicable operating reserve margin for the PJM Region and for the relevant LDAs) for more than six hours over any one or more of the tested peak days. Second, PJM adopts the lowest result from these three tests as the Limited Demand Resource Reliability Target. The Limited Demand Resource Reliability Target shall be expressed as a percentage of the forecasted peak load of the PJM Region or such LDA and is converted to Unforced Capacity by multiplying [the reliability target percentage] times [the Forecast Pool Requirement] times [the DR Factor] times [the forecasted peak load of the PJM Region or such LDA, reduced by the amount of load served under the FRR Alternative].

### **2.36C Limited Resource Constraint**

“Limited Resource Constraint” shall mean, for the 2017/2018 Delivery Year, for the PJM Region or each LDA for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for a Delivery Year, a limit on the total amount of Unforced Capacity that can be committed as Limited Demand Resources for the 2017/2018 Delivery Year in the PJM Region or in such LDA, calculated as the Limited Demand Resource Reliability Target for the PJM Region or such LDA, respectively, minus the Short Term Resource Procurement Target for the PJM Region or such LDA, respectively.

### **2.36D Limited Resource Price Decrement**

“Limited Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Limited Demand Resources and the clearing price for Extended Summer Demand Resources and Annual Resources, representing the cost to procure additional Extended Summer Demand Resources or Annual Resources out of merit order when the Limited Resource Constraint is binding.

### **2.37 Load Serving Entity (LSE)**

“Load Serving Entity” or “LSE” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.38 Locational Deliverability Area (LDA)**

“Locational Deliverability Area” or “LDA” shall mean a geographic area within the PJM Region that has limited transmission capability to import capacity to satisfy such area’s reliability requirement, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, and as specified in Schedule 10.1 of the Reliability Assurance Agreement.

### **2.39 Locational Deliverability Area Reliability Requirement**

“Locational Deliverability Area Reliability Requirement” shall mean the projected internal capacity in the Locational Deliverability Area plus the Capacity Emergency Transfer Objective

for the Delivery Year, as determined by the Office of the Interconnection in connection with preparation of the Regional Transmission Expansion Plan, less the minimum internal resources required for all FRR Entities in such Locational Deliverability Area.

#### **2.40 Locational Price Adder**

“Locational Price Adder” shall mean an addition to the marginal value of Unforced Capacity within an LDA as necessary to reflect the price of Capacity Resources required to relieve applicable binding locational constraints.

#### **2.41 Locational Reliability Charge**

“Locational Reliability Charge” shall have the meaning specified in the Reliability Assurance Agreement.

##### **2.41A Locational UCAP**

“Locational UCAP” shall mean unforced capacity that a Member with available uncommitted capacity sells in a bilateral transaction to a Member that previously committed capacity through an RPM Auction but now requires replacement capacity to fulfill its RPM Auction commitment. The Locational UCAP Seller retains responsibility for performance of the resource providing such replacement capacity.

##### **2.41B Locational UCAP Seller**

“Locational UCAP Seller” shall mean a Member that sells Locational UCAP.

##### **2.41C Market Seller Offer Cap**

“Market Seller Offer Cap” shall mean a maximum offer price applicable to certain Market Sellers under certain conditions, as determined in accordance with section 6 of Attachment DD and section II.E of Attachment M - Appendix.

##### **2.41D Minimum Annual Resource Requirement**

“Minimum Annual Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Annual Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Sub-Annual Resource Reliability Target for the RTO in Unforced Capacity]. For an LDA, the Minimum Annual Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Sub-Annual Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

### **2.41E Minimum Extended Summer Resource Requirement**

“Minimum Extended Summer Resource Requirement” shall mean, for Delivery Years through May 31, 2017, the minimum amount of capacity that PJM will seek to procure from Extended Summer Demand Resources and Annual Resources for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the PJM Region, the Minimum Extended Summer Resource Requirement shall be equal to the RTO Reliability Requirement minus [the Limited Demand Resource Reliability Target for the PJM Region in Unforced Capacity]. For an LDA, the Minimum Extended Summer Resource Requirement shall be equal to the LDA Reliability Requirement minus [the LDA CETL] minus [the Limited Demand Resource Reliability Target for such LDA in Unforced Capacity]. The LDA CETL may be adjusted pro rata for the amount of load served under the FRR Alternative.

### **2.42 Net Cost of New Entry**

“Net Cost of New Entry” shall mean the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset, as defined in Section 5.

### **2.43 Nominated Demand Resource Value**

“Nominated Demand Resource Value” shall mean the amount of load reduction that a Demand Resource commits to provide either through direct load control, firm service level or guaranteed load drop programs. For existing Demand Resources, the maximum Nominated Demand Resource Value is limited, in accordance with the PJM Manuals, to the value appropriate for the method by which the load reduction would be accomplished, at the time the Base Residual Auction or Incremental Auction is being conducted.

### **2.43A Nominated Energy Efficiency Value**

“Nominated Energy Efficiency Value” shall mean the amount of load reduction that an Energy Efficiency Resource commits to provide through installation of more efficient devices or equipment or implementation of more efficient processes or systems.

### **2.44 [Reserved]**

### **2.45 Opportunity Cost**

“Opportunity Cost” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.46 Peak-Hour Dispatch**

“Peak-Hour Dispatch” shall mean, for purposes of calculating the Energy and Ancillary Services Revenue Offset under section 5 of this Attachment, an assumption, as more fully set forth in the

PJM Manuals, that the Reference Resource is committed in the Day-Ahead Energy Market in four distinct blocks of four hours of continuous output for each block from the peak-hour period beginning with the hour ending 0800 EPT through to the hour ending 2300 EPT for any day when the average day-ahead LMP for the area for which the Net Cost of New Entry is being determined is greater than, or equal to, the cost to generate (including the cost for a complete start and shutdown cycle) for at least two hours during each four-hour block, where such blocks shall be assumed to be committed independently; provided that, if there are not at least two economic hours in any given four-hour block, then the Reference Resource shall be assumed not to be committed for such block; and to the extent not committed in any such block in the Day-Ahead Energy Market under the above conditions based on Day-Ahead LMPs, is dispatched in the Real-Time Energy Market for such block if the Real-Time LMP is greater than or equal to the cost to generate under the same conditions as described above for the Day-Ahead Energy Market.

#### **2.47 Peak Season**

“Peak Season” shall mean the weeks containing the 24th through 36th Wednesdays of the calendar year. Each such week shall begin on a Monday and end on the following Sunday, except for the week containing the 36th Wednesday, which shall end on the following Friday.

#### **2.48 Percentage Internal Resources Required**

“Percentage Internal Resources Required” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.48A Performance Assessment Hour**

“Performance Assessment Hour” shall mean each whole or partial clock-hour for which an Emergency Action has been declared by the Office of the Interconnection, provided, however, that Performance Assessment Hours for a Base Capacity Resource shall not include any hours outside the calendar months of June through September.

#### **2.49 Planned Demand Resource**

“Planned Demand Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50 Planned External Generation Capacity Resource**

“Planned External Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

#### **2.50A Planned Generation Capacity Resource**

“Planned Generation Capacity Resource” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.51 Planning Period**

“Planning Period” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.52 PJM Region**

“PJM Region” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.53 PJM Region Installed Reserve Margin**

“PJM Region Installed Reserve Margin” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.54 PJM Region Peak Load Forecast**

“PJM Region Peak Load Forecast” shall mean the peak load forecast used by the Office of the Interconnection in determining the PJM Region Reliability Requirement, and shall be determined on both a preliminary and final basis as set forth in section 5.

### **2.55 PJM Region Reliability Requirement**

“PJM Region Reliability Requirement” shall mean, for purposes of the Base Residual Auction, the Forecast Pool Requirement multiplied by the Preliminary PJM Region Peak Load Forecast, less the sum of all Preliminary Unforced Capacity Obligations of FRR Entities in the PJM Region; and, for purposes of the Incremental Auctions, the Forecast Pool Requirement multiplied by the updated PJM Region Peak Load Forecast, less the sum of all updated Unforced Capacity Obligations of FRR Entities in the PJM Region.

### **2.56 Projected PJM Market Revenues**

“Projected PJM Market Revenues” shall mean a component of the Market Seller Offer Cap calculated in accordance with section 6.

### **2.57 Qualifying Transmission Upgrade**

“Qualifying Transmission Upgrade” shall mean a proposed enhancement or addition to the Transmission System that: (a) will increase the Capacity Emergency Transfer Limit into an LDA by a megawatt quantity certified by the Office of the Interconnection; (b) the Office of the Interconnection has determined will be in service on or before the commencement of the first Delivery Year for which such upgrade is the subject of a Sell Offer in the Base Residual Auction; (c) is the subject of a Facilities Study Agreement executed before the conduct of the Base Residual Auction for such Delivery Year and (d) a New Service Customer is obligated to fund through a rate or charge specific to such facility or upgrade.

### **2.58 Reference Resource**

“Reference Resource” shall mean a combustion turbine generating station, configured with two General Electric Frame 7FA turbines with inlet air cooling to 50 degrees, Selective Catalytic Reduction technology all CONE Areas, dual fuel capability, and a heat rate of 10.096 Mmbtu/MWh.

### **2.59 Reliability Assurance Agreement**

“Reliability Assurance Agreement” shall mean that certain “Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region,” on file with FERC as PJM Interconnection, L.L.C. Rate Schedule FERC No.44.

### **2.60 Reliability Pricing Model Auction**

“Reliability Pricing Model Auction” or “RPM Auction” shall mean the Base Residual Auction or any Incremental Auction, or, for the 2016/2017 and 2017/2018 Delivery Years, any Capacity Performance Transition Incremental Auction.

### **2.60A Repowered / Repowering**

“Repowering” or “Repowered” shall refer to a partial or total replacement of existing steam production equipment with new technology or a partial or total replacement of steam production process and power generation equipment, or an addition of steam production and/or power generation equipment, or a change in the primary fuel being used at the plant. A resource can be considered Repowered whether or not such aforementioned replacement, addition, or fuel change provides an increase in installed capacity, and whether or not the pre-existing plant capability is formally deactivated or retired.

### **2.61 Resource Substitution Charge**

“Resource Substitution Charge” shall mean a charge assessed on Capacity Market Buyers in an Incremental Auction to recover the cost of replacement Capacity Resources.

### **2.61A Scheduled Incremental Auctions**

“Scheduled Incremental Auctions” shall refer to the First, Second, or Third Incremental Auction.

### **2.62 Second Incremental Auction**

“Second Incremental Auction” shall mean an Incremental Auction conducted ten months before the Delivery Year to which it relates.

### **2.63 Sell Offer**

“Sell Offer” shall mean an offer to sell Capacity Resources in a Base Residual Auction, Incremental Auction, or Reliability Backstop Auction.

**2.64 [Reserved for Future Use]****2.65 Self-Supply**

“Self-Supply” shall mean Capacity Resources secured by a Load-Serving Entity, by ownership or contract, outside a Reliability Pricing Model Auction, and used to meet obligations under this Attachment or the Reliability Assurance Agreement through submission in a Base Residual Auction or an Incremental Auction of a Sell Offer indicating such Market Seller’s intent that such Capacity Resource be Self-Supply. Self-Supply may be either committed regardless of clearing price or submitted as a Sell Offer with a price bid. A Load Serving Entity’s Sell Offer with a price bid for an owned or contracted Capacity Resource shall not be deemed “Self-Supply,” unless it is designated as Self-Supply and used by the LSE to meet obligations under this Attachment or the Reliability Assurance Agreement.

**2.65A Short-Term Resource Procurement Target**

“Short-Term Resource Procurement Target” shall mean, for Delivery Years through May 31, 2018, as to the PJM Region, for purposes of the Base Residual Auction, 2.5% of the PJM Region Reliability Requirement determined for such Base Residual Auction, for purposes of the First Incremental Auction, 2% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, for purposes of the Second Incremental Auction, 1.5% of the of the PJM Region Reliability Requirement as calculated at the time of the Base Residual Auction; and, as to any Zone, an allocation of the PJM Region Short-Term Resource Procurement Target based on the Preliminary Zonal Forecast Peak Load, reduced by the amount of load served under the FRR Alternative. For any LDA, the LDA Short-Term Resource Procurement Target shall be the sum of the Short-Term Resource Procurement Targets of all Zones in the LDA.

**2.65B Short-Term Resource Procurement Target Applicable Share**

“Short-Term Resource Procurement Target Applicable Share” shall mean, for Delivery Years through May 31, 2018: (i) for the PJM Region, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction and, as to the Third Incremental Auction for the PJM Region, 0.6 times such target; and (ii) for an LDA, as to the First and Second Incremental Auctions, 0.2 times the Short-Term Resource Procurement Target used in the Base Residual Auction for such LDA and, as to the Third Incremental Auction, 0.6 times such target.

**2.65B.01 Small Commercial Customer**

“Small Commercial Customer,” as used in Schedule 6 of the RAA and Attachment DD-1 of the Tariff, shall mean a commercial retail electric end-use customer of an electric distribution company that participates in a mass market demand response program under the jurisdiction of a RERRA and satisfies the definition of a “small commercial customer” under the terms of the applicable RERRA’s program, provided that the customer has an annual peak demand no greater than 100kW.

### **2.65C Sub-Annual Resource Price Decrement**

“Sub-Annual Resource Price Decrement” shall mean, for the 2017/2018 Delivery Year, a difference between the clearing price for Extended Summer Demand Resources and the clearing price for Annual Resources, representing the cost to procure additional Annual Resources out of merit order when the Sub-Annual Resource Constraint is binding.

### **2.66 Third Incremental Auction**

“Third Incremental Auction” shall mean an Incremental Auction conducted three months before the Delivery Year to which it relates.

### **2.67 [Reserved for Future Use]**

### **2.68 Unconstrained LDA Group**

“Unconstrained LDA Group” shall mean a combined group of LDAs that form an electrically contiguous area and for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD. Any LDA for which a separate Variable Resource Requirement Curve has not been established under Section 5.10 of Attachment DD shall be combined with all other such LDAs that form an electrically contiguous area.

### **2.69 Unforced Capacity**

“Unforced Capacity” shall have the meaning specified in the Reliability Assurance Agreement.

### **2.69A Updated VRR Curve**

“Updated VRR Curve” shall mean the Variable Resource Requirement Curve as defined in section 5.10(a) of this Attachment for use in the Base Residual Auction of the relevant Delivery Year, updated to reflect any change in the Reliability Requirement from the Base Residual Auction to such Incremental Auction, and for Delivery Years through May 31, 2018, the Short-term Resource Procurement Target applicable to the relevant Incremental Auction.

### **2.69B Updated VRR Curve Increment**

“Updated VRR Curve Increment” shall mean the portion of the Updated VRR Curve to the right of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this Attachment DD.*

### **2.69C Updated VRR Curve Decrement**

“Updated VRR Curve Decrement” shall mean the portion of the Updated VRR Curve to the left



of a vertical line at the level of Unforced Capacity on the x-axis of such curve equal to the net Unforced Capacity committed to the PJM Region as a result of all prior auctions conducted for such Delivery Year *and adjusted, if applicable, by the reduction in Unforced Capacity commitments associated with the transition provision of section 5.14C of this attachment DD.*

## **2.70 Variable Resource Requirement Curve**

“Variable Resource Requirement Curve” shall mean a series of maximum prices that can be cleared in a Base Residual Auction for Unforced Capacity, corresponding to a series of varying resource requirements based on varying installed reserve margins, as determined by the Office of the Interconnection for the PJM Region and for certain Locational Deliverability Areas in accordance with the methodology provided in Section 5.

## **2.71 Zonal Capacity Price**

“Zonal Capacity Price” shall mean the clearing price required in each Zone to meet the demand for Unforced Capacity and satisfy Locational Deliverability Requirements for the LDA or LDAs associated with such Zone. If the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

OATT ATT DD.3, OATT ATTACHMENT DD.3 RESPONSIBILITIES OF THE OFFICE OF THE, 7.0.0, A

Record Narrative Name: OATT ATT DD.3 RESPONSIBILITIES OF THE OFFICE OF THE INTERCONNECTION

Tariff Record ID: 1140

Tariff Record Collation Value: 655676796 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **3. RESPONSIBILITIES OF THE OFFICE OF THE INTERCONNECTION**

### **3.1 Support for Self-Supply and Bilateral Transactions**

The Office of the Interconnection shall:

(a) support electronic tools to facilitate communication by Market Sellers and Market Buyers of information to the Office of the Interconnection concerning Self-Supply arrangements;

(b) support an electronic bulletin board providing a forum for prospective buyers and sellers to transact Capacity Resources outside the Reliability Pricing Model Auctions, including Locational UCAP transactions (including mechanisms to allow prospective Sellers with partial-year resources to explore voluntary opportunities to combine their resources such that they can be offered together for a full Delivery Year) and support electronic tools to report bilateral capacity transactions between Market Participants to the Office of the Interconnection, in accordance with procedures set forth in the PJM Manuals; and

(c) define one or more capacity trading hubs and determine and publicize values for such hubs based on the capacity prices determined for one or more Locational Deliverability Areas, in accordance with the PJM Manuals.

### **3.2 Administration of the Base Residual Auction and Incremental Auctions**

The Office of the Interconnection shall conduct and administer the Base Residual Auction and Incremental Auctions in accordance with this Attachment, the Operating Agreement, and the Reliability Assurance Agreement. Administration of the Base Residual Auction and Incremental Auctions shall include, but not be limited to, the following:

a) Determining the qualification of entities to become Capacity Market Sellers and Capacity Market Buyers;

b) Determining PJM Region Peak Load Forecasts and Locational Deliverability Area Reliability Requirements;

c) Determining the Minimum Annual Resource Requirements and the Minimum Extended Summer Resource Requirements for the PJM Region and applicable LDAs for Delivery Years starting June 1, 2014 and ending May 31, 2017;

d) Determining Limited Resource Constraints and Sub-Annual Resource Constraints for the 2017/2018 Delivery Year;

e) Determining Base Capacity Demand Resource Constraints and Base Capacity Resource Constraints for the 2018/2019 and 2019/2020 Delivery Years;

f) Determining the need, if any, for a Conditional Incremental Auction and providing appropriate prior notice of any such auction

g) Calculating the EFORd for each Generation Capacity Resource in the PJM Region to be used in the Third Incremental Auction;

h) Receiving Buy Bids and Sell Offers, determining Locational Deliverability Requirements and Variable Resource Requirement Curves, and determining the clearing price that reflects all such inputs;

i) Conducting settlements for auction transactions, including but not limited to rendering bills to, receiving payments from, and disbursing payments to, participants in Base Residual Auctions and Incremental Auctions.

j) Maintaining such records of Sell Offers and Buy Bids, clearing price determinations, and other aspects of auction transactions, as may be appropriate to the administration of Base Residual Auctions and Incremental Auctions; and

k) Posting of selected non-confidential data used in Reliability Pricing Model Auctions to calculate clearing prices and other auction results, as appropriate to inform market participants of auction conditions.

### **3.3 Records and Reports**

The Office of the Interconnection shall prepare and maintain such records as are required for the administration of the Base Residual Auction and Incremental Auctions. For each auction conducted, the Office of the Interconnection shall, consistent with section 18.17 of the Operating Agreement, publish the following: (i) Zonal Capacity Prices for each LDA; (ii) Capacity Resource Clearing Prices for each LDA; (iii) Locational Price Adders; (iv) the total megawatts of Unforced Capacity that cleared; and (v) such other auction data as may be appropriate to the efficient and competitive conduct of the Base Residual Auction and Incremental Auctions. Such information shall be available on the PJM internet site through the end of the Delivery Year to which such auctions apply.

### **3.4 Counterparty**

(a) PJMSettlement shall be the Counterparty to the transactions arising from the cleared Base Residual Auctions and Incremental Auctions; provided, however, PJMSettlement shall not be a contracting party to (i) any bilateral transactions between Market Participants, or (ii) with respect to Self-Supply for which designation of Self-Supply has been reported to the Office of the Interconnection.

(b) Charges. PJMSettlement shall be the Counterparty with respect to the obligations to pay, and the payment of, charges pursuant to this Attachment DD.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
ATTACHMENT DD.4, OATT ATTACHMENT DD.4. GENERAL PROVISIONS, 3.0.0, A  
Record Narrative Name: 4. GENERAL PROVISIONS  
Tariff Record ID: 1141  
Tariff Record Collation Value: 656749451 Tariff Record Parent Identifier: 1132  
Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

## **4. GENERAL PROVISIONS**

### **4.1 Capacity Market Sellers**

Only Capacity Market Sellers shall be eligible to submit Sell Offers into the Base Residual Auction and Incremental Auctions. Capacity Market Sellers shall comply with the terms and conditions of all Sell Offers, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.2 Capacity Market Buyers**

Only Capacity Market Buyers shall be eligible to submit Buy Bids into an Incremental Auction. Capacity Market Buyers shall comply with the terms and conditions of all Buy Bids, as established by the Office of the Interconnection in accordance with this Attachment, Attachment M, Attachment M - Appendix and the Operating Agreement.

### **4.3 Agents**

A Capacity Market Seller may participate in a Base Residual Auction or Incremental Auction through an Agent, provided that the Capacity Market Seller informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer may participate in an Incremental Auction through an Agent, provided that the Capacity Market Buyer informs the Office of the Interconnection in advance in writing of the appointment and authority of such Agent. A Capacity Market Buyer or Capacity Market Seller participating in such an auction through an Agent shall be bound by all of the acts or representations of such Agent with respect to transactions in such auction. Any written instrument establishing the authority of such Agent shall provide that any such Agent shall comply with the requirements of this Attachment and the Operating Agreement.

### **4.4 General Obligations of Capacity Market Buyers and Capacity Market Sellers**

Each Capacity Market Buyer and Capacity Market Seller shall comply with all laws and regulations applicable to the operation of the Base Residual and Incremental Auctions and the use of these auctions shall comply with all applicable provisions of this Attachment, Attachment M, Attachment M - Appendix, the Operating Agreement, and the Reliability Assurance Agreement, and all procedures and requirements for the conduct of the Base Residual and Incremental Auctions and the PJM Region established by the Office of the Interconnection in accordance with the foregoing.

### **4.5 Confidentiality**

The following information submitted to the Office of the Interconnection in connection with any Base Residual Auction, Incremental Auction, Reliability Backstop Auction, or Capacity Performance Transition Incremental Auction shall be deemed confidential information for purposes of Section 18.17 of the Operating Agreement, Attachment M and Attachment M - Appendix: (i) the terms and conditions of the Sell Offers and Buy Bids; and (ii) the terms and conditions of any bilateral transactions for Capacity Resources.

### **4.6 Bilateral Capacity Transactions**

(a) Unit-Specific Internal Capacity Bilateral Transaction Transferring All Rights and Obligations (“Section 4.6(a) Bilateral”).

(i) Market Participants may enter into unit-specific internal bilateral capacity contracts for the purchase and sale of title and rights to a specified amount of installed capacity from a specific generating unit or units. Such bilateral capacity contracts shall be for the transfer of rights to capacity to and from a Market Participant and shall be reported to the Office

of the Interconnection in accordance with this Attachment DD and the Office of the Interconnection's rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Section 4.6(a) Bilateral transactions, the rights to, and obligations regarding, the capacity that is the subject of the transaction shall pass to the buyer under the contract at the location of the unit and further transactions and rights and obligations associated with such capacity shall be the responsibility of the buyer under the contract. Such obligations include any charges, including penalty charges, relating to the capacity under this Attachment DD. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(a) Bilateral constitute a transaction with the Office of the Interconnection or PJMSettlement or a transaction in any auction under this Attachment DD.

(iii) All payments and related charges associated with a Section 4.6(a) Bilateral shall be arranged between the parties to the transaction and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(a) Bilateral reported to the Office of the Interconnection under this Attachment DD.

(iv) With respect to capacity that is the subject of a Section 4.6(a) Bilateral that has cleared an auction under this Attachment DD prior to a transfer, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction.

(v) A buyer under a Section 4.6(a) Bilateral contract shall pay any penalties or charges associated with the capacity transferred under the contract. To the extent the capacity that is the subject of a Section 4.6(a) Bilateral contract has cleared an auction under this Attachment DD prior to a transfer, then the seller under the contract also shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer's obligation to pay any penalties or charges associated with the capacity and for which payment is not made to PJMSettlement by the buyer as determined by the Office of the Interconnection. All claims regarding a default of a buyer to a seller under a Section 4.6(a) Bilateral contract shall be resolved solely between the buyer and the seller.

(vi) To the extent the capacity that is the subject of the Section 4.6(a) Bilateral transaction already has cleared an auction under this Attachment DD, such bilateral capacity transactions shall be subject to the prior consent of the Office of the Interconnection and its determination that sufficient credit is in place for the buyer with respect to the credit exposure associated with such obligations.

(b) Bilateral Capacity Transaction Transferring Title to Capacity But Not Transferring Performance Obligations ("Section 4.6(b) Bilateral").

(i) Market Participants may enter into bilateral capacity transactions for the purchase and sale of a specified megawatt quantity of capacity that has cleared an auction

pursuant to this Attachment DD. The parties to a Section 4.6(b) Bilateral transaction shall identify (1) each unit from which the transferred megawatts are being sold, and (2) the auction in which the transferred megawatts cleared. Such bilateral capacity transactions shall transfer title and all rights with respect to capacity and shall be reported to the Office of the Interconnection on an annual basis prior to each Delivery Year in accordance with this Attachment DD and pursuant to the Office of the Interconnection's rules related to its eRPM tools. Reported transactions with respect to a unit will be accepted by the Office of the Interconnection only to the extent that the total of all bilateral sales from the reported unit (including Section 4.6(a) Bilaterals, Section 4.6(b) Bilaterals, and Locational UCAP bilaterals) do not exceed the unit's cleared unforced capacity.

(ii) For purposes of clarity, with respect to all Section 4.6(b) Bilateral transactions, the rights to the capacity shall pass to the buyer at the location of the unit(s) specified in the reported transaction. In no event shall the purchase and sale of the rights to capacity pursuant to a Section 4.6(b) Bilateral constitute a transaction with PJMSettlement or the Office of the Interconnection or a transaction in any auction under this Attachment DD.

(iii) With respect to a Section 4.6(b) Bilateral, the buyer of the cleared capacity shall be considered in the Delivery Year the party to a transaction with PJMSettlement as Counterparty for the cleared capacity at the Capacity Resource Clearing Price published for the applicable auction; provided, however, with respect to all Section 4.6(b) Bilateral transactions, such transactions do not effect a novation of the seller's obligations to make RPM capacity available to PJM pursuant to the terms and conditions originally agreed to by the seller; provided further, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller under a Section 4.6(b) Bilateral to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity.

(iv) All payments and related charges associated with a Section 4.6(b) Bilateral shall be arranged between the parties to the contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The Office of the Interconnection, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Section 4.6(b) Bilateral capacity contract reported to the Office of the Interconnection under this Attachment DD.

(v) All claims regarding a default of a buyer to a seller under a Section 4.6(b) Bilateral shall be resolved solely between the buyer and the seller.

(c) Locational UCAP Bilateral Transactions Between Capacity Sellers.

(i) Market Participants may enter into Locational UCAP bilateral transactions as defined in, and pursuant to the rules set forth in, section 5.3A of this Attachment DD, which shall be reported to the Office of the Interconnection in accordance with this Attachment DD and the LLC's rules related to its eRPM tools.

(ii) For purposes of clarity, with respect to all Locational UCAP bilateral

transactions, the rights to the Locational UCAP that are the subject of the Locational UCAP bilateral transaction shall pass to the buyer under the Locational UCAP bilateral contract subject to the provisions of section 5.3A. In no event, shall the purchase and sale of Locational UCAP pursuant to a Locational UCAP bilateral transaction constitute a transaction with the Office of the Interconnection or PJMSettlement, or a transaction in any auction under this Attachment DD.

(iii) A Locational UCAP Seller shall have the obligation to make the capacity available to PJM in the same manner as capacity that has cleared an auction under this Attachment DD and the Locational UCAP Seller shall have all obligations for charges and penalties associated with the capacity that is the subject of the Locational UCAP bilateral contract; provided, however, the buyer shall indemnify PJMSettlement, the LLC, and the Members for any failure by a seller to meet any resulting obligations, including the obligation to pay deficiency penalties and charges owed to PJMSettlement, associated with the capacity. All claims regarding a default of a buyer to a seller under a Locational UCAP bilateral contract shall be resolved solely between the buyer and the seller.

(iv) All payments and related charges for the Locational UCAP associated with a Locational UCAP bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by the Office of the Interconnection or PJMSettlement. The LLC, PJMSettlement, and the Members will not assume financial responsibility for the failure of a party to perform obligations owed to the other party under a Locational UCAP bilateral contract reported to the Office of the Interconnection under this Attachment DD.

(d) The bilateral transactions provided for in this section 4.6 shall be for the physical transfer of capacity to or from a Market Participant and shall be reported to and coordinated with the Office of the Interconnection in accordance with this Attachment DD and pursuant to the Office of the Interconnection's rules relating to its eRPM tools. Bilateral transactions that do not contemplate the physical transfer of capacity to and from a Market Participant are not subject to this Attachment DD and shall not be reported to and coordinated with the Office of the Interconnection.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.5.3A, OATT ATTACHMENT DD.5.3A Locational UCAP Bilateral Transactio, 3.0.0, A

Record Narrative Name: 5.3A Locational UCAP Bilateral Transactions

Tariff Record ID: 1146

Tariff Record Collation Value: 660324966 Tariff Record Parent Identifier: 1142

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

### **5.3A Locational UCAP Bilateral Transactions**

A Member that has committed capacity through an RPM Auction for a Delivery Year may purchase Locational UCAP as replacement capacity from a Member with available uncommitted capacity for such Delivery Year in accordance with the terms of this section and the PJM Manuals. Locational UCAP may not be sold or purchased prior to the date that the final EFORD is established for such Delivery Year, and if designated to PJM by the Locational UCAP Seller as sold prior to the Third Incremental Auction for a Delivery Year must be confirmed by the buyer prior to such Third Incremental Auction as purchased for replacement capacity, or such

transaction shall be rejected. In accordance with procedures specified in the PJM Manuals, the parties to a Locational UCAP transaction must notify PJM of such transaction, which notification must specify: i) the buyer, ii) the Locational UCAP Seller, iii) the start and end dates of the transaction (which may not be retroactive), iv) the Locational UCAP amount (no less than 0.1 megawatts), v) the demand or generation resource with available uncommitted capacity that is the basis for the sale, and vi) the Locational Delivery Area in which the resource is located. The Locational UCAP Seller shall be responsible for any charges imposed under sections 7, 8, 9, 10, 10A, 11, or 13, as applicable, for such Delivery Year, with respect to the increment of capacity sold as Locational UCAP; any other settlement of charges under the Locational UCAP transaction shall be between the parties. A purchaser of Locational UCAP may not offer such capacity into an RPM Auction.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
 ATTACHMENT DD.5.4, OATT ATTACHMENT DD.5.4 Reliability Pricing Model Auctions, 5.0.0, A  
 Record Narrative Name: 5.4 Reliability Pricing Model Auctions  
 Tariff Record ID: 1147  
 Tariff Record Collation Value: 661040069 Tariff Record Parent Identifier: 1142  
 Proposed Date: 2015-04-01  
 Priority Order: 500  
 Record Change Type: CHANGE  
 Record Content Type: 1  
 Associated Filing Identifier:

#### **5.4 Reliability Pricing Model Auctions**

The Office of the Interconnection shall conduct the following Reliability Pricing Model Auctions:

a) **Base Residual Auction.**

PJM shall conduct for each Delivery Year a Base Residual Auction to secure commitments of Capacity Resources as needed to satisfy the portion of the RTO Unforced Capacity Obligation not satisfied through Self-Supply of Capacity Resources for such Delivery Year. All Self-Supply Capacity Resources must be offered in the Base Residual Auction. As set forth in section 6.6, all other Capacity Resources, and certain other existing generation resources, must be offered in the Base Residual Auction. The Base Residual Auction shall be conducted in the month of May that is three years prior to the start of such Delivery Year. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Load Serving Entities through the Locational Reliability Charge during such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and the payments, by Load Serving Entities; provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

b) **Scheduled Incremental Auctions.**

PJM shall conduct for each Delivery Year a First, a Second, and a Third Incremental Auction for the purposes set forth in section 2.34. The First Incremental Auction shall be conducted in the month of September that is twenty months prior to the start of the Delivery Year; the Second



Incremental Auction shall be conducted in the month of July that is ten months prior to the start of the Delivery Year; and the Third Incremental Auction shall be conducted in the month of February that is three months prior to the start of the Delivery Year.

c) Adjustment through Scheduled Incremental Auctions of Capacity Previously Committed.

The Office of the Interconnection shall recalculate the PJM Region Reliability Requirement and each LDA Reliability Requirement prior to each Scheduled Incremental Auction, based on an updated peak load forecast, updated Installed Reserve Margin and an updated Capacity Emergency Transfer Objective; shall update such reliability requirements for the Third Incremental Auction to reflect any change from such recalculation; and shall update such reliability requirements for the First Incremental Auction or Second Incremental Auction only if the change is greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement. Based on such update, the Office of the Interconnection shall, under certain conditions, seek through the Scheduled Incremental Auction to secure additional commitments of capacity or release sellers from prior capacity commitments. Specifically, the Office of the Interconnection shall:

1) seek additional capacity commitments to serve the PJM Region or an LDA if the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) is less than, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such additional capacity commitments only if such shortfall is in an amount greater than or equal to the lesser of: (i) 500 MW or (ii) one percent of the applicable prior reliability requirement;

2) seek additional capacity commitments to serve the PJM Region or an LDA if:

i) the updated PJM Region Reliability Requirement less, for Delivery Years through May 31, 2018, the PJM Region Short-Term Resource Procurement Target utilized in the most recent auction conducted for the Delivery Year, or if the LDA Reliability Requirement less, for Delivery Years through May 31, 2018, the LDA Short Term Resource Procurement Target applicable to such auction, exceeds the total capacity committed in all prior auctions in such region or area, respectively, for such Delivery Year by an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM conducts a Conditional Incremental Auction for such Delivery Year and does not obtain all additional commitments of Capacity Resources sought in such Conditional Incremental Auction, in which case, PJM shall seek in the

Incremental Auction the commitments that were sought in the Conditional Incremental Auction but not obtained.

3) seek agreements to release prior capacity commitments to the PJM Region or to an LDA if:

i) the PJM Region Reliability Requirement or LDA Reliability Requirement utilized in the most recent prior auction conducted for the Delivery Year (including any reductions to such reliability requirements as a result of any Price Responsive Demand with a PRD Reservation Price equal to or lower than the clearing price in the Base Residual Auction for such Delivery Year) exceeds, respectively, the updated PJM Region Reliability Requirement or updated LDA Reliability Requirement; provided, however, that in the First Incremental Auction or Second Incremental Auction the Office of the Interconnection shall seek such agreements only if such excess is in an amount greater than or equal to the lesser of: (A) 500 MW or (B) one percent of the applicable prior reliability requirement; or

ii) PJM obtains additional commitments of Capacity Resources in a Conditional Incremental Auction, in which case PJM shall seek release of an equal number of megawatts (comparing the total purchase amount for all LDAs and the PJM Region related to the delay in Backbone Transmission with the total sell amount for all LDAs and the PJM Region related to the delay in Backbone Transmission) of prior committed capacity that would not have been committed had the delayed Backbone Transmission upgrade that prompted the Conditional Incremental Auction not been assumed, at the time of the Base Residual Auction, to be in service for the relevant Delivery Year; and if PJM obtains additional commitments of capacity in an incremental auction pursuant to subsection c.2.ii above, PJM shall seek in such Incremental Auction to release an equal amount of capacity (in total for all LDAs and the PJM Region related to the delay in Backbone Transmission) previously committed that would not have been committed absent the Backbone Transmission upgrade.

4) The cost of payments to Market Sellers for additional Capacity Resources cleared in such auctions, and the credits from payments from Market Sellers for the release of previously committed Capacity Resources, shall be apportioned to Load Serving Entities in the PJM Region or LDA, as applicable, through adjustments to the Locational Reliability Charge for such Delivery Year.

5) PJM Settlement shall be the Counterparty to the sales (including releases) of Capacity Resources that clear in such auctions and to the obligations to pay, and the payments, by Load Serving Entities, provided, however, that PJM Settlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

d) Commitment of Replacement Capacity through Scheduled Incremental Auctions.

Each Scheduled Incremental Auction for each Delivery Year shall allow Capacity Market Sellers that committed Capacity Resources in any prior Reliability Pricing Model Auction for such Delivery Year to submit Buy Bids for replacement Capacity Resources. Capacity Market Sellers that submit Buy Bids into an Incremental Auction must specify the type of Unforced Capacity desired, i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource. The need to purchase replacement Capacity Resources may arise for any reason, including but not limited to resource retirement, resource cancellation or construction delay, resource derating, EFORd increase, a decrease in the Nominated Demand Resource Value of a Planned Demand Resource, delay or cancellation of a Qualifying Transmission Upgrade, or similar occurrences. The cost of payments to Capacity Market Sellers for Capacity Resources that clear such auction shall be paid by PJMSettlement from amounts collected by PJMSettlement from Capacity Market Buyers that purchase replacement Capacity Resources in such auction. PJMSettlement shall be the Counterparty to the sales and purchases that clear in such auction, provided, however, PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

e) Conditional Incremental Auction.

PJM shall conduct for any Delivery Year a Conditional Incremental Auction if the in service date of a Backbone Transmission Upgrade that was modeled in the Base Residual Auction is announced as delayed by the Office of the Interconnection beyond July 1 of the Delivery Year for which it was modeled and if such delay causes a reliability criteria violation. If conducted, the Conditional Incremental Auction shall be for the purpose of securing commitments of additional capacity for the PJM Region or for any LDA to address the identified reliability criteria violation. If PJM determines to conduct a Conditional Incremental Auction, PJM shall post on its website the date and parameters for such auction (including whether such auction is for the PJM Region or for an LDA, and the type of Capacity Resources required) at least one month prior to the start of such auction. The cost of payments to Market Sellers for Capacity Resources cleared in such auction shall be collected by PJMSettlement from Load Serving Entities in the PJM Region or LDA, as applicable, through an adjustment to the Locational Reliability Charge for such Delivery Year. PJMSettlement shall be the Counterparty to the sales that clear in such auction and to the obligations to pay, and payments, by Load Serving Entities, provided, however, that PJMSettlement shall not be a Counterparty to committed Self-Supply Capacity Resources.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.5.5, OATT ATTACHMENT DD.5.5 Eligibility for Participation in RPM, 2.0.0, A

Record Narrative Name: 5.5 Eligibility for Participation in RPM Auctions

Tariff Record ID: 1148

Tariff Record Collation Value: 661755172 Tariff Record Parent Identifier: 1142

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **5.5 Eligibility for Participation in RPM Auctions**

A Capacity Market Seller may submit a Sell Offer for a Capacity Resource in a Base Residual Auction, Incremental Auction, or Capacity Performance Transition Incremental Auction only if such seller owns or has the contractual authority to control the output or load reduction capability of such resource and has not transferred such authority to another entity prior to submitting such Sell Offer. Capacity Resources must satisfy the capability and deliverability requirements of Schedules 9 and 10 of the PJM Reliability Assurance Agreement, the requirements for Demand Resources or Energy Efficiency Resources in Attachment DD-1 and Schedule 6 of the Reliability Assurance Agreement, as applicable, and, for the 2018/2019 Delivery Year and subsequent Delivery Years, the criteria in section 5.5A.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
 ATTACHMENT DD.5.5A, OATT ATTACHMENT DD.5.5A Capacity Resource Types, 0.0.0, A  
 Record Narrative Name: 5.5A Capacity Resource Types  
 Tariff Record ID: 1632  
 Tariff Record Collation Value: 661896070 Tariff Record Parent Identifier: 1142  
 Proposed Date: 2015-04-01  
 Priority Order: 500  
 Record Change Type: NEW  
 Record Content Type: 1  
 Associated Filing Identifier:

## **5.5A Capacity Resource Types**

### **a) Capacity Performance Resources**

Capacity Performance Resources are Capacity Resources which, to the extent such resources cleared in a Reliability Pricing Model Auction or are otherwise committed as a Capacity Resource, are obligated to deliver energy during the relevant Delivery Year as scheduled and/or dispatched by the Office of Interconnection during the Performance Assessment Hours. As further detailed in Section 10A of this Attachment, Capacity Performance Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this Attachment. Subject to 5.5A(a)(i)-(ii), the following types of Capacity Resources are eligible to submit a Sell Offer as a Capacity Performance Resource: internal or external Generation Capacity Resources; Annual Demand Resources; Capacity Storage Resources; Annual Energy Efficiency Resources; and Qualifying Transmission Upgrades.

#### **i). Capacity Performance Resource Sell Offer Representations**

In submitting a Sell Offer for a Capacity Performance Resource in an RPM Auction for a Delivery Year, a Capacity Market Seller is representing that it:

- A. has made, or is capable of demonstrating that it will make, the necessary investment to ensure the Capacity Resource has the capability for the entire such Delivery Year to provide energy at any time when called upon by the Office of the Interconnection;
- B. shall be capable of complying with the performance obligations specified in this Attachment DD and in Schedule 1 of the Operating Agreement by the relevant Delivery Year;
- C. meets the criteria for obtaining an exception to the Capacity Import Limit as contained in section 1.7A of the Reliability Assurance Agreement, to the extent the underlying Capacity Resource is an external Generation Capacity Resource; and
- D. contemplates the physical delivery of the Capacity Performance Resource underlying such Sell Offer by no later than the commencement of the applicable Delivery Year. A Sell Offer shall not meet the standard of physical delivery, for purposes of this section, if at the time it is submitted in an RPM Auction, the Capacity Market Seller intends to satisfy its obligation for the applicable Delivery Year by subsequently securing a replacement Capacity Performance Resource through either an Incremental Auction or bilateral transaction(s). Capacity Market Sellers acknowledge and agree that the Office of the Interconnection will rely on this representation to meet the physical capacity resource adequacy objectives upon which RPM is based. A Capacity Market Seller that is unable to make such representation shall not submit a Sell Offer for that resource into an RPM Auction. Capacity Market Sellers are cautioned that representations made hereunder that are knowingly false or otherwise inconsistent with the requirements of this section may constitute a violation of, and may subject the Capacity Market Seller to penalties under, the PJM Market Rules and the FERC Market Rules.

**ii). Process for Support and Review of Capacity Performance Resource Offers**

- A. The Capacity Market Seller shall provide to the Office of the Interconnection and the Market Monitoring Unit, upon their request, all supporting data and information requested by either the Office of the Interconnection or the Market Monitoring Unit to evaluate whether the

underlying Capacity Resource can meet the operational and performance requirements of Capacity Performance Resources. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes.

- B. The Office of the Interconnection and the Market Monitoring Unit shall review any requested supporting data and information, and the Office of the Interconnection, considering advice and recommendation from the Market Monitoring Unit, shall reject a request for a resource to offer as a Capacity Performance Resource if the Capacity Market Seller does not demonstrate to the satisfaction of the Office of the Interconnection that the resource meets the necessary requirements. The Office of Interconnection shall provide its determination to reject eligibility of the resource as a Capacity Performance Resource, and notify the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.

#### **b) Base Capacity Resources**

For the 2018/2019 and 2019/2020 Delivery Years, following types of Capacity Resources eligible to submit a Sell Offer as a Base Capacity Resource: Generation Capacity Resources, Capacity Storage Resources, Annual Demand Resources, Base Capacity Demand Resources, and Base Capacity Energy Efficiency Resources. Each resource that clears a RPM Auction as a Base Capacity Resource must provide energy output to PJM if called during Performance Assessment Hours occurring in the calendar months of June through September, including any necessary recall of such capacity and energy from service to areas outside the PJM Region. As further detailed in Section 10A of this Attachment, Base Capacity Resources that fail to meet this obligation will be subject to a Non-Performance Assessment Charge, unless excused pursuant to Section 10A(d) of this section.

Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

## **5.6 Sell Offers**

Sell Offers shall be submitted or withdrawn via the internet site designated by the Office of the Interconnection, under the procedures and time schedule set forth in the PJM Manuals.

### **5.6.1 Specifications**

A Sell Offer shall state quantities in increments of 0.1 megawatts and shall specify, as appropriate:

a) Identification of the Generation Capacity Resource, Demand Resource, Capacity Storage Resource or Energy Efficiency Resource on which such Sell Offer is based;

b) Minimum and maximum megawatt quantity of installed capacity that the Capacity Market Seller is willing to offer (notwithstanding such specification, the product offered shall be Unforced Capacity), or designate as Self-Supply, from a Generation Capacity Resource;

i) Price, in dollars and cents per megawatt-day, that will be accepted by the Capacity Market Seller for the megawatt quantity of Unforced Capacity offered from such Generation Capacity Resource.

ii) The Sell Offer may take the form of offer segments with varying price-quantity pairs for varying output levels from the underlying resource, but may not take the form of an offer curve with nonzero slope.

c) EFORd of each Generation Capacity Resource offered.

i) If a Capacity Market Seller is offering such resource in a Base Residual Auction, First Incremental Auction, Second Incremental Auction, or Conditional Incremental Auction occurring before the Third Incremental Auction, the Capacity Market Seller shall specify the EFORd to apply to the offer.

ii) If a Capacity Market Seller is committing the resource as Self-Supply, the Capacity Market Seller shall specify the EFORd to apply to the commitment.

iii) The EFORd applied to the Third Incremental Auction will be the final EFORd established by the Office of the Interconnection six (6) months prior to the Delivery Year, based on the actual EFORd in the PJM Region during the 12-month period ending September 30 that last precedes such Delivery Year.

d) The Nominated Demand Resource Value for each Demand Resource offered and the Nominated Energy Efficiency Value for each Energy Efficiency Resource offered. The Office of the Interconnection shall, in both cases, convert such value to an Unforced Capacity

basis by multiplying such value by the DR Factor (for Delivery Years through May 31, 2018) times the Forecast Pool Requirement. Demand Resources shall specify the LDA in which the Demand Resource is located, including the location of such resource within any Zone that includes more than one LDA as identified on Schedule 10.1 of the RAA.

e) For Delivery Years through May 31, 2018, a Demand Resource with the potential to qualify as two or more of a Limited Demand Resource, Extended Summer Demand Resource or Annual Demand Resource may submit separate but coupled Sell Offers for each Demand Resource type for which it qualifies at different prices and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. For such coupled Demand Resource offers, the offer price of an Annual Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Extended Summer Demand Resource offer and the offer price of a Extended Summer Demand Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Limited Demand Resource offer.

f) For a Qualifying Transmission Upgrade, the Sell Offer shall identify such upgrade, and the Office of the Interconnection shall determine and certify the increase in CETL provided by such upgrade. The Capacity Market Seller may offer the upgrade with an associated increase in CETL to an LDA in accordance with such certification, including an offer price that will be accepted by the Capacity Market Seller, stated in dollars and cents per megawatt-day as a price difference between a Capacity Resource located outside such an LDA and a Capacity Resource located inside such LDA; and the increase in CETL into such LDA to be provided by such Qualifying Transmission Upgrade, as certified by the Office of the Interconnection.

g) For the 2018/2019 and 2019/2020 Delivery Years, each Capacity Market Seller owning or controlling a resource that qualifies as both a Base Capacity Resource and a Capacity Performance Resource may submit separate but coupled Sell Offers for such resource as a Base Capacity Resource and as a Capacity Performance Resource, at different prices, and the auction clearing algorithm will select the Sell Offer that yields the least-cost solution. Submission of a coupled Base Capacity Resource Sell Offer shall be mandatory for any Capacity Performance Resource Sell Offer that exceeds a Sell Offer Price equal to the applicable Net Cost of New Entry. For such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer.

(h) For the 2018/2019 Delivery Year and subsequent Delivery Years, a Capacity Market Seller that owns or controls one or more Capacity Storage Resources, Intermittent Resources, Demand Resources, or Energy Efficiency Resources located within the same Locational Deliverability Area may submit a Sell Offer which represents the aggregated Unforced Capacity value of such resources. For the 2018/2019 and 2019/2020 Delivery Years, any such offer may be submitted as Capacity Performance Resource, Base Capacity Resource, or as a coupled offer for Capacity Performance Resource and Base Capacity Resource, provided that, for any such coupled Sell Offers, the offer price of a Capacity Performance Resource offer must be at least \$.01 per MW-day greater than the offer price of a coupled Base Capacity Resource offer. For the 2020/2021 Delivery Year and subsequent Delivery Years, any such



offer must be submitted as a Capacity Performance Resource.

### **5.6.2 Compliance with PJM Credit Policy**

Capacity Market Sellers shall comply with the provisions of the PJM Credit Policy as set forth in Attachment Q to this Tariff, including the provisions specific to the Reliability Pricing Model, prior to submission of Sell Offers in any Reliability Pricing Model Auction. A Capacity Market Seller desiring to submit a Credit-Limited Offer shall specify in its Sell Offer the maximum auction credit requirement, in dollars, and the maximum amount of Unforced Capacity, in megawatts, applicable to its Sell Offer.

### **5.6.3 [reserved]**

### **5.6.4 Qualifying Transmission Upgrades**

A Qualifying Transmission Upgrade may not be the subject of any Sell Offer in a Base Residual Auction unless it has been approved by the Office of the Interconnection, including certification of the increase in Import Capability to be provided by such Qualifying Transmission Upgrade, no later than 45 days prior to such Base Residual Auction. No such approval shall be granted unless, at a minimum, a Facilities Study Agreement has been executed with respect to such upgrade, and such upgrade conforms to all applicable standards of the Regional Transmission Expansion Plan process.

### **5.6.5 Market-based Sell Offers**

Subject to section 6, a Market Seller authorized by FERC to sell electric generating capacity at market-based prices, or that is not required to have such authorization, may submit Sell Offers that specify market-based prices in any Base Residual Auction or Incremental Auction.

### **5.6.6 Availability of Capacity Resources for Sale**

(a) The Office of the Interconnection shall determine the quantity of megawatts of available installed capacity that each Capacity Market Seller must offer in any RPM Auction pursuant to Section 6.6 of Attachment DD, through verification of the availability of megawatts of installed capacity from: (i) all Generation Capacity Resources owned by or under contract to the Capacity Market Seller, including all Generation Capacity Resources obtained through bilateral contract; (ii) the results of prior Reliability Pricing Model Auctions, if any, for such Delivery Year (including consideration of any restriction imposed as a consequence of a prior failure to offer); and (iii) such other information as may be available to the Office of the Interconnection. The Office of the Interconnection shall reject Sell Offers or portions of Sell Offers for Capacity Resources in excess of the quantity of installed capacity from such Capacity Market Seller's Capacity Resource that it determines to be available for sale.

(b) The Office of the Interconnection shall determine the quantity of installed capacity available for sale in a Base Residual Auction or Incremental Auction as of the beginning of the period during which Buy Bids and Sell Offers are accepted for such auction, as applicable, in accordance with the time schedule set forth in the PJM Manuals. Removal of a

resource from Capacity Resource status shall not be reflected in the determination of available installed capacity unless the associated unit-specific bilateral transaction is approved, the designation of such resource (or portion thereof) as a network resource for the external load is demonstrated to the Office of the Interconnection, or equivalent evidence of a firm external sale is provided prior to the deadline established therefor. The determination of available installed capacity shall also take into account, as they apply in proportion to the share of each resource owned or controlled by a Capacity Market Seller, any approved capacity modifications, and existing capacity commitments established in a prior RPM Auction, an FRR Capacity Plan, Locational UCAP transactions and/or replacement capacity transactions under this Attachment DD. To enable the Office of the Interconnection to make this determination, no bilateral transactions for Capacity Resources applicable to the period covered by an auction will be processed from the beginning of the period for submission of Sell Offers and Buy Bids, as appropriate, for that auction until completion of the clearing determination for such auction. Processing of such bilateral transactions will reconvene once clearing for that auction is completed. A Generation Capacity Resource located in the PJM Region shall not be removed from Capacity Resource status to the extent the resource is committed to service of PJM loads as a result of an RPM Auction, FRR Capacity Plan, Locational UCAP transaction and/or by designation as a replacement resource under this Attachment DD.

(c) In order for a bilateral transaction for the purchase and sale of a Capacity Resource to be processed by the Office of the Interconnection, both parties to the transaction must notify the Office of the Interconnection of the transfer of the Capacity Resource from the seller to the buyer in accordance with procedures established by the Office of the Interconnection and set forth in the PJM Manuals. If a material change with respect to any of the prerequisites for the application of Section 5.6.6 to the Generation Capacity Resource occurs, the Capacity Resource Owner shall immediately notify the Market Monitoring Unit and the Office of the Interconnection.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

OATT ATT DD.5.10, OATT ATTACHMENT DD.5.10 Auction Clearing Requirements, 20.0.0, A

Record Narrative Name: OATT ATTACHMENT DD.5.10 Auction Clearing Requirements

Tariff Record ID: 1153

Tariff Record Collation Value: 665330687 Tariff Record Parent Identifier: 1142

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **5.10 Auction Clearing Requirements**

The Office of the Interconnection shall clear each Base Residual Auction and Incremental Auction for a Delivery Year in accordance with the following:

a) Variable Resource Requirement Curve

The Office of the Interconnection shall determine Variable Resource Requirement Curves for the PJM Region and for such Locational Deliverability Areas as determined appropriate in accordance with subsection (a)(iii) for such Delivery Year to establish the level of Capacity Resources that will provide an acceptable level of reliability consistent with the Reliability

Principles and Standards. It is recognized that the variable resource requirement reflected in the Variable Resource Requirement Curve can result in an optimized auction clearing in which the level of Capacity Resources committed for a Delivery Year exceeds the PJM Region Reliability Requirement (for Delivery Years through May 31, 2018, less the Short-Term Resource Procurement Target) or Locational Deliverability Area Reliability Requirement (for Delivery Year through May 31, 2018, less the Short-Term Resource Procurement Target for the Zones associated with such LDA) for such Delivery Year. For any auction, the Updated Forecast Peak Load, and Short-Term Resource Procurement Target applicable to such auction, shall be used, and Price Responsive Demand from any applicable approved PRD Plan, including any associated PRD Reservation Prices, shall be reflected in the derivation of the Variable Resource Requirement Curves, in accordance with the methodology specified in the PJM Manuals.

i) Methodology to Establish the Variable Resource Requirement Curve

Prior to the Base Residual Auction, in accordance with the schedule in the PJM Manuals, the Office of the Interconnection shall establish the Variable Resource Requirement Curve for the PJM Region as follows:

- Each Variable Resource Requirement Curve shall be plotted on a graph on which Unforced Capacity is on the x-axis and price is on the y-axis;
- For the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), (iii) a straight line connecting points (2) and (3), and (iv) a vertical line from point (3) to the x-axis, where:
  - For point (1), price equals: {the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]} divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus the approved PJM Region Installed Reserve Margin (“IRM”)% minus 3%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target;
  - For point (2), price equals: (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset) divided by (one minus the pool-wide average EFORd) and Unforced Capacity equals: [the PJM Region Reliability Requirement multiplied by (100% plus IRM% plus 1%) divided by (100% plus IRM%)], and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target; and

- For point (3), price equals  $[0.2 \text{ times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)}]$  divided by  $(\text{one minus the pool-wide average EFORD})$  and Unforced Capacity equals:  $[\text{the PJM Region Reliability Requirement multiplied by } (100\% \text{ plus IRM\% plus } 5\%) \text{ divided by } (100\% \text{ plus IRM\%})]$ , and for Delivery Years through May 31, 2018, minus the Short-Term Resource Procurement Target;
  - For the 2018/2019 Delivery Year and subsequent Delivery Years, the Variable Resource Requirement Curve for the PJM Region shall be plotted by combining (i) a horizontal line from the y-axis to point (1), (ii) a straight line connecting points (1) and (2), and (iii) a straight line connecting points (2) and (3), where:
    - For point (1), price equals:  $\{\text{the greater of [the Cost of New Entry] or [1.5 times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)]}\}$  divided by  $(\text{one minus the pool-wide average EFORD})$  and Unforced Capacity equals:  $[\text{the PJM Region Reliability Requirement multiplied by } (100\% \text{ plus the approved PJM Region Installed Reserve Margin ("IRM")\% minus } 0.2\%) \text{ divided by } (100\% \text{ plus IRM\%})]$  minus the Short-Term Resource Procurement Target;
    - For point (2), price equals:  $[0.75 \text{ times (the Cost of New Entry minus the Net Energy and Ancillary Service Revenue Offset)}]$  divided by  $(\text{one minus the pool-wide average EFORD})$  and Unforced Capacity equals:  $[\text{the PJM Region Reliability Requirement multiplied by } (100\% \text{ plus IRM\% plus } 2.9\%) \text{ divided by } (100\% \text{ plus IRM\%})]$  minus the Short-Term Resource Procurement Target; and
    - For point (3), price equals zero and Unforced Capacity equals:  $[\text{the PJM Region Reliability Requirement multiplied by } (100\% \text{ plus IRM\% plus } 8.8\%) \text{ divided by } (100\% \text{ plus IRM\%})]$  minus the Short-Term Resource Procurement Target.
- ii) For any Delivery Year, the Office of the Interconnection shall establish a separate Variable Resource Requirement Curve for each LDA for which:
- A. the Capacity Emergency Transfer Limit is less than 1.15 times the Capacity Emergency Transfer Objective, as determined by the Office of the Interconnection in accordance with NERC and Applicable Regional Entity guidelines; or
  - B. such LDA had a Locational Price Adder in any one or more of the three immediately preceding Base Residual Auctions; or

- C. such LDA is determined in a preliminary analysis by the Office of the Interconnection to be likely to have a Locational Price Adder, based on historic offer price levels; provided however that for the Base Residual Auction conducted for the Delivery Year commencing on June 1, 2012, the Eastern Mid-Atlantic Region (“EMAR”), Southwest Mid-Atlantic Region (“SWMAR”), and Mid-Atlantic Region (“MAR”) LDAs shall employ separate Variable Resource Requirement Curves regardless of the outcome of the above three tests; and provided further that the Office of the Interconnection may establish a separate Variable Resource Requirement Curve for an LDA not otherwise qualifying under the above three tests if it finds that such is required to achieve an acceptable level of reliability consistent with the Reliability Principles and Standards, in which case the Office of the Interconnection shall post such finding, such LDA, and such Variable Resource Requirement Curve on its internet site no later than the March 31 last preceding the Base Residual Auction for such Delivery Year. The same process as set forth in subsection (a)(i) shall be used to establish the Variable Resource Requirement Curve for any such LDA, except that the Locational Deliverability Area Reliability Requirement for such LDA shall be substituted for the PJM Region Reliability Requirement and, for Delivery Years through May 31, 2018, the LDA Short-Term Resource Procurement Target shall be substituted for the PJM Region Short-Term Resource Procurement Target. For purposes of calculating the Capacity Emergency Transfer Limit under this section, all generation resources located in the PJM Region that are, or that qualify to become, Capacity Resources, shall be modeled at their full capacity rating, regardless of the amount of capacity cleared from such resource for the immediately preceding Delivery Year.

For each such LDA, for the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection shall (a) determine the Net Cost of New Entry for each Zone in such LDA, with such Net Cost of New Entry equal to the applicable Cost of New Entry value for such Zone minus the Net Energy and Ancillary Services Revenue Offset value for such Zone, and (b) compute the average of the Net Cost of New Entry values of all such Zones to determine the Net Cost of New Entry for such LDA; provided however, that the Net Cost of New Entry for an LDA may be greater than, but shall be no less than, the Net Cost of New Entry determined for any other LDA in which the first LDA resides (immediately or successively) including the Net Cost of New Entry for the RTO. The Net Cost of New Entry for use in an LDA in any Incremental Auction for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years shall be the Net Cost of New Entry used for such LDA in the Base Residual Auction for such Delivery Year.

- iii) Procedure for ongoing review of Variable Resource Requirement Curve

shape.

Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall perform a review of the shape of the Variable Resource Requirement Curve, as established by the requirements of the foregoing subsection. Such analysis shall be based on simulation of market conditions to quantify the ability of the market to invest in new Capacity Resources and to meet the applicable reliability requirements on a probabilistic basis. Based on the results of such review, PJM shall prepare a recommendation to either modify or retain the existing Variable Resource Requirement Curve shape. The Office of the Interconnection shall post the recommendation and shall review the recommendation through the stakeholder process to solicit stakeholder input. If a modification of the Variable Resource Requirement Curve shape is recommended, the following process shall be followed:

- A) If the Office of the Interconnection determines that the Variable Resource Requirement Curve shape should be modified, Staff of the Office of the Interconnection shall propose a new Variable Resource Requirement Curve shape on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - B) The PJM Members shall review the proposed modification to the Variable Resource Requirement Curve shape.
  - C) The PJM Members shall either vote to (i) endorse the proposed modification, (ii) propose alternate modifications or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - D) The PJM Board of Managers shall consider a proposed modification to the Variable Resource Requirement Curve shape, and the Office of the Interconnection shall file any approved modified Variable Resource Requirement Curve shape with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- iv) Cost of New Entry
- A) For the Incremental Auctions for the 2015/2016, 2016/2017, and 2017/2018 Delivery Years, the Cost of New Entry for the PJM Region and for each LDA shall be the respective value used in the Base Residual Auction for such Delivery Year and LDA. For the Delivery Year commencing on June 1, 2018, and continuing thereafter unless and until changed pursuant to subsection (B)

below, the Cost of New Entry for the PJM Region shall be the average of the Cost of New Entry for each CONE Area listed in this section as adjusted pursuant to subsection (a)(iv)(B).

<b>Geographic Location Within the PJM Region Encompassing These Zones</b>	<b>Cost of New Entry in \$/MW-Year</b>
PS, JCP&L, AE, PECO, DPL, RECO ("CONE Area 1")	132,200
BGE, PEPCO ("CONE Area 2")	130,300
AEP, Dayton, ComEd, APS, DQL, ATSI, DEOK, EKPC, Dominion ("CONE Area 3")	128,900
PPL, MetEd, Penelec ("CONE Area 4")	130,300

- B) Beginning with the 2019/2020 Delivery Year, the CONE for each CONE Area shall be adjusted to reflect changes in generating plant construction costs based on changes in the Applicable United States Bureau of Labor Statistics ("BLS") Composite Index, in accordance with the following:

(1) The Applicable BLS Composite Index for any Delivery Year and CONE Area shall be the most recently published twelve-month change, at the time CONE values are required to be posted for the Base Residual Auction for such Delivery Year, in a composite of the BLS Quarterly Census of Employment and Wages for Utility System Construction (weighted 20%), the BLS Producer Price Index for Construction Materials and Components (weighted 50%), and the BLS Producer Price Index Turbines and Turbine Generator Sets (weighted 30%), as each such index is further specified for each CONE Area in the PJM Manuals.

(2) The CONE in a CONE Area shall be adjusted prior to the Base Residual Auction for each Delivery Year by applying the Applicable BLS Composite Index for such CONE Area to the Benchmark CONE for such CONE Area.

(3) The Benchmark CONE for a CONE Area shall be the CONE used for such CONE Area in the Base Residual Auction for the prior Delivery Year (provided, however that the Gross CONE values stated in subsection (a)(iv)(A) above shall be the Benchmark CONE values for the 2018/2019 Delivery Year to which the Applicable BLS Composite Index shall be applied to determine the CONE for subsequent Delivery Years).

(4) Notwithstanding the foregoing, CONE values for any CONE Area for any Delivery Year shall be subject to amendment pursuant to appropriate filings with FERC under the Federal Power Act, including, without limitation, any filings resulting from the process described in section 5.10(a)(vi)(C) or any filing to establish new or revised CONE Areas.

- v) Net Energy and Ancillary Services Revenue Offset

- A) The Office of the Interconnection shall determine the Net Energy and Ancillary Services Revenue Offset each year for the PJM Region as (A) the annual average of the revenues that would have been received by the Reference Resource from the PJM energy markets during a period of three consecutive calendar years preceding the time of the determination, based on (1) the heat rate and other characteristics of such Reference Resource; (2) fuel prices reported during such period at an appropriate pricing point for the PJM Region with a fuel transmission adder appropriate for such region, as set forth in the PJM Manuals, assumed variable operation and maintenance expenses for such resource of \$6.47 per MWh, and actual PJM hourly average Locational Marginal Prices recorded in the PJM Region during such period; and (3) an assumption that the Reference Resource would be dispatched for both the Day-Ahead and Real-Time Energy Markets on a Peak-Hour Dispatch basis; plus (B) ancillary service revenues of \$2,199 per MW-year.
- B) For the Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the Office of the Interconnection will employ for purposes of the Variable Resource Requirement Curves for such Delivery Years the same calculations of the sub-regional Net Energy and Ancillary Services Revenue Offsets that were used in the Base Residual Auctions for such Delivery year and sub-region. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Office of the Interconnection also shall determine a Net Energy and Ancillary Service Revenue Offset each year for each Zone, using the same procedures and methods as set forth in the previous subsection; provided, however, that: (1) the average hourly LMPs for such Zone shall be used in place of the PJM Region average hourly LMPs; (2) if such Zone was not integrated into the PJM Region for the entire applicable period, then the offset shall be calculated using only those whole calendar years during which the Zone was integrated; and (3) a posted fuel pricing point in such Zone, if available, and (if such pricing point is not available in such Zone) a fuel transmission adder appropriate to such Zone from an appropriate PJM Region pricing point shall be used for each such Zone.

vi) Process for Establishing Parameters of Variable Resource Requirement

Curve

- A) The parameters of the Variable Resource Requirement Curve will be established prior to the conduct of the Base Residual Auction for a Delivery Year and will be used for such Base Residual Auction.



- B) The Office of the Interconnection shall determine the PJM Region Reliability Requirement and the Locational Deliverability Area Reliability Requirement for each Locational Deliverability Area for which a Variable Resource Requirement Curve has been established for such Base Residual Auction on or before February 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values will be applied, in accordance with the Reliability Assurance Agreement.
- C) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the calculation of the Cost of New Entry for each CONE Area.
  - 1) If the Office of the Interconnection determines that the Cost of New Entry values should be modified, the Staff of the Office of the Interconnection shall propose new Cost of New Entry values on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 2) The PJM Members shall review the proposed values.
  - 3) The PJM Members shall either vote to (i) endorse the proposed values, (ii) propose alternate values or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
  - 4) The PJM Board of Managers shall consider Cost of New Entry values, and the Office of the Interconnection shall file any approved modified Cost of New Entry values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.
- D) Beginning with the Delivery Year that commences June 1, 2018, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the methodology set forth in this Attachment for determining the Net Energy and Ancillary Services Revenue Offset for the PJM Region and for each Zone.
  - 1) If the Office of the Interconnection determines that the Net Energy and Ancillary Services Revenue Offset

methodology should be modified, Staff of the Office of the Interconnection shall propose a new Net Energy and Ancillary Services Revenue Offset methodology on or before May 15, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.

- 2) The PJM Members shall review the proposed methodology.
- 3) The PJM Members shall either vote to (i) endorse the proposed methodology, (ii) propose an alternate methodology or (iii) recommend no modification, by August 31, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new methodology would be applied.
- 4) The PJM Board of Managers shall consider the Net Revenue Offset methodology, and the Office of the Interconnection shall file any approved modified Net Energy and Ancillary Services Revenue Offset values with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.

b) Locational Requirements

The Office of Interconnection shall establish locational requirements prior to the Base Residual Auction to quantify the amount of Unforced Capacity that must be committed in each Locational Deliverability Area, in accordance with the PJM Reliability Assurance Agreement.

c) Resource Requirements and Constraints

Prior to the Base Residual Auction and each Incremental Auction for the Delivery Years starting on June 1, 2014 and ending May 31, 2017, the Office of the Interconnection shall establish the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and Incremental Auctions for the 2017/2018 Delivery Year, the Office of the Interconnection shall establish the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. Prior to the Base Residual Auction and Incremental Auctions for 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office

of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year.

d) Preliminary PJM Region Peak Load Forecast for the Delivery Year

The Office of the Interconnection shall establish the Preliminary PJM Region Load Forecast for the Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the Base Residual Auction for such Delivery Year.

e) Updated PJM Region Peak Load Forecasts for Incremental Auctions

The Office of the Interconnection shall establish the updated PJM Region Peak Load Forecast for a Delivery Year in accordance with the PJM Manuals by February 1, prior to the conduct of the First, Second, and Third Incremental Auction for such Delivery Year.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

OATT ATT DD.5.11, OATT ATTACHMENT DD.5.11 Posting of Information Relevant to t, 11.0.0, A

Record Narrative Name: OATT ATT DD.5.11 Posting of Information Relevant to the RPM Auctions

Tariff Record ID: 1154

Tariff Record Collation Value: 665688238 Tariff Record Parent Identifier: 1142

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## 5.11 Posting of Information Relevant to the RPM Auctions

a) In accordance with the schedule provided in the PJM Manuals, PJM will post the following information for a Delivery Year prior to conducting the Base Residual Auction for such Delivery Year:

i) The Preliminary PJM Region Peak Load Forecast (for the PJM Region, and allocated to each Zone);

ii) The PJM Region Installed Reserve Margin, the Pool-wide average EFORd, the Forecast Pool Requirement, *and all applicable Capacity Import Limits*;

iii) For the Delivery Years through May 31, 2018, the Demand Resource Factor;

iv) The PJM Region Reliability Requirement, and the Variable Resource Requirement Curve for the PJM Region, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices;

v) The Locational Deliverability Area Reliability Requirement and the Variable Resource Requirement Curve for each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction, including the details of any adjustments to account for Price Responsive Demand and any associated PRD Reservation Prices, and the CETO and CETL values for all Locational Deliverability Areas;

vi) For the Delivery Years starting June 1, 2014 and ending May 31, 2017, the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year; and for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints for the PJM Region and for each Locational Deliverability Area for which PJM is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year. For the 2018/2019 and 2019/2020 Delivery Years, the Office of the Interconnection shall establish the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints for the PJM Region and for each Locational Deliverability Area for which the Office of the Interconnection is required under section 5.10(a) of this Attachment DD to establish a separate VRR Curve for such Delivery Year;

vii) Any Transmission Upgrades that are expected to be in service for such Delivery Year, provided that a Transmission Upgrade that is Backbone Transmission satisfies the project development milestones set forth in section 5.11A;

viii) The bidding window time schedule for each auction to be conducted for such Delivery Year; and

ix) The Net Energy and Ancillary Services Revenue Offset values for the PJM Region for use in the Variable Resource Requirement Curves for the PJM Region and each Locational Deliverability Area for which a separate Variable Resource Requirement Curve has been established for such Base Residual Auction.

b) In addition to the information required to be posted by subsection (a), PJM will post for a Delivery Year, at least sixty (60) days prior to conducting the Base Residual Auction for such Delivery Year, the aggregate megawatt quantity of, for the PJM Region, all Self-Supply Exemption requests under section 5.14(h), all Competitive Entry Exemption requests under section 5.14(h), and such exemptions granted in each such category, and to the extent PJM has made any such determination, notice that PJM has determined that one or more state-sponsored or state-mandated procurement processes is Competitive and Non-Discriminatory pursuant to section 5.14(h).

c) The information listed in (a) will be posted and applicable for the First, Second, Third, and Conditional Incremental Auctions for such Delivery Year, except to the extent updated or adjusted as required by other provisions of this Tariff.

d) In accordance with the schedule provided in the PJM Manuals, PJM will post the Final PJM Region Peak Load Forecast and the allocation to each zone of the obligation resulting from such final forecast, following the completion of the final Incremental Auction (including any Conditional Incremental Auction) conducted for such Delivery Year;

e) In accordance with the schedule provided in the PJM Manuals, PJM will advise owners of Generation Capacity Resources of the updated EFORd values for such Generation

Capacity Resources prior to the conduct of the Third Incremental Auction for such Delivery Year.

f) After conducting the Reliability Pricing Model Auctions, PJM will post the results of each auction as soon thereafter as possible, including any adjustments to PJM Region or LDA Reliability Requirements to reflect Price Responsive Demand with a PRD Reservation Price equal to or less than the applicable Base Residual Auction clearing price. The posted results shall include graphical supply curves that are (a) provided for the entire PJM Region, (b) provided for any Locational Deliverability Area for which there are four (4) or more suppliers, and (c) developed using a formulaic approach to smooth the curves using a statistical technique that fits a smooth curve to the underlying supply curve data while ensuring that the point of intersection between supply and demand curves is at the market clearing price. At such time, PJM also shall post the aggregate megawatt quantity requested and granted in the Self-Supply and Competitive Entry Exemption categories in the EMAAC, MAAC and Rest of RTO LDAs/regions; the aggregate megawatt quantity cleared in the RPM Auction for Self-Supply and Competitive Entry Exemption categories; and the aggregate megawatt quantity of Self-Supply and Competitive Entry Exemptions requested and granted for any LDA other than those specified in the preceding clause if the LDA has more than four new generation projects in the generation interconnection queue that could have offered into the applicable RPM Auction and the LDA had a separate VRR Curve posted for the applicable RPM Auction.

If PJM discovers an error in the initial posting of auction results for a particular Reliability Pricing Model Auction, it shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the fifth business day following the initial publication of the results of the auction. After this initial notification, if PJM determines it is necessary to post modified results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the seventh business day following the initial publication of the results of the auction. Thereafter, PJM must post on its Web site any corrected auction results by no later than 5:00 p.m. of the tenth business day following the initial publication of the results of the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
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 Record Narrative Name: OATT ATTACHMENT DD.5.12 Conduct of RPM Auctions  
 Tariff Record ID: 1156  
 Tariff Record Collation Value: 667475996 Tariff Record Parent Identifier: 1142  
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 Priority Order: 500  
 Record Change Type: CHANGE  
 Record Content Type: 1  
 Associated Filing Identifier:

## **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 and any applicable Capacity Import Limit;
- for Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-Annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;
- For the Delivery Years through May 31, 2018, the PJM Region Reliability Requirement minus the Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement.

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.

For purposes of a Scheduled Incremental Auction, the optimization algorithm shall consider:

- For the Delivery years through May 31, 2018, the PJM Region Reliability Requirement, less the Short-term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the PJM Reliability Requirement;
- 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- For the Delivery Years through May 31, 2018, for each LDA, such LDA's updated Reliability Requirement, less such LDA's Short-Term Resource Procurement Target;
- For the 2018/2019 Delivery Year and subsequent Delivery Years, for each LDA, such LDA's updated Reliability Requirement
- For Delivery Years starting June 1, 2014 and ending May 31, 2017, 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; for the 2017/2018 Delivery Year, the Limited Resource Constraints and the Sub-annual Resource Constraints 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; and for the 2018/2019 and 2019/2020 Delivery Years, the Base Capacity Demand Resource Constraints and the Base Capacity Resource Constraints 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;

- 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) When the requirement to seek additional resource commitments in a Scheduled Incremental Auction 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.

(ii) When 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 5.4(c)(2)(ii), plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD. 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.



(iii) When 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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 (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 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, plus (D) the reduction in Unforced Capacity commitments associated with the *transition provisions* of sections 5.14B and 5.14C of this Attachment DD; 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.

(iv) If none of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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 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, plus, for the Delivery Years through May 31, 2018, the Short-Term Resource Procurement Target Applicable Share for such auction, minus (B) 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. For the Delivery Years through May 31, 2018, if more than one of the tests for adjustment of capacity procurement in subsections (i), (ii), or (iii) 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

(v) If PJM seeks to procure additional capacity in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years due to a triggering of the tests in subsections (i), (ii), (iii) or (iv) 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 in an Incremental Auction for the 2014-15, 2015-16 or 2016-17 Delivery Years 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), (ii), or (iii) 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) above in the Scheduled Incremental Auctions for such Delivery Year that does not clear such auctions, 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 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 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) Conditional Incremental Auction

For each 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 Conditional Incremental Auction;
- All applicable Capacity Import Limits;
- the same Capacity Emergency Transfer Limits that were modeled in the Base Residual Auction, or any updated value resulting from a 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.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
OATT ATT DD.5.14, OATT ATTACHMENT DD.5.14 Clearing Prices and Charges, 18.0.0, A  
Record Narrative Name: OATT ATTACHMENT DD.5.14 Clearing Prices and Charges  
Tariff Record ID: 1158  
Tariff Record Collation Value: 668906202 Tariff Record Parent Identifier: 1142  
Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
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## **5.14 Clearing Prices and Charges**

### **a) Capacity Resource Clearing Prices**

For each Base Residual Auction and Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. The Capacity Resource Clearing Price for each LDA will be the marginal value of system capacity for the PJM Region, without considering locational constraints, adjusted as necessary by any applicable Locational Price Adders, Annual Resource Price Adders, Extended Summer Resource Price Adders, Limited Resource Price Decrements, Sub-Annual Resource Price Decrements, Base Capacity Demand Resource Price Decrements, and Base Capacity Resource Price Decrements, all as determined by the Office of the Interconnection based on the optimization algorithm. If a Capacity Resource is located in more than one Locational Deliverability Area, it shall be paid the highest Locational Price Adder in any applicable LDA in which the Sell Offer for such Capacity Resource cleared. The Annual Resource Price Adder is applicable for Annual Resources only. The Extended Summer Resource Price Adder is applicable for Annual Resources and Extended Summer Demand Resources.

### **b) Resource Make-Whole Payments**

If a Sell Offer specifies a minimum block, and only a portion of such block is needed to clear the market in a Base Residual or Incremental Auction, the MW portion of such Sell Offer needed to clear the market shall clear, and such Sell Offer shall set the marginal value of system capacity. In addition, the Capacity Market Seller shall receive a Resource Make-Whole Payment equal to

the Capacity Resource Clearing Price in such auction times the difference between the Sell Offer's minimum block MW quantity and the Sell Offer's cleared MW quantity. The cost for any such Resource Make-Whole Payments required in a Base Residual Auction or Incremental Auction for adjustment of prior capacity commitments shall be collected pro rata from all LSEs in the LDA in which such payments were made, based on their Daily Unforced Capacity Obligations. The cost for any such Resource Make-Whole Payments required in an Incremental Auction for capacity replacement shall be collected from all Capacity Market Buyers in the LDA in which such payments were made, on a pro-rata basis based on the MWs purchased in such auction.

c) New Entry Price Adjustment

A Capacity Market Seller that submits a Sell Offer based on a Planned Generation Capacity Resource that clears in the BRA for a Delivery Year may, at its election, submit Sell Offers with a New Entry Price Adjustment in the BRAs for the two immediately succeeding Delivery Years if:

1. Such Capacity Market Seller provides notice of such election at the time it submits its Sell Offer for such resource in the BRA for the first Delivery Year for which such resource is eligible to be considered a Planned Generation Capacity Resource. When the Capacity Market Seller provides notice of such election, it must specify whether its Sell Offer is contingent upon qualifying for the New Entry Price Adjustment. The Office of the Interconnection shall not clear such contingent Sell Offer if it does not qualify for the New Entry Price Adjustment.

2. All or any part of a Sell Offer from the Planned Generation Capacity Resource submitted in accordance with section 5.14(c)(1) is the marginal Sell Offer that sets the Capacity Resource Clearing Price for the LDA.

3. Acceptance of all or any part of a Sell Offer that meets the conditions in section 5.14(c)(1)-(2) in the BRA increases the total Unforced Capacity committed in the BRA (including any minimum block quantity) for the LDA in which such Resource will be located from a megawatt quantity below the LDA Reliability Requirement, minus the Short Term Resource Procurement Target, to a megawatt quantity at or above a megawatt quantity at the price-quantity point on the VRR Curve at which the price is 0.40 times the applicable Net CONE divided by (one minus the pool-wide average EFORD).

4. Such Capacity Market Seller submits Sell Offers in the BRA for the two immediately succeeding Delivery Years for the entire Unforced Capacity of such Generation Capacity Resource committed in the first BRA under section 5.14(c)(1)-(2) equal to the lesser of: A) the price in such seller's Sell Offer for the BRA in which such resource qualified as a Planned Generation Capacity Resource that satisfies the conditions in section 5.14(c)(1)-(3); or B) 0.90 times the Net CONE applicable in the first BRA in which such Planned Generation Capacity Resource meeting the conditions in section 5.14(c)(1)-(3) cleared, on an Unforced Capacity basis, for such LDA.

5. If the Sell Offer is submitted consistent with section 5.14(c)(1)-(4) the foregoing conditions, then:

- (i) in the first Delivery Year, the Resource sets the Capacity Resource Clearing Price for the LDA and all cleared resources in the LDA receive the Capacity Resource Clearing Price set by the Sell Offer as the marginal offer, in accordance with sections 5.12(a) and 5.14(a).
- (ii) in either of the subsequent two BRAs, if any part of the Sell Offer from the Resource clears, it shall receive the Capacity Resource Clearing Price for such LDA for its cleared capacity and for any additional minimum block quantity pursuant to section 5.14(b); or
- (iii) if the Resource does not clear, it shall be deemed resubmitted at the highest price per MW-day at which the megawatt quantity of Unforced Capacity of such Resource that cleared the first-year BRA will clear the subsequent-year BRA pursuant to the optimization algorithm described in section 5.12(a) of this Attachment, and
- (iv) the resource with its Sell Offer submitted shall clear and shall be committed to the PJM Region in the amount cleared, plus any additional minimum-block quantity from its Sell Offer for such Delivery Year, but such additional amount shall be no greater than the portion of a minimum-block quantity, if any, from its first-year Sell Offer satisfying section 5.14(c)(1)-(3) that is entitled to compensation pursuant to section 5.14(b) of this Attachment; and
- (v) the Capacity Resource Clearing Price, and the resources cleared, shall be re-determined to reflect the resubmitted Sell Offer. In such case, the Resource for which the Sell Offer is submitted pursuant to section 5.14(c)(1)-(4) shall be paid for the entire committed quantity at the Sell Offer price that it initially submitted in such subsequent BRA. The difference between such Sell Offer price and the Capacity Resource Clearing Price (as well as any difference between the cleared quantity and the committed quantity), will be treated as a Resource Make-Whole Payment in accordance with Section 5.14(b). Other capacity resources that clear the BRA in such LDA receive the Capacity Resource Clearing Price as determined in Section 5.14(a).

6. The failure to submit a Sell Offer consistent with Section 5.14(c)(i)-(iii) in the BRA for Delivery Year 3 shall not retroactively revoke the New Entry Price Adjustment for Delivery Year 2. However, the failure to submit a Sell Offer consistent with section 5.14(c)(4) in the BRA for Delivery Year 2 shall make the resource ineligible for the New Entry Pricing Adjustment for Delivery Years 2 and 3.

7. For each Delivery Year that the foregoing conditions are satisfied, the

Office of the Interconnection shall maintain and employ in the auction clearing for such LDA a separate VRR Curve, notwithstanding the outcome of the test referenced in Section 5.10(a)(ii) of this Attachment.

8. On or before August 1, 2012, PJM shall file with FERC under FPA section 205, as determined necessary by PJM following a stakeholder process, tariff changes to establish a long-term auction process as a not unduly discriminatory means to provide adequate long-term revenue assurances to support new entry, as a supplement to or replacement of this New Entry Price Adjustment.

d) Qualifying Transmission Upgrade Payments

A Capacity Market Seller that submitted a Sell Offer based on a Qualifying Transmission Upgrade that clears in the Base Residual Auction shall receive a payment equal to the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA into which the Qualifying Transmission Upgrade is to increase Capacity Emergency Transfer Limit, less the Capacity Resource Clearing Price, including any Locational Price Adder, of the LDA from which the upgrade was to provide such increased CETL, multiplied by the megawatt quantity of increased CETL cleared from such Sell Offer. Such payments shall be reflected in the Locational Price Adder determined as part of the Final Zonal Capacity Price for the Zone associated with such LDAs, and shall be funded through a reduction in the Capacity Transfer Rights allocated to Load-Serving Entities under section 5.15, as set forth in that section. PJMSettlement shall be the Counterparty to any cleared capacity transaction resulting from a Sell Offer based on a Qualifying Transmission Upgrade.

e) Locational Reliability Charge

In accordance with the Reliability Assurance Agreement, each LSE shall incur a Locational Reliability Charge (subject to certain offsets and other adjustments as described in sections 5.13, 5.14A, 5.14B, 5.14C, 5.14D, and 5.15) equal to such LSE's Daily Unforced Capacity Obligation in a Zone during such Delivery Year multiplied by the applicable Final Zonal Capacity Price in such Zone. PJMSettlement shall be the Counterparty to the LSEs' obligations to pay, and payments of, Locational Reliability Charges.

f) The Office of the Interconnection shall determine Zonal Capacity Prices in accordance with the following, based on the optimization algorithm:

i) The Office of the Interconnection shall calculate and post the Preliminary Zonal Capacity Prices for each Delivery Year following the Base Residual Auction for such Delivery Year. The Preliminary Zonal Capacity Price for each Zone shall be the sum of: 1) the marginal value of system capacity for the PJM Region, without considering locational constraints; 2) the Locational Price Adder, if any, for the LDA in which such Zone is located; provided however, that if the Zone contains multiple LDAs with different Capacity Resource Clearing Prices, the Zonal Capacity Price shall be a weighted average of the Capacity Resource Clearing Prices for such LDAs, weighted by the Unforced Capacity of Capacity Resources cleared in each such LDA; 3) an adjustment, if required, to account for adders paid to Annual

Resources and Extended Summer Demand Resources in the LDA for which the zone is located; 4) an adjustment, if required, to account for Resource Make-Whole Payments; and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits, all as determined in accordance with the optimization algorithm.

ii) The Office of the Interconnection shall calculate and post the Adjusted Zonal Capacity Price following each Incremental Auction. The Adjusted Zonal Capacity Price for each Zone shall equal the sum of: (1) the average marginal value of system capacity weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (2) the average Locational Price Adder weighted by the Unforced Capacity cleared in all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (3) an adjustment, if required, to account for adders paid to Annual Resources and Extended Summer Demand Resources for all auctions previously conducted for such Delivery Year (excluding any Unforced Capacity cleared as replacement capacity); (4) an adjustment, if required, to account for Resource Make-Whole Payments for all actions previously conducted (excluding any Resource Make-Whole Payments to be charged to the buyers of replacement capacity); and (5) an adjustment, if required to provide sufficient revenue for payment of any PRD Credits. The Adjusted Zonal Capacity Price may decrease if Unforced Capacity is decommitted or the Resource Clearing Price decreases in an Incremental Auction.

iii) The Office of the Interconnection shall calculate and post the Final Zonal Capacity Price for each Delivery Year after the final auction is held for such Delivery Year, as set forth above. The Final Zonal Capacity Price for each Zone shall equal the Adjusted Zonal Capacity Price, as further adjusted to reflect any decreases in the Nominated Demand Resource Value of any existing Demand Resource cleared in the Base Residual Auction and Second Incremental Auction.

g) Resource Substitution Charge

Each Capacity Market Buyer in an Incremental Auction securing replacement capacity shall pay a Resource Substitution Charge equal to the Capacity Resource Clearing Price resulting from such auction multiplied by the megawatt quantity of Unforced Capacity purchased by such Market Buyer in such auction.

h) Minimum Offer Price Rule for Certain Generation Capacity Resources

(1) General Rule. Any Sell Offer submitted in any RPM Auction for any Delivery Year based on a MOPR Screened Generation Resource shall have an offer price no lower than the MOPR Floor Offer Price for the period specified in this subsection (h), unless the Capacity Market Seller has obtained a Self-Supply Exemption, a Competitive Entry Exemption, or a Unit-Specific Exception with respect to such MOPR Screened Generation Resource in such auction prior to the submission of such offer, in accordance with the provisions of this subsection. Nothing in subsection (c) of this section 5.14 shall be read to excuse compliance of any Sell Offer with the requirements of this subsection (h). \_



(2) Applicability. A MOPR Screened Generation Resource shall be any Generation Capacity Resource, and any uprate to a Generation Capacity Resource that is being, or has been, modified to increase the number of megawatts of available installed capacity thereof by 20 MW or more, based on a combustion turbine, combined cycle, or integrated gasification combined cycle generating plant (including Repowering of an existing plant whenever the repowered plant utilizes combustion turbine, combined cycle, or integrated gasification combined cycle *technology*) with an installed capacity rating, combined for all units comprising such resource at a single point of interconnection to the Transmission System, of no less than 20 MW; provided, however, that a MOPR Screened Generation Resource shall not include: (i) the Installed Capacity equivalent (measured as of the time of clearing) of any of a resource's Unforced Capacity that has cleared any RPM Auction conducted prior to February 1, 2013 *or an uprate of such resource to the extent that the developer or owner of the uprate timely submitted a request for, and PJM issued, an offer floor pursuant to the unit-specific exception process of this subsection (h) before the start of the commencement of the Base Residual Auction for the 2016/2017 Delivery Year and the capacity associated with the uprate clears that auction;* (ii) any unit primarily fueled with landfill gas; (iii) any cogeneration unit that is certified or self-certified as a Qualifying Facility (*as defined in Part 292 of FERC's regulations*), where the Capacity Market Seller is *the owner of the Qualifying Facility or has contracted for the Unforced Capacity of such facility* and the Unforced Capacity of the unit is no larger than approximately all of the Unforced Capacity Obligation of the host load, and all Unforced Capacity of the unit is used to meet the Unforced Capacity Obligation of the host load. A MOPR Screened Generation Resource shall include all Generation Capacity Resources located in the PJM Region that meet the foregoing criteria, and all Generation Capacity Resources located outside the PJM Region (where such Sell Offer is based solely on such resource) that entered commercial service on or after January 1, 2013, that meet the foregoing criteria and that require sufficient transmission investment for delivery to the PJM Region to indicate a long-term commitment to providing capacity to the PJM Region.

(3) MOPR Floor Offer Price. The MOPR Floor Offer Price shall be 100% of the Net Asset Class Cost of New Entry for the relevant generator type and location, as determined hereunder. The gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be, for purposes of the *2018/2019 Delivery Year and subsequent Delivery Years*, the values indicated in the table below for each CONE Area for a combustion turbine generator ("CT"), a combined cycle generator ("CC"), and an integrated gasification combined cycle generator ("IGCC"), respectively, and shall be adjusted for subsequent Delivery Years in accordance with subsection (h)(3)(i) below. *For purposes of Incremental Auctions for the 2015/2016, 2016/2017 and 2017/2018 Delivery Years, the MOPR Floor Offer Price shall be the same as that used in the Base Residual Auction for such Delivery Year.* The estimated energy and ancillary service revenues for each type of plant shall be determined as described in subsection (h)(3)(ii) below.

	CONE Area 1	CONE Area 2	CONE Area 3	CONE Area 4
CT \$/MW-yr	132,200	130,300	128,900	130,300
CC \$/MW-yr	185,700	176,000	172,600	179,400
IGCC \$/MW-yr	582,042	558,486	547,240	537,306

i) Commencing with the Delivery Year that begins on June 1, 2019, the gross Cost of New Entry component of the Net Asset Class Cost of New Entry shall be adjusted to reflect changes in generating plant construction costs in the same manner as set forth for the cost of new entry in section 5.10(a)(iv)(B), provided, however, *that the Applicable BLS Composite Index used for CC plants shall be calculated from the three indices referenced in that section but weighted 25% for the wages index, 60% for the construction materials index, and 15% for the turbines index, and provided further* that nothing herein shall preclude the Office of the Interconnection from filing to change the Net Asset Class Cost of New Entry for any Delivery Year pursuant to appropriate filings with FERC under the Federal Power Act.

ii) For purposes of this provision, the net energy and ancillary services revenue estimate for a combustion turbine generator shall be that determined by section 5.10(a)(v)(A) of this Attachment DD, provided that the energy revenue estimate for each CONE Area shall be based on the Zone within such CONE Area that has the highest energy revenue estimate calculated under the methodology in that subsection. The net energy and ancillary services revenue estimate for a combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator in the previous sentence, except that the heat rate assumed for the combined cycle resource shall be 6.722 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$3.23 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3198 per MW-year. The net energy and ancillary services revenue estimate for an integrated gasification combined cycle generator shall be determined in the same manner as that prescribed for a combustion turbine generator above, except that the heat rate assumed for the combined cycle resource shall be 8.7 MMBtu/Mwh, the variable operations and maintenance expenses for such resource shall be \$7.77 per MWh, the Peak-Hour Dispatch scenario for both the Day-Ahead and Real-Time Energy Markets shall be modified to dispatch the resource continuously during the full peak-hour period, as described in section 2.46, for each such period that the resource is economic (using the test set forth in such section), rather than only during the four-hour blocks within such period that such resource is economic, and the ancillary service revenues shall be \$3,198 per MW-year.

(4) Duration. The MOPR Floor Offer Price shall apply to any Sell Offer based on a MOPR Screened Generation Resource (to the extent an exemption has not been obtained for such resource under this subsection) until (*and including*) the *first Delivery Year* for which a Sell Offer based on the non-exempt portion of such resource has cleared an RPM Auction.

(5) Effect of Exemption or Exception. To the extent a Sell Offer in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, either a Competitive Entry Exemption or a Self-Supply Exemption, such offer (to the extent of such exemption) may include an offer price below the MOPR Floor Offer Price (including, without limitation, an offer price of zero or other indication of intent to clear regardless of price). *To the extent a Sell Offer*

*in any RPM Auction for any Delivery Year is based on a MOPR Screened Generation Resource for which the Capacity Market Seller obtains, prior to the submission of such offer, a Unit-Specific Exception, such offer (to the extent of such exception) may include an offer price below the MOPR Floor Offer Price but no lower than the minimum offer price determined in such exception process. The Installed Capacity equivalent of any MOPR Screened Generation Resource's Unforced Capacity that has both obtained such an exemption or exception and cleared the RPM Auction for which it obtained such exemption or exception shall not be subject to a MOPR Floor Offer Price in any subsequent RPM Auction, except as provided in subsection (h)(10) hereof.*

(6) Self-Supply Exemption. A Capacity Market Seller that is a Self-Supply LSE may qualify its MOPR Screened Generation Resource in any RPM Auction for any Delivery Year for a Self-Supply Exemption if the MOPR Screened Generation Resource satisfies the criteria specified below:

i) Cost and revenue criteria. The costs and revenues associated with a MOPR Screened Generation Resource for which a Self-Supply LSE seeks a Self-Supply Exemption may permissibly reflect: (A) payments, concessions, rebates, subsidies, or incentives designed to incent or promote, or participation in a program, contract, or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (B) payments, concessions, rebates, subsidies or incentives from a county or other local government authority designed to incent, or participation in a program, contract or other arrangement established by a county or other local governmental authority utilizing eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; (C) revenues received by the Self-Supply LSE attributable to the inclusion of costs of the MOPR Screened Generation Resource in such LSE's regulated retail rates where such LSE is a *Vertically Integrated Utility* and the MOPR Screened Generation Resource is planned consistent with such LSE's most recent integrated resource plan found reasonable by the RERRA to meet the needs of its customers; and (D) payments to the Self-Supply LSE (such as retail rate recovery) traditionally associated with revenues and costs of Public Power Entities (or joint action of multiple Public Power Entities); revenues to a Public Power Entity from its contracts having a term of one year or more with its members or customers (including wholesale power contracts between an electric cooperative and its members); or cost or revenue advantages related to a longstanding business model employed by the Self-Supply LSE, such as its financial condition, tax status, access to capital, or other similar conditions affecting the Self-Supply LSE's costs and revenues. A Self-Supply Exemption shall not be permitted to the extent that the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, has any formal or informal agreements or arrangements to seek, recover, accept or receive: (E) any material payments, concessions, rebates, or subsidies, connected to the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource, not described by (A) through (D) of this section; or (F) other support through contracts having a term of one year or more obtained in any procurement process sponsored or mandated by any state legislature or agency connected with the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource. Any cost and revenue advantages described by (A) through (D) of this subsection that are material to the cost of the MOPR Screened Generation Resource and that are irregular or anomalous, that do not reflect arms-length transactions, or that

are not in the ordinary course of the Self-Supply LSE's business, shall disqualify application of the Self-Supply Exemption unless the Self-Supply LSE demonstrates in the exemption process provided hereunder that such costs and revenues are consistent with the overall objectives of the Self-Supply Exemption.

ii) **Owned and Contracted Capacity.** To qualify for the Self-Supply Exemption, the Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, must demonstrate that the MOPR Screened Generation Resource is included in such LSE's Owned and Contracted Capacity and that its Owned and Contracted Capacity meets the criteria outlined below after the addition of such MOPR Screened Generation Resource.

iii) **Maximum Net Short Position.** If the excess, if any, of the Self-Supply LSE's Estimated Capacity Obligation above its Owned and Contracted Capacity ("Net Short") is less than the amount of Unforced Capacity specified in or calculated under the table below for all relevant areas based on the specified type of LSE, then this exemption criterion is satisfied. For this purpose, the Net Short position shall be calculated for any Self-Supply LSE requesting this exemption for the PJM Region and for each LDA specified in the table below in which the MOPR Screened Generation Resource is located (including through nesting of LDAs) to the extent the Self-Supply LSE has an Estimated Capacity Obligation in such LDA. If the Self-Supply LSE does not have an Estimated Capacity Obligation in an evaluated LDA, then the Self-Supply LSE is deemed to satisfy the test for that LDA.

Type of Self-Supply LSE	Maximum Net Short Position (UCAP MW, measured at RTO, MAAC, SWMAAC and EMAAC unless otherwise specified)
Single Customer Entity	150 MW
Public Power Entity	1000 MW
Multi-state Public Power Entity*	1000 MW in SWMAAC, EMAAC, or MAAC LDAs and 1800 MW RTO
Vertically Integrated Utility	20% of LSE's Reliability Requirement

\*A Multi-state Public Power Entity shall not have more than 90% of its total load in any one state.

iv) **Maximum Net Long Position.** If the excess, if any, of the Self-Supply LSE's Owned and Contracted Capacity for the PJM Region above its Estimated Capacity Obligation for the PJM Region ("Net Long"), is less than the amount of Unforced Capacity specified in or calculated under the table below, then this exemption criterion is satisfied:

Self-Supply LSE Total Estimated Capacity Obligation in the PJM Region (UCAP MW)	Maximum Net Long Position (UCAP MW)
Less than 500	75 MW
Greater than or equal to 500 and less	15% of LSE's Estimated Capacity

than 5,000	Obligation
Greater than or equal to 5,000 and less than 15,000	750 MW
Greater than or equal to 15,000 and less than 25,000	1,000 MW
Greater than or equal to 25,000	4% of LSE's Estimated Capacity Obligation capped at 1300 MWs

If the MOPR Screened Generation Resource causes the Self-Supply LSE's Net Long Position to exceed the applicable threshold stated above, the MOPR Floor Offer Price shall apply, for the Delivery Year in which such threshold is exceeded, only to the quantity of Unforced Capacity of such resource that exceeds such threshold. In such event, such Unforced Capacity of such resource shall be subject to the MOPR Floor Offer Price for the period specified in subsection (h)(4) hereof; provided however, that any such Unforced Capacity that did not qualify for such exemption for such Delivery Year may qualify for such exemption in any RPM Auction for a future Delivery Year to the extent the Self-Supply LSE's future load growth accommodates the resource under the Net Long Position criteria.

v) *Beginning with the Delivery Year that commences June 1, 2020, and continuing no later than for every fourth Delivery Year thereafter, the Office of the Interconnection shall review the Maximum Net Short and Net Long positions, as required by the foregoing subsection. Such review may include, without limitation, analyses under various appropriate scenarios of the minimum net short quantities at which the benefit to an LSE of a clearing price reduction for its capacity purchases from the RPM Auction outweighs the cost to the LSE of a new generating unit that is offered at an uneconomic price, and may, to the extent appropriate, reasonably balance the need to protect the market with the need to accommodate the normal business operations of Self-Supply LSEs. Based on the results of such review, PJM shall propose either to modify or retain the existing Maximum Net Short and Net Long positions. The Office of the Interconnection shall post publicly and solicit stakeholder comment regarding the proposal. If, as a result of this process, changes to the Maximum Net Short and/or Net Long positions are proposed, the Office of the Interconnection shall file such modified Maximum Net Short and/or Net Long positions with the FERC by October 1, prior to the conduct of the Base Residual Auction for the first Delivery Year in which the new values would be applied.*

vi) **Officer Certification.** The Self-Supply LSE, acting either as the Capacity Market Seller or on behalf of the Capacity Market Seller, shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller's decision to submit a Sell Offer into the RPM Auction for the MOPR Screened Generation Resource and seek an exemption from the MOPR Floor Offer Price for such resource, and to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection in support of its exemption request is true and correct and the MOPR Screened Generation Resource will be Owned and Contracted Capacity for the purpose of self-supply for the benefit of the Self-Supply LSE; (B) the Self-Supply LSE has disclosed all material facts relevant to the exemption request; and (C) the

Capacity Market Seller satisfies the criteria for the exemption.

vii) For purposes of the Self-Supply Exemption:

(A) “Self-Supply LSE” means the following types of Load Serving Entity, which operate under long-standing business models: Municipal/Cooperative Entity, Single Customer Entity, or Vertically Integrated Utility.

(B) “Municipal/Cooperative Entity” means cooperative and municipal utilities, including public power supply entities comprised of either or both of the same, and joint action agencies.

(C) “Vertically Integrated Utility” means a utility that owns generation, includes such generation in its regulated rates, and earns a regulated return on its investment in such generation.

(D) “Single Customer Entity” means an LSE that serves at retail only customers that are under common control with such LSE, where such control means holding 51% or more of the voting securities or voting interests of the LSE and all its retail customers.

(E) All capacity calculations shall be on an Unforced Capacity basis.

(F) Estimated Capacity Obligations and Owned and Contracted Capacity shall be measured on a three-year average basis for the three years starting with the first day of the Delivery Year associated with the RPM Auction for which the exemption is being sought (“MOPR Exemption Measurement Period”). Such measurements shall be verified by PJM using the latest available data that PJM uses to determine capacity obligations.

(G) The Self-Supply LSE’s Estimated Capacity Obligation shall be the average, for the three Delivery Years of the MOPR Exemption Measurement Period, of the Self-Supply LSE’s estimated share of the most recent available Zonal Peak Load Forecast for each such Delivery Year for each Zone in which the Self-Supply LSE will serve load during such Delivery Year, times the Forecast Pool Requirement established for the first such Delivery Year, shall be stated on an Unforced Capacity basis. The Self-Supply LSE’s share of such load shall be determined by the ratio of: (1) the peak load contributions, from the most recent summer peak for which data is available at the time of the exemption request, of the customers or areas within each Zone for which such LSE will have load-serving responsibility during the first Delivery Year of the MOPR Exemption Measurement Period to (2) the weather-normalized summer peak load of such Zone for the same summer peak period addressed in the previous clause. *Notwithstanding the foregoing, solely in the case of any Self-Supply LSE that demonstrates to the Office of the Interconnection that its annual peak load occurs in the winter, such LSE’s Estimated Capacity Obligation determined solely for the purposes of this subsection 5.14(h) shall be based on its winter peak.* Once submitted, an exemption request shall not be subject

to change due to later revisions to the PJM load forecasts for such Delivery Years. The Self-Supply LSE's Estimated Capacity Obligation shall be limited to the LSE's firm obligations to serve specific identifiable customers or groups of customers including native load obligations and specific load obligations in effective contracts for which the term of the contract includes at least a portion of the Delivery Year associated with the RPM Auction for which the exemption is requested (and shall not include load that is speculative or load obligations that are not native load or customer specific); as well as retail loads of entities that directly (as through charges on a retail electric bill) or indirectly, contribute to the cost recovery of the MOPR Screened Generation Resource; provided, however, nothing herein shall require a Self-Supply LSE that is a joint owner of a MOPR Screened Generation Resource to aggregate its expected loads with the loads of any other joint owner for purposes of such Self-Supply LSE's exemption request.

(H) "Owned and Contracted Capacity" includes all of the Self-Supply LSE's qualified Capacity Resources, whether internal or external to PJM. For purposes of the Self-Supply Exemption, Owned and Contracted Capacity includes Generation Capacity Resources without regard to whether such resource has failed or could fail the Competitive and Non-Discriminatory procurement standard of the Competitive Entry Exemption. To qualify for a Self-Supply Entry exemption, the MOPR Screened Generation must be used by the Self-Supply LSE, meaning such Self-Supply LSE is the beneficial off-taker of such generation such that the owned or contracted for MOPR Screened Generation is for the Self-Supply LSE's use to supply its customer(s).

(I) If multiple entities will have an ownership or contractual share in, or are otherwise sponsoring, the MOPR Screened Generation Resource, the positions of each such entity will be measured and considered for a Self-Supply Exemption with respect to the individual Self-Supply LSE's ownership or contractual share of such resource.

(7) Competitive Entry Exemption. A Capacity Market Seller may qualify a MOPR Screened Generation Resource for a Competitive Entry Exemption in any RPM Auction for any Delivery Year if the Capacity Market Seller demonstrates that the MOPR Screened Generation Resource satisfies all of the following criteria:

i) No costs of the MOPR Screened Generation Resource are recovered from customers either directly or indirectly through a non-bypassable charge, *except in the event that Sections 5.14(h)(7)(ii) and (iii), to the extent either or both are applicable to such resource, are satisfied.*

ii) No costs of the MOPR Screened Generation Resource are supported through any contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes that are not Competitive and Non-Discriminatory. The Office of the Interconnection and the Market Monitoring Unit may deem a procurement process to be "Competitive and Non-Discriminatory" only if: (A) both new and existing resources may satisfy the requirements of the procurement; (B) the requirements of the procurement are fully objective and transparent; (C) the procurement terms do not restrict the

type of capacity resources that may participate in and satisfy the requirements of the procurement; (D) the procurement terms do not include selection criteria that could give preference to new resources; and (E) the procurement terms do not use indirect means to discriminate against existing capacity, such as geographic constraints inconsistent with LDA import capabilities, unit technology or unit fuel requirements or unit heat-rate requirements, identity or nature of seller requirements, or requirements for new construction.

iii) The Capacity Market Seller does not have any formal or informal agreements or arrangements to seek, recover, accept or receive any (A) material payments, concessions, rebates, or subsidies directly or indirectly from any governmental entity connected with the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource, or (B) other material support through contracts having a term of one year or more obtained in any state-sponsored or state-mandated procurement processes, connected to the construction, or clearing in any RPM Auction, of the MOPR Screened Generation Resource. These restrictions shall not include (C) payments (including payments in lieu of taxes), concessions, rebates, subsidies, or incentives designed to incent, or participation in a program, contract or other arrangement that utilizes criteria designed to incent or promote, general industrial development in an area; (D) payments, concessions, rebates, subsidies or incentives designed to incent, or participation in a program, contract or other arrangements from a county or other local governmental authority using eligibility or selection criteria designed to incent, siting facilities in that county or locality rather than another county or locality; or (E) federal government production tax credits, investment tax credits, and similar tax advantages or incentives that are available to generators without regard to the geographic location of the generation.

iv) The Capacity Market Seller shall submit a sworn, notarized certification of a duly authorized officer, certifying that the officer has personal knowledge of, or has engaged in a diligent inquiry to determine, the facts and circumstances supporting the Capacity Market Seller's decision to submit a Sell Offer into the RPM Auction for the MOPR Screened Generation Resource and seek an exemption from the MOPR Floor Offer Price for such resource, and, to the best of his/her knowledge and belief: (A) the information supplied to the Market Monitoring Unit and the Office of Interconnection to support its exemption is true and correct and the resource is being constructed or contracted for purposes of competitive entry by the Capacity Market Seller; (B) the Capacity Market Seller has disclosed all material facts relevant to the request for the exemption; and (C) the exemption request satisfies the criteria for the exemption.

(8) *Unit-Specific Exception. A Capacity Market Seller intending to submit a Sell Offer in any RPM Auction below the MOPR Floor Offer Price for any Delivery Year based on a MOPR Screened Generation Resource may, at its election, submit a request for a Unit-Specific Exception in addition to, or in lieu of, a request for a Self-Supply Exemption or a Competitive Entry Exemption, for such MOPR Screened Generation Resource. A Sell Offer meeting the Unit-Specific Exception criteria in this subsection shall be permitted and shall not be re-set to the MOPR Floor Offer Price if the Capacity Market Seller obtains a determination from the Office of the Interconnection or the Commission, prior to the RPM Auction in which it seeks to submit the Sell Offer, that such Sell Offer is permissible because it is consistent with the competitive, cost-based, fixed, net cost of new entry were the resource to rely solely on revenues from PJM-administered markets. The following requirements shall apply to requests for such*



*determinations:*

i) *The Capacity Market Seller shall submit a written request with all of the required documentation as described below and in the PJM Manuals. For such purpose, per subsection (h)(9)(i) below, the Office of the Interconnection shall post a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price expected to be established hereunder. If the MOPR Floor Offer Price subsequently established for the relevant Delivery Year is less than the Sell Offer, the Sell Offer shall be permitted and no exception shall be required.*

ii) *As more fully set forth in the PJM Manuals, the Capacity Market Seller must include in its request for an exception under this subsection documentation to support the fixed development, construction, operation, and maintenance costs of the MOPR Screened Generation Resource, as well as estimates of offsetting net revenues. Estimates of costs or revenues shall be supported at a level of detail comparable to the cost and revenue estimates used to support the Net Asset Class Cost of New Entry established under this section 5.14(h). As more fully set forth in the PJM Manuals, supporting documentation for project costs may include, as applicable and available, a complete project description; environmental permits; vendor quotes for plant or equipment; evidence of actual costs of recent comparable projects; bases for electric and gas interconnection costs and any cost contingencies; bases and support for property taxes, insurance, operations and maintenance (“O&M”) contractor costs, and other fixed O&M and administrative or general costs; financing documents for construction-period and permanent financing or evidence of recent debt costs of the seller for comparable investments; and the bases and support for the claimed capitalization ratio, rate of return, cost-recovery period, inflation rate, or other parameters used in financial modeling. Such documentation also shall identify and support any sunk costs that the Capacity Market Seller has reflected as a reduction to its Sell Offer. The request shall include a certification, signed by an officer of the Capacity Market Seller, that the claimed costs accurately reflect, in all material respects, the seller’s reasonably expected costs of new entry and that the request satisfies all standards for a Unit-Specific Exception hereunder. The request also shall identify all revenue sources relied upon in the Sell Offer to offset the claimed fixed costs, including, without limitation, long-term power supply contracts, tolling agreements, or tariffs on file with state regulatory agencies, and shall demonstrate that such offsetting revenues are consistent, over a reasonable time period identified by the Capacity Market Seller, with the standard prescribed above. In making such demonstration, the Capacity Market Seller may rely upon forecasts of competitive electricity prices in the PJM Region based on well defined models that include fully documented estimates of future fuel prices, variable operation and maintenance expenses, energy demand, emissions allowance prices, and expected environmental or energy policies that affect the seller’s forecast of electricity prices in such region, employing input data from sources readily available to the public. Documentation for net revenues also may include, as available and applicable, plant performance and capability information, including heat rate, start-up times and costs, forced outage rates, planned outage schedules, maintenance cycle, fuel costs and other variable operations and maintenance expenses, and ancillary service capabilities.*

iii) *A Sell Offer evaluated under the Unit-Specific Exception shall be*

*permitted if the information provided reasonably demonstrates that the Sell Offer's competitive, cost-based, fixed, net cost of new entry is below the MOPR Floor Offer Price, based on competitive cost advantages relative to the costs implied by the MOPR Floor Offer Price, including, without limitation, competitive cost advantages resulting from the Capacity Market Seller's business model, financial condition, tax status, access to capital or other similar conditions affecting the applicant's costs, or based on net revenues that are reasonably demonstrated hereunder to be higher than those implied by the MOPR Floor Offer Price. Capacity Market Sellers shall be asked to demonstrate that claimed cost advantages or sources of net revenue that are irregular or anomalous, that do not reflect arm's-length transactions, or that are not in the ordinary course of the Capacity Market Seller's business are consistent with the standards of this subsection. Failure to adequately support such costs or revenues so as to enable the Office of the Interconnection to make the determination required in this section will result in denial of a Unit-Specific Exception hereunder by the Office of the Interconnection.*

(9) Exemption/Exception Process.

i) *The Office of the Interconnection shall post, by no later than one hundred fifty (150) days prior to the commencement of the offer period for an RPM Auction, a preliminary estimate for the relevant Delivery Year of the MOPR Floor Offer Price.*

ii) *The Capacity Market Seller must submit its request for a Unit-Specific Exception, Competitive Entry Exemption or a Self-Supply Exemption in writing simultaneously to the Market Monitoring Unit and the Office of Interconnection by no later than one hundred thirty five (135) days prior to the commencement of the offer period for the RPM Auction in which such seller seeks to submit its Sell Offer. The Capacity Market Seller shall include in its request a description of its MOPR Screened Generation Resource, the exemption or exception that the Capacity Market Seller is requesting, and all documentation necessary to demonstrate that the exemption or exception criteria are satisfied, including without limitation the applicable certification(s) specified in this subsection (h). In addition to the documentation identified herein and in the PJM Manuals, the Capacity Market Seller shall provide any additional supporting information reasonably requested by the Office of the Interconnection or the Market Monitoring Unit to evaluate the Sell Offer. Requests for additional documentation will not extend the deadline by which the Office of the Interconnection or the Market Monitoring Unit must provide their determinations of the exemption request. The Capacity Market Seller shall have an ongoing obligation through the closing of the offer period for the RPM Auction to update the request to reflect any material changes in the request.*

iii) *As further described in Section II.D. of Attachment M-Appendix to this Tariff, the Market Monitoring Unit shall review the request and supporting documentation and shall provide its determination by no later than forty-five (45) days after receipt of the exemption or exception request. The Office of the Interconnection shall also review all exemption and exception requests to determine whether the request is acceptable in accordance with the standards and criteria under this section 5.14(h) and shall provide its determination in writing to the Capacity Market Seller, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days after receipt of the exemption or exception request. The Office of the Interconnection shall reject a requested exemption or exception if the Capacity Market Seller's*

*request does not comply with the PJM Market Rules, as interpreted and applied by the Office of the Interconnection. Such rejection shall specify those points of non-compliance upon which the Office of the Interconnection based its rejection of the exemption or exception request. If the Office of the Interconnection does not provide its determination on an exemption or exception request by no later than sixty-five (65) days after receipt of the exemption or exception request, the request shall be deemed granted. Following the Office of the Interconnection's determination on a Unit-Specific Exception request, the Capacity Market Seller shall notify the Market Monitoring Unit and the Office of the Interconnection, in writing, of the minimum level of Sell Offer, consistent with such determination, to which it agrees to commit by no later than five (5) days after receipt of the Office of the Interconnection's determination of its Unit-Specific Exception request. A Capacity Market Seller that is dissatisfied with any determination hereunder may seek any remedies available to it from FERC; provided, however, that the Office of the Interconnection will proceed with administration of the Tariff and market rules unless and until ordered to do otherwise by FERC.*

*(10) Procedures and Remedies in Cases of Suspected Fraud or Material Misrepresentation or Omissions in Connection with Exemption Requests.*

In the event the Office of the Interconnection reasonably believes that a request for a Competitive Entry Exemption or a Self-Supply Exemption that has been granted contains fraudulent or material misrepresentations or fraudulent or material omissions such that the Capacity Market Seller would not have been eligible for the exemption for that resource had the request not contained such misrepresentations or omissions, then:

- i) if the Office of the Interconnection provides written notice of revocation to the Capacity Market Seller no later than thirty (30) days prior to the commencement of the offer period for the RPM Auction for which the seller submitted a fraudulent exemption request, the Office of the Interconnection shall revoke the exemption for that auction. In such event, the Office of the Interconnection shall make any filings with FERC that the Office of the Interconnection deems necessary, and
- ii) if the Office of the Interconnection does not provide written notice of revocation no later than 30 days before the start of the relevant RPM Auction, then the Office of the Interconnection may not revoke the exemption absent FERC approval. In any such filing to FERC, the requested remedies shall include (A) in the event that such resource has not cleared in the RPM Auction for which the exemption has been granted and the filing is made no later than 5 days prior to the commencement of the offer period for the RPM Auction, revocation of the exemption or, (B) in the event that the resource has cleared the RPM Auction for which the exemption has been granted and the filing is made no later than two (2) years after the close of the offer period for the relevant RPM Auction, suspension of any payments, during the pendency of the FERC proceeding, to the Capacity Market Seller for the resource that cleared in any RPM Auction relying on such exemption; and suspension of the Capacity Market Seller's exemption for that resource for future RPM Auctions.
- iii) Prior to any automatic revocation or submission to FERC, the Office of the Interconnection and/or the Market Monitoring Unit shall notify the affected

Capacity Market Seller and, to the extent practicable, provide the Capacity Market Seller an opportunity to explain the alleged misrepresentation or omission. Any filing to FERC under this provision shall seek fast track treatment and neither the name nor any identifying characteristics of the Capacity Market Seller or the resource shall be publicly revealed, but otherwise the filing shall be public. The Capacity Market Seller may apply for a new exemption for that resource for subsequent auctions, including auctions held during the pendency of the FERC proceeding. In the event that the Capacity Market Seller is cleared by FERC from such allegations of misrepresentations or omissions then the exemption shall be restored to the extent and in the manner permitted by FERC. The remedies required by this subsection (h)(10) to be requested in any filing to FERC shall not be exclusive of any other remedies or penalties that may be pursued against the Capacity Market Seller.

i) Capacity Export Charges and Credits

(1) Charge

Each Capacity Export Transmission Customer shall incur for each day of each Delivery Year a Capacity Export Charge equal to the Reserved Capacity of Long-Term Firm Transmission Service used for such export ("Export Reserved Capacity") multiplied by (the Final Zonal Capacity Price for such Delivery Year for the Zone encompassing the interface with the Control Area to which such capacity is exported minus the Final Zonal Capacity Price for such Delivery Year for the Zone in which the resources designated for export are located, but not less than zero). If more than one Zone forms the interface with such Control Area, then the amount of Reserved Capacity described above shall be apportioned among such Zones for purposes of the above calculation in proportion to the flows from such resource through each such Zone directly to such interface under CETO/CETL analysis conditions, as determined by the Office of the Interconnection using procedures set forth in the PJM Manuals. The amount of the Reserved Capacity that is associated with a fully controllable facility that crosses such interface shall be completely apportioned to the Zone within which such facility terminates.

(2) Credit

To recognize the value of firm Transmission Service held by any such Capacity Export Transmission Customer, such customer assessed a charge under section 5.14(i)(1) also shall receive a credit, comparable to the Capacity Transfer Rights provided to Load-Serving Entities under section 5.15. Such credit shall be equal to the locational capacity price difference specified in section 5.14(i)(1) times the Export Customer's Allocated Share determined as follows:

Export Customer's Allocated Share equals

$(\text{Export Path Import} * \text{Export Reserved Capacity}) /$

$(\text{Export Reserved Capacity} + \text{Daily Unforced Capacity Obligations of all LSEs in such Zone}).$

Where:

“Export Path Import” means the megawatts of Unforced Capacity imported into the export interface Zone from the Zone in which the resource designated for export is located.

If more than one Zone forms the interface with such Control Area, then the amount of Export Reserved Capacity shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

### (3) Distribution of Revenues

Any revenues collected from the Capacity Export Charge with respect to any capacity export for a Delivery Year, less the credit provided in subsection (i)(2) for such Delivery Year, shall be distributed to the Load Serving Entities in the export-interface Zone that were assessed a

Locational Reliability Charge for such Delivery Year, pro rata based on the Daily Unforced Capacity Obligations of such Load-serving Entities in such Zone during such Delivery Year. If more than one Zone forms the interface with such Control Area, then the revenues shall be apportioned among such Zones for purposes of the above calculation in the same manner as set forth in subsection (i)(1) above.

#### **5.14A Demand Response Transition Provision for RPM Delivery Years 2012/2013, 2013/2014, and 2014/2015**

A. This *transition provision* applies only with respect to Demand Resources cleared in the Base Residual Auction for any or all of the 2012/2013, 2013/2014, or 2014/2015 Delivery Years (hereafter, “Transition Delivery Years” and each a “Transition Delivery Year”) by a Curtailment Service Provider as an aggregator of end-use customers registered for the Emergency Load Response Program as Full Program Option or Capacity Only Option. A Curtailment Service Provider meeting the description of the preceding sentence is hereafter in this Section 5.14A referred to as a “Qualified DR Provider.”

B. In the event that a Qualified DR Provider concludes that its cleared Demand Resource for a Transition Delivery Year is not viable under the revised Reporting and Compliance provisions of the Emergency Load Response Program which became effective on November 7, 2011, pursuant to the Commission’s order issued on November 4, 2011, in Docket No. ER11-3322-000 (137 FERC ¶ 61,108), the Qualified DR Provider must so inform PJM in writing by no later than 30 days prior to the next Incremental Auction for the Transition Delivery Year for which the identified Demand Resource was cleared. A Qualified DR Provider that does not timely provide the notice described in this paragraph shall be excluded from application of the remainder of this *section 5.14A*. A Demand Resource cleared for a Transition Delivery Year is not viable for purposes of this *section 5.14A* to the extent that it relies upon load reduction by any end-use customer for which the applicable Qualified DR Provider anticipated, when it offered the Demand Resource, measuring load reduction at loads in excess of such customer’s peak load contribution during Emergency Load Response dispatch events or tests.

1. In the event a Qualified DR Provider that participates in an Incremental Auction after

providing notice pursuant to paragraph B. above purchases Capacity Resources to replace its previously cleared Demand Resource at a price that exceeds the price at which the provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year, the Qualified DR Provider shall receive a DR Capacity Transition Credit in an amount determined by the following:

$$\text{DRTC} = (\text{IAP} - \text{BRP}) * \text{DRMW}$$

Where:

DRTC is the amount of the DR Capacity Transition Credit for the Qualified DR Provider, expressed in dollars;

IAP = the Capacity Resource Clearing Price paid by the Qualified DR Provider for replacement Capacity Resources in the Incremental Auction for the relevant Transition Delivery Year;

BRP = the Capacity Resource Clearing Price at which the Qualified DR Provider's Demand Resource cleared in the Base Residual Auction for the same Transition Delivery Year; and

DRMW = the capacity in MW of the Qualified DR Provider's previously cleared Demand Resource.

2. All DR Capacity Transition Credits will be paid weekly to the recipient Qualified DR Providers by PJMSettlement during the relevant Transition Delivery Year.
3. The cost of payments of DR Capacity Transition Credits to Qualified DR Providers shall be included in the Locational Reliability Charge collected by PJMSettlement during the relevant Transition Delivery Year from Load-Serving Entities in the LDA(s) for which the Qualified DR Provider's subject Demand Resource was cleared.

C. A Qualified DR Provider may seek compensation related to its previously cleared Demand Resource for a particular Transition Delivery Year, in lieu of any DR Capacity Transition Credits for which it otherwise might be eligible under paragraph B.1. above, under the following conditions:

1. The Qualified DR Provider must provide timely notice to PJM in accordance with paragraph B of this *section 5.14A*, and
2. The Qualified DR Provider must demonstrate to PJM's reasonable satisfaction, not later than 60 days prior to the start of the applicable Transition Delivery Year, that
  - a. the Qualified DR Provider entered into contractual arrangements on or before April 7, 2011, with one or more end-use customers registered for the Emergency

Load Response Program as Full Program Option or Capacity Only Option in association with the Demand Resource identified in the provider's notice pursuant to paragraph B above,

b. under which the Qualified DR Provider is unavoidably obligated to pay to such end-use customers during the relevant Transition Delivery Year

c. an aggregate amount that exceeds:

(i) any difference of (A) the amount the Qualified DR Provider is entitled to receive in payment for the previously cleared Demand Resource it designated as not viable in its notice pursuant to paragraph B of this provision, minus (B) the amount the provider is obligated to pay for capacity resources it purchased in the Incremental Auctions to replace the Demand Resource the provider designated as not viable, plus

(ii) any monetary gains the Qualified DR Provider realizes from purchases of Capacity Resources in Incremental Auctions for the same Transition Delivery Year to replace any Demand Resources that the Qualified DR Provider cleared in the applicable Base Residual Auction other than the resource designated as not viable in the provider's notice pursuant to paragraph (B) of this provision,

(iii) where "monetary gains" for the purpose of clause (ii) shall be any positive difference of (A) the aggregate amount the Qualified DR Provider is entitled to receive in payment for any such other Demand Resource it cleared in the Base Residual Auction, minus (B) the aggregate amount the provider is obligated to pay for capacity resources it purchased in the applicable Incremental Auctions to replace any such other Demand Resource the provider cleared in the Base Residual Auction.

D. A Qualified DR Provider which demonstrates satisfaction of the conditions of paragraph C of this *section 5.14A* shall be entitled to an Alternative DR Transition Credit equal to the amount described in paragraph C.2.c. above. Any Alternative DR Transition Credit provided in accordance with this paragraph shall be paid and collected by PJMSettlement in the same manner as described in paragraphs B.2. and B.3. of this *section 5.14A*, provided, however, that each Qualified DR Provider receiving an Alternative DR Transition Credit shall submit to PJM within 15 days following the end of each month of the relevant Transition Delivery Year a report providing the calculation described in paragraph C.2.c. above, using actual amounts paid and received through the end of the month just ended. The DR Provider's Alternative DR Transition Credit shall be adjusted as necessary (including, if required, in the month following the final month of the Transition Delivery Year) to ensure that the total credit paid to the Qualified DR Provider for the Transition Delivery Year will equal, but shall not exceed, the amount described in paragraph C.2.c. above, calculated using the actual amounts paid and received by the Qualified DR Provider.

### **5.14B Generating Unit Capability Verification Test Requirements Transition Provision for RPM Delivery Years 2014/2015, 2015/2016, and 2016/2017**

A. This *transition provision* applies only with respect to Generation Capacity Resources with existing capacity commitments for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years that experience reductions in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals. A Generation Capacity Resource meeting the description of the preceding sentence, and the Capacity Market Seller of such a resource, are hereafter in this section 5.14B referred to as an “Affected Resource” and an “Affected Resource Owner,” respectively.

B. For each of its Affected Resources, an Affected Resource Owner is required to provide documentation to the Office of the Interconnection sufficient to show a reduction in installed capacity value as a direct result of the revised capability test procedures. Upon acceptance by the Office of the Interconnection, the Affected Resource’s installed capacity value will be updated in the eRPM system to reflect the reduction, and the Affected Resource’s Capacity Interconnection Rights value will be updated to reflect the reduction, effective June 1, 2014. The reduction’s impact on the Affected Resource’s existing capacity commitments for the 2014/2015 Delivery Year will be determined in Unforced Capacity terms, using the final EFORD value established by the Office of the Interconnection for the 2014/2015 Delivery Year as applied to the Third Incremental Auction for the 2014/2015 Delivery Year, to convert installed capacity to Unforced Capacity. The reduction’s impact on the Affected Resource’s existing capacity commitments for each of the 2015/2016 and 2016/2017 Delivery Years will be determined in Unforced Capacity terms, using the EFORD value from each Sell Offer in each applicable RPM Auction, applied on a pro-rata basis, to convert installed capacity to Unforced Capacity. The Unforced Capacity impact for each Delivery Year represents the Affected Resource’s capacity commitment shortfall, resulting wholly and directly from the revised capability test procedures, for which the Affected Resource Owner is subject to a Capacity Resource Deficiency Charge for the Delivery Year, as described in section 8 of this Attachment DD, unless the Affected Resource Owner (i) provides replacement Unforced Capacity, as described in section 8.1 of this Attachment DD, prior to the start of the Delivery Year to resolve the Affected Resource’s total capacity commitment shortfall; or (ii) requests relief from Capacity Resource Deficiency Charges that result wholly and directly from the revised capability test procedures by electing the transition mechanism described in this section 5.14B (“Transition Mechanism”).

C. Under the Transition Mechanism, an Affected Resource Owner may elect to have the Unforced Capacity commitments for all of its Affected Resources reduced for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years to eliminate the capacity commitment shortfalls, across all of its Affected Resources, that result wholly and directly from the revised capability test procedures, and for which the Affected Resource Owner otherwise would be subject to Capacity Resource Deficiency Charges for the Delivery Year. In electing this option, the Affected Resource Owner relinquishes RPM Auction Credits associated with the reductions in Unforced Capacity commitments for all of its Affected Resources for the Delivery Year, and Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are adjusted



accordingly. Affected Resource Owners wishing to elect the Transition Mechanism for the 2015/2016 Delivery Year must notify the Office of the Interconnection by May 30, 2014. Affected Resource Owners wishing to elect the Transition Mechanism for the 2016/2017 Delivery Year must notify the Office of the Interconnection by July 25, 2014.

D. The Office of the Interconnection will offset the total reduction (across all Affected Resources and Affected Resource Owners) in Unforced Capacity commitments associated with the Transition Mechanism for the 2015/2016 and 2016/2017 Delivery Years by applying corresponding adjustments to the quantity of Buy Bid or Sell Offer activity in the upcoming Incremental Auctions for each of those Delivery Years, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD.

E. By electing the Transition Mechanism, an Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years, and a Locational UCAP Seller that sells Locational UCAP based on an Affected Resource owned by the Affected Resource Owner may receive relief from applicable Capacity Resource Deficiency Charges for the 2014/2015 Delivery Year, to the extent that the Affected Resource Owner demonstrates, to the satisfaction of the Office of the Interconnection, that an inability to deliver the amount of Unforced Capacity previously committed for the 2014/2015, 2015/2016, or 2016/2017 Delivery Years is due to a reduction in verified installed capacity available for sale as a direct result of revised generating unit capability verification test procedures effective with the summer 2014 capability tests, as set forth in the PJM Manuals; provided, however, that the Affected Resource Owner must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief.

#### **5.14C Demand Response Operational Resource Flexibility Transition Provision for RPM Delivery Years 2015/2016 and 2016/2017**

A. This transition provision applies only to Demand Resources for which a Curtailment Service Provider has existing RPM commitments for the 2015/2016 or 2016/2017 Delivery Years (alternatively referred to in this section 5.14C as “Applicable Delivery Years” and each an “Applicable Delivery Year”) that (i) cannot satisfy the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; (ii) are not excepted from the 30-minute notification requirement as described in Section A.2 of Attachment DD-1 of the Tariff and the parallel provision of Schedule 6 of the RAA; and (iii) cleared in the Base Residual Auction or First Incremental Auction for the 2015/2016 Delivery Year, or cleared in the Base Residual Auction for the 2016/2017 Delivery Year. A Demand Resource meeting these criteria and the Curtailment Service Provider of such a resource are hereafter in this section 5.14C referred to as an “Affected Demand Resource” and an “Affected Curtailment Service Provider,” respectively.

B. For this section 5.14C to apply to an Affected Demand Resource, the Affected Curtailment Service Provider must notify the Office of the Interconnection in writing, with regard to the Affected Demand Resource, of the number of cleared megawatts of Unforced Capacity for the Applicable Delivery Year, by type of Demand Resource (i.e., Limited DR,

Annual DR, Extended Summer DR) and by Zone or sub-Zone, by the applicable deadline as follows:

1. For the 2015/2016 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2015/2016 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2015/2016 Delivery Year.

2. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Second Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second or Third Incremental Auctions for the 2016/2017 Delivery Year.

3. For the 2016/2017 Delivery Year, the notice shall be provided by no later than seven (7) days prior to the posting by the Office of the Interconnection of planning parameters for the Third Incremental Auction for the 2016/2017 Delivery Year. Such Affected Curtailment Service Provider that utilizes this transition provision must not have sold or offered to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Second Incremental Auction for the 2016/2017 Delivery Year, and may not sell or offer to sell megawatts in the modeled LDA or sub-LDA where an Affected Demand Resource is located in the Third Incremental Auction for the 2016/2017 Delivery Year.

C. For the Third Incremental Auction for the 2015/2016 Delivery Year and the First, Second, and Third Incremental Auctions for the 2016/2017 Delivery Year, the Office of the Interconnection shall publish aggregate information on the undeliverable megawatts declared under this transition provision (hereafter, “non-viable megawatts”), by type of Demand Resource and by Zone or sub-Zone, concurrently with its posting of planning parameters for the applicable Scheduled Incremental Auction. Non-viable megawatts for a Scheduled Incremental Auction for an Applicable Delivery Year represent those megawatts meeting the criteria of subsection A above and declared in accordance with subsection B above. Prior to each Third Incremental Auction for an Applicable Delivery Year, the Office of the Interconnection shall apply adjustments equal to the declared non-viable megawatt quantity to the quantity of Buy Bid or Sell Offer activity in the upcoming Scheduled Incremental Auctions for the Applicable Delivery Year, as described in sections 5.12(b)(ii) and 5.12(b)(iii) of this Attachment DD. Prior to the Second Incremental Auction for the 2016/2017 Delivery Year, the Office of the Interconnection shall adjust the recalculated PJM Region Reliability Requirement and recalculated LDA Reliability Requirements, as described in section 5.4(c) of this Attachment DD, by the applicable quantity of declared non-viable megawatts, and shall update the PJM Region Reliability Requirement and each LDA Reliability Requirement for such Second Incremental Auction only if the combined change of the applicable adjustment and applicable recalculation is greater than or equal to the lesser of (i) 500 megawatts or (ii) one percent of the prior PJM Region Reliability Requirement or one percent of the prior LDA Reliability Requirement, as applicable.

D. Prior to the start of each Applicable Delivery Year, the Office of the Interconnection shall reduce, by type of Demand Resource and by Zone or sub-Zone, the capacity commitment of each Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year based on the non-viable megawatts declared by the Affected Curtailment Service Provider under this transition provision. If the Affected Curtailment Service Provider cleared megawatts from multiple Affected Demand Resources of the same type and Zone or sub-Zone, or cleared megawatts in multiple RPM Auctions for the Applicable Delivery Year, the Office of the Interconnection shall allocate the reduction in capacity commitment by type of Demand Resource and by Zone or sub-Zone across the applicable Affected Demand Resources and relevant RPM Auctions. Such allocation shall be performed on a pro-rata basis, based on megawatts cleared by the Affected Demand Resources in the relevant RPM Auctions.

E. For each Applicable Delivery Year, an Affected Curtailment Service Provider that utilizes this transition provision for the Applicable Delivery Year relinquishes an Affected Demand Resource's RPM Auction Credits for the amount of capacity commitment reduction as determined under subsection D above. Locational Reliability Charges as described in section 5.14(e) of this Attachment DD are also adjusted accordingly.

#### **5.14D Capacity Performance and Base Capacity Transition Provision for RPM Delivery Years 2016/2017 and 2017/2018**

A. This transition provision applies only for procuring Capacity Performance Resources for the 2016/2017 and 2017/2018 Delivery Years.

B. For both the 2016/2017 and 2017/2018 Delivery Years, PJM will hold a Capacity Performance Transition Incremental Auction to procure Capacity Performance Resources.

1. For each Capacity Performance Transition Incremental Auction, the optimization algorithm shall consider:

- the target quantities of Capacity Performance Resources specified below;
- the Sell Offers submitted in such auction.

The Office of the Interconnection shall submit a Buy Bid based on the quantity of Capacity Performance Resources specified for that Delivery Year. For the 2016/2017 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a quantity of Capacity Performance Resources equal to 60 percent of the updated Reliability Requirement for the PJM Region. For the 2017/2018 Delivery Year, the Office of the Interconnection shall submit a Buy Bid, at a price no higher than 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year, for a quantity of Capacity Performance Resources equal to 70 percent of the updated Reliability Requirement for the PJM Region.

2. For each Capacity Performance Transition Incremental Auction, the Office of the Interconnection shall calculate a clearing price to be paid for each megawatt-day of Unforced Capacity that clears in such auction. For the 2016/2017 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.5 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year. For the 2017/2018 Delivery Year, the Capacity Resource Clearing Price for any Capacity Performance Transition Incremental Auction shall not exceed 0.6 times the Net CONE value for the PJM Region determined for the Base Residual Auction for that Delivery Year.

3. A Capacity Market Seller may offer any Generation Capacity Resource that has not been committed in an FRR Capacity Plan, that qualifies as a Capacity Performance Resource under section 5.5A(a) and that (i) has not cleared an RPM Auction for that Delivery Year; or (ii) has cleared in an RPM Auction for that Delivery Year. A Capacity Market Seller may offer an external Generation Capacity Resource to the extent that such resource: (i) is reasonably expected, by the relevant Delivery Year, to meet all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction; (ii) has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and (iii) is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions.

4. Capacity Resources that already cleared an RPM Auction for a Delivery Year, retain the capacity obligations for that Delivery Year, and clear in a Capacity Performance Transition Incremental Auction for the same Delivery Year shall: (i) receive a payment equal to the Capacity Resource Clearing Price as established in that Capacity Performance Transition Incremental Auction; and (ii) not be eligible to receive a payment for clearing in any prior RPM Auction for that Delivery Year.

D. All Capacity Performance Resources that clear in a Capacity Performance Transition Incremental Auction will be subject to the Non-Performance Charge set forth in section 10A.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

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## **6. MARKET POWER MITIGATION**

### **6.1 Applicability**

The provisions of the Market Monitoring Plan (in Attachment M and Attachment - M Appendix to this Tariff and this section 6) shall apply to the Reliability Pricing Model Auctions.

## 6.2 Process

(a) [Reserved for Future Use]

(b) In accordance with the schedule specified in the PJM Manuals, following PJM's conduct of a Base Residual Auction or Incremental Auction pursuant to section 5.12, but prior to the Office of the Interconnection's final determination of clearing prices and charges pursuant to section 5.14, the Office of the Interconnection shall: (i) apply the Market Structure Test to any LDA having a Locational Price Adder greater than zero and to the entire PJM region; (ii) apply Market Seller Offer Caps, if required under this section 6; and (iii) recompute the optimization algorithm to clear the auction with the Market Seller Offer Caps in place.

(c) Within seven days after the deadline for submission of Sell Offers in a Base Residual Auction or Incremental Auction, the Office of the Interconnection shall file with FERC a report of any determination made pursuant to sections 5.14(h), 6.5(a)(ii), or 6.7(c) identified in such sections as subject to the procedures of this section. Such report shall list each such determination, the information considered in making each such determination, and an explanation of each such determination. Any entity that objects to any such determination may file a written objection with FERC no later than seven days after the filing of the report. Any such objection must not merely allege that the determination was in error, and must provide support for the objection, demonstrating that the determination overlooked or failed to consider relevant evidence. In the event that no objection is filed, the determination shall be final. In the event that an objection is filed, FERC shall issue any decision modifying the determination no later than 60 days after the filing of such report; otherwise, the determination shall be final. Final auction results shall reflect any decision made by FERC regarding the report.

## 6.3 Market Structure Test

(a) [Reserved for Future Use]

(b) Market Structure Test.

A constrained LDA or the PJM Region shall fail the Market Structure Test, and mitigation shall be applied to all jointly pivotal suppliers (including all Affiliates of such suppliers, and all third-party supply in the relevant LDA controlled by such suppliers by contract), if, as to the Sell Offers that comprise the incremental supply determined pursuant to section 6.3(c) that are based on Generation Capacity Resources, there are not more than three jointly pivotal suppliers. The Office of the Interconnection shall apply the Market Structure Test. The Office of the Interconnection shall confirm the results of the Market Structure Test with the Market Monitoring Unit.

(c) Determination of Incremental Supply

In applying the Market Structure Test, the Office of the Interconnection shall consider all (i) incremental supply (provided, however, that the Office of the Interconnection shall consider only

such supply available from Generation Capacity Resources) available to solve the constraint applicable to a constrained LDA offered at less than or equal to 150% of the cost-based clearing price; or (ii) supply for the PJM Region, offered at less than or equal to 150% of the cost-based clearing price, provided that supply in this section includes only the lower of cost-based or priced based offers from Generation Capacity Resources. Cost-based clearing prices are the prices resulting from the RPM auction algorithm using the lower of cost-based or price-based offers for all Capacity Resources.

#### **6.4 Market Seller Offer Caps**

(a) The Market Seller Offer Cap, stated in dollars per MW/day of unforced capacity, applicable to price-quantity offers within the Base Offer Segment for an Existing Generation Capacity Resource shall be the Avoidable Cost Rate for such resource, less the Projected PJM Market Revenues for such resource, stated in dollars per MW/day of unforced capacity, provided, however, that the Market Seller Offer Cap for any Capacity Performance Resource shall be the Net Cost of New Entry applicable for the Delivery Year and Locational Deliverability Area for which such Capacity Performance Resource is offered, and that the submission of a Sell Offer with an Offer Price at or below the revised Market Seller Offer Cap permitted under this proviso shall not, in and of itself, be deemed an exercise of market power in the RPM market. Notwithstanding the previous sentence, should a Capacity Performance Resource seek a Market Seller Offer Cap that exceeds the Net Cost of New Entry, it shall be subject to and comply with paragraph (b) of this section 6.4. The Market Seller Offer Cap for an Existing Generation Capacity Resource shall be the Opportunity Cost for such resource, if applicable, as determined in accordance with section 6.7. Nothing herein shall preclude any Capacity Market Seller and the Market Monitoring Unit from agreeing to, nor require either such entity to agree to, an alternative market seller offer cap determined on a mutually agreeable basis. Any such alternative offer cap shall be filed with the Commission for its approval. This provision is duplicated in section II.E.3 of Attachment M- Appendix.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection data and documentation required under section 6.7 to establish the level of the Market Seller Offer Cap applicable to each resource by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller must promptly address any concerns identified by the Market Monitoring Unit regarding the data and documentation provided, review the Market Seller Offer Cap proposed by the Market Monitoring Unit, and attempt to reach agreement with the Market Monitoring Unit on the level of the Market Seller Offer Cap by no later than ninety (90) days prior to the commencement of the offer period for the applicable RPM Auction. The Capacity Market Seller shall notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, whether an agreement with the Market Monitoring Unit has been reached or, if no agreement has been reached, specifying the level of Market Seller Offer Cap to which it commits by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. The Office of the Interconnection shall review the data submitted by the Capacity Market Seller, make a determination whether to accept or reject the requested unit-specific Market Seller Offer Cap, and notify the Capacity Market Seller and the Market

Monitoring Unit of its determination in writing, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction. If the Market Monitoring Unit does not provide its determination to the Capacity Market Seller and the Office of the Interconnection by the specified deadline, by no later than sixty-five (65) days prior to the commencement of the offer period for the applicable RPM Auction the Office of the Interconnection will make the determination of the level of the Market Seller Offer Cap, which shall be deemed to be final. If the Capacity Market Seller does not notify the Market Monitoring Unit and the Office of the Interconnection of the Market Seller Offer Cap it desires to utilize by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction, it shall be required to utilize a Market Seller Offer Cap determined using the applicable default Avoidable Cost Rate specified in section 6.7(c).

(c) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the Sell Offer complies with the requirements of the Tariff.

(d) For any Third Incremental Auction for Delivery Years through the 2017/2018 Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 or 2019/2020 Delivery Years, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Base Capacity resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year. For any Third Incremental Auction for the 2018/2019 Delivery Year or any subsequent Delivery Year, the Market Seller Offer Cap for an Existing Generation Capacity Resource offering as a Capacity Performance Resource shall be determined pursuant to paragraph (a) of this Section 6.4, or if elected by the Capacity Market Seller, shall be equal to the greater of the Net Cost of New Entry for the relevant LDA and Delivery Year or 1.1 times the Capacity Resource Clearing Price in the Base Residual Auction for the relevant LDA and Delivery Year.

## **6.5 Mitigation**

The Office of the Interconnection shall apply market power mitigation measures in any Base Residual Auction or Incremental Auction for any LDA, Unconstrained LDA Group, or the PJM Region that fails the Market Structure Test.

- (a) Mitigation for Generation Capacity Resources.
  - i) Existing Generation Capacity Resource

Mitigation will be applied on a unit-specific basis and only if the Sell Offer of Unforced Capacity from an Existing Generation Capacity Resource: (1) is greater than the Market Seller Offer Cap applicable to such resource; and (2) would, absent mitigation, increase the Capacity

Resource Clearing Price in the relevant auction. If such conditions are met, such Sell Offer shall be set equal to the Market Seller Offer Cap.

ii) Planned Generation Capacity Resources

(A) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) shall be presumed to be competitive and shall not be subject to market power mitigation in any Base Residual Auction or Incremental Auction for which such resource qualifies as a Planned Generation Capacity Resource, but any such Sell Offer shall be rejected if it meets the criteria set forth in subsection (C) below, unless the Capacity Market Seller obtains approval from FERC for use of such offer prior to the deadline for submission of such offers in the applicable auction. Such resources are Existing Generation Capacity Resources in the auctions for any Delivery Year following the Delivery Year for which such resource cleared an RPM Auction. Such resources may receive certain price assurances for the two Delivery Years immediately following the first Delivery Year of service under certain conditions as set forth in section 5.14 of this Attachment. Notwithstanding the foregoing, a Generation Capacity Resource for which construction has not commenced and which would otherwise have been treated as a Planned Generation Capacity Resource but for the fact that it was bid into RPM Auctions for at least two consecutive Delivery Years, and cleared the last such auction only because it was considered existing and its mitigated offer cap was accepted when its price offer would not have otherwise been accepted, shall be deemed to be a Planned Generation Capacity Resource.

(B) Sell Offers based on Planned Generation Capacity Resources (including External Planned Generation Capacity Resources) submitted for the first year in which such resources qualify as Planned Generation Capacity Resources shall be deemed competitive and not be subject to mitigation if: (1) collectively all such Sell Offers provide Unforced Capacity in an amount equal to or greater than two times the incremental quantity of new entry required to meet the LDA Reliability Requirement; and (2) at least two unaffiliated suppliers have submitted Sell Offers for Planned Generation Capacity Resources in such LDA. Notwithstanding the foregoing, any Capacity Market Seller, together with Affiliates, whose Sell Offers based on Planned Generation Capacity Resources in that LDA are pivotal, shall be subject to mitigation.

(C) Where the two conditions stated in subsection (B) are not met, or the Sell Offer is pivotal, the Sell Offer shall be rejected if it exceeds 140 percent of: 1) the average of location-adjusted Sell Offers for Planned Generation Capacity Resources from the same asset class as such Sell Offer, submitted (and not rejected) (Asset-Class New Plant Offers) for



such Delivery Year; or 2) if there are no Asset-Class New Plant Offers for such Delivery Year, the average of Asset-Class New Plant Offers for all prior Delivery Years; or 3) if there are no Asset-Class New Plant Offers for any prior Delivery Year, the Net CONE applicable for such Delivery Year in the LDA for which such offer was submitted. For purposes of this section, asset classes shall be as stated in section 6.7(c) as effective for such Delivery Year, and Asset-Class New Plant Offers shall be location-adjusted by the ratio between the Net CONE effective for such Delivery Year for the LDA in which the Sell Offer subject to this section was submitted and the average, weighted by installed capacity, of the Net CONEs for all LDAs in which the units underlying such Asset Class New Plant Offers are located. Following the conduct of the applicable auction and before the final determination of clearing prices, in accordance with Section 6.2(b) above, each Capacity Market Seller whose Sell Offer is so rejected shall be notified in writing by the Office of the Interconnection by no later than one (1) business day after the close of the offer period for the applicable RPM Auction and allowed an opportunity to submit a revised Sell Offer that does not exceed such threshold within one business (1) day of the Office of the Interconnection's rejection of such Sell Offer. If such revised Sell Offer is accepted by the Office of the Interconnection, the Office of the Interconnection then shall clear the auction with such revised Sell Offer in place.

(b) Mitigation for Demand Resources

The Market Seller Offer Cap shall not be applied to Sell Offers of Demand Resources or Energy Efficiency Resources.

## 6.6 Offer Requirement for Capacity Resources

(a) To avoid application of subsection (h), all of the installed capacity of all Existing Generation Capacity Resources located in the PJM Region shall be offered by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff. The Unforced Capacity of such resources is determined using the EFORD value that is submitted by the Capacity Market Seller in its Sell Offer, which shall not exceed the maximum EFORD for that resource as defined in Section 6.6(b). If a resource should be included on the list of Existing Generation Capacity Resources subject to the must-offer requirement that is maintained by the Market Monitoring Unit pursuant to Section II.C.1 of Attachment M – Appendix of the Tariff, but is omitted therefrom whether by mistake of the Market Monitoring Unit or failure of the Capacity Market Seller that owns or controls all or part of such resource to provide information about the resource to the Market Monitoring Unit, this shall not excuse such resource from the must-offer requirement.

(b) For each Existing Generation Capacity Resource, a potential Capacity Market Seller must timely provide to the Market Monitoring Unit and the Office of the Interconnection all data and documentation required under section 6.6 to establish the maximum EFORd applicable to each resource in accordance with standards and procedures specified in the PJM Manuals. The maximum EFORd that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORds used for a Delivery Year are posted, is the greater of (i) the average EFORd for the five consecutive years ending on the September 30 that last precedes the Base Residual Auction, or (ii) the EFORd for the 12 months ending on the September 30 that last precedes the Base Residual Auction.

Notwithstanding the foregoing, a Capacity Market Seller may request an alternate maximum EFORd for Sell Offers submitted in such auctions if it has a documented, known reason that would result in an increase in its EFORd, by submitting a written request to the Market Monitoring Unit and Office of the Interconnection, along with data and documentation required to support the request for an alternate maximum EFORd, by no later one hundred twenty (120) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. The Capacity Market Seller must address any concerns identified by the Market Monitoring Unit and/or the Office of the Interconnection regarding the data and documentation provided and attempt to reach agreement with the Market Monitoring Unit on the level of the alternate maximum EFORd by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. As further described in Section II.C of Attachment M-Appendix, the Market Monitoring Unit shall notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination of the requested alternate maximum EFORd by no later than ninety (90) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year. By no later than eighty (80) days prior to the commencement of the offer period for the Base Residual Auction for the applicable Delivery Year, the Capacity Market Seller shall notify the Office of the Interconnection and the Market Monitoring Unit in writing whether it agrees with the Market Monitoring Unit on the alternate maximum EFORd or, if no agreement has been reached, specifying the level of alternate maximum EFORd to which it commits. If a Capacity Market Seller fails to request an alternate maximum EFORd prior to the specified deadlines, the maximum EFORd for the applicable RPM Auction shall be deemed to be the default EFORd calculated pursuant to this section.

The maximum EFORd that may be used in a Sell Offer for Third Incremental Auctions, and for Conditional Incremental Auctions held after the date on which the final EFORd used for a Delivery Year is posted, is the EFORd for the 12 months ending on the September 30 that last precedes the submission of such offers.

(c) [Reserved for Future Use]

(d) In the event that a Capacity Market Seller and the Market Monitoring Unit cannot agree on the maximum level of the alternate EFORd that may be used in a Sell Offer for RPM Auctions held prior to the date on which the final EFORds used for a Delivery Year are posted, the Office of the Interconnection shall make its own determination of the maximum level of the

alternate EFORD based on the requirements of the Tariff and the PJM Manuals, per Section 5.8 of Attachment DD, by no later than sixty-five (65) days prior to the commencement of the offer period for the Base Residual for the applicable Delivery Year, and shall notify the Capacity Market Seller and the Market Monitoring Unit in writing of such determination.

(e) Nothing in this section precludes the Capacity Market Seller from filing a petition with FERC seeking a determination of whether the EFORD complies with the requirements of the Tariff.

(f) Notwithstanding the foregoing, a Capacity Market Seller may submit an EFORD that it chooses for an RPM Auction held prior to the date on which the final EFORD used for a Delivery Year is posted, provided that (i) it has participated in good faith with the process described in this section 6.6 and in section II.C of Attachment M - Appendix, (ii) the offer is no higher than the level defined in any agreement reached by the Capacity Market Seller and the Market Monitoring Unit that resulted from the foregoing process, and (iii) the offer is accepted by the Office of the Interconnection subject to the criteria set forth in the Tariff and the PJM Manuals.

(g) A Capacity Market Seller that owns or controls an existing generation resource in the PJM Region that is capable of qualifying as an Existing Generation Capacity Resource as of the date on which bidding commences for an RPM Auction may not avoid the rule in subsection (a) or be removed from Capacity Resource status by failing to qualify as a Generation Capacity Resource, or by attempting to remove a unit previously qualified as a Generation Capacity Resource from classification as a Capacity Resource for that RPM Auction. However, generation resource may qualify for an exception to the must-offer requirement, as shown by appropriate documentation, if the Capacity Market Seller that owns or controls such resource demonstrates that it: (i) is reasonably expected to be physically unable to participate in the relevant Delivery Year; (ii) has a financially and physically firm commitment to an external sale of its capacity, or (iii) was interconnected to the Transmission System as an Energy Resource and not subsequently converted to a Capacity Resource.

In order to establish that a resource is reasonably expected to be physically unable to participate in the relevant auction as set forth in (i) above, the Capacity Market Seller must demonstrate that:

- A. It has a documented plan in place to retire the resource prior to or during the Delivery Year, and has submitted a notice of Deactivation to the Office of the Interconnection consistent with Section 113.1 of the PJM Tariff, without regard to whether the Office of the Interconnection has requested the Capacity Market Seller to continue to operate the resource beyond its desired deactivation date in accordance with Section 113.2 of the PJM Tariff for the purpose of maintaining the reliability of the PJM Transmission System and the Capacity Market Seller has agreed to do so;
- B. Significant physical operational restrictions cause long term or permanent changes to the installed capacity value of the resource, or the resource is under major repair that will extend into the applicable Delivery Year, that will result in the imposition of RPM

performance penalties pursuant to Attachment DD of the PJM Tariff;

- C. The Capacity Market Seller is involved in an ongoing regulatory proceeding (e.g. – regarding potential environmental restrictions) specific to the resource and has received an order, decision, final rule, opinion or other final directive from the regulatory authority that will result in the retirement of the resource; or
- D. A resource considered an Existing Generating Capacity Resource because it cleared an RPM Auction for a Delivery Year prior to the Delivery Year of the relevant auction, but which is not yet in service, is unable to achieve full commercial operation prior to the Delivery Year of the relevant auction. The Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer certifying that the resource will not be in full commercial operation prior to the referenced Delivery Year.

In order to establish that a resource has a financially and physically firm commitment to an external sale of its capacity as set forth in (ii) above, the Capacity Market Seller must demonstrate that it has entered into a unit-specific bilateral transaction for service to load located outside the PJM Region, by a demonstration that such resource is identified on a unit-specific basis as a network resource under the transmission tariff for the control area applicable to such external load, or by an equivalent demonstration of a financially and physically firm commitment to an external sale. The Capacity Market Seller additionally shall identify the megawatt amount, export zone, and time period (in days) of the export.

A Capacity Market Seller that seeks to remove a Generation Capacity Resource from PJM Capacity Resource status and/or seeks approval for an exception to the must-offer requirement, for any reason other than the reason specified in Paragraph A above, shall first submit such request in writing, along with all supporting data and documentation, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction.

In order to obtain an exception to the must-offer requirement for the reason specified in Paragraph A above, a Capacity Market Seller shall first submit a preliminary exception request in writing, along with supporting data and documentation indicating the reasons and conditions upon which the Capacity Market Seller is relying in its analysis of whether to retire such resource, to the Market Monitoring Unit for evaluation, notifying the Office of the Interconnection by copy of the same, by no later than (a) November 1, 2013 for the Base Residual Auction for the 2017/2018 Delivery Year, (b) the September 1 that last precedes the Base Residual Auction for the 2018/2019 and subsequent Delivery Years, and (c) two hundred forty (240) days prior to the commencement of the offer period for the applicable Incremental Auction. By no later than five (5) business days after receipt of any such preliminary exception requests, the Office of the Interconnection will post on its website a summary of the number of megawatts of Generation Capacity Resources for which it has received notification of preliminary exception requests, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

Thereafter, as applicable, such Capacity Market Seller shall by no later than (a) the December 1 that last precedes the Base Residual Auction for the applicable Delivery Year, or (b) one hundred twenty (120) days prior to the commencement of the offer period for the applicable Incremental Auction, either (a) notify the Office of the Interconnection and the Market Monitoring Unit in writing that it is withdrawing its preliminary exception request and explaining the changes to its analysis of whether to retire such resource that support its decision to withdraw, or (b) demonstrate that it has met the requirements specified under Paragraph A above. By no later than five (5) business days after receipt of such notification, the Office of the Interconnection will post on its website a revised summary of the number of megawatts of Generation Capacity Resources for which it has received requests for exceptions to the must-offer requirement for the reason specified in Paragraph A above, on an aggregate basis by Zone and Locational Deliverability Area that comprises a subset of a Zone, as specified in the PJM Manuals.

A Capacity Market Seller may only remove the Generation Capacity Resource from PJM Capacity Resource status if (i) the Market Monitoring Unit has determined that the Generation Capacity Resource meets the applicable criteria set forth in Sections 5.6.6 and 6.6 of Attachment DD and the Office of the Interconnection agrees with this determination, or (ii) the Commission has issued an order terminating the Capacity Resource status of the resource. Nothing herein shall require a Market Seller to offer its resource into an RPM Auction prior to seeking to remove a resource from Capacity Resource status, subject to satisfaction of Section 6.6.

If the Capacity Market Seller disagrees with the Market Monitoring Unit's determination of its request to remove a resource from Capacity Resource status or its request for an exception to the must-offer requirement, it must notify the Market Monitoring Unit in writing, with a copy to the Office of the Interconnection, of the same by no later than eighty (80) days prior to the commencement of the offer period for the applicable RPM Auction. After the Market Monitoring Unit has made its determination of whether a resource has satisfied the must-offer requirement or meets one of the exceptions thereto and has notified the Capacity Market Seller and the Office of the Interconnection of the same pursuant to Section II.C.4 of Attachment M – Appendix, the Office of the Interconnection shall approve or deny the exception request. The exception request shall be deemed to be approved by the Office of the Interconnection, consistent with the determination of the Market Monitoring Unit, unless the Office of the Interconnection notifies the Capacity Market Seller and Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences, that the exception request is denied.

If the Market Monitoring Unit does not timely notify the Capacity Market Seller and the Office of the Interconnection of its determination of the request to remove a Generation Capacity Resource from Capacity Resource status or for an exception to the must-offer requirement, the Office of the Interconnection shall make the determination whether the request shall be approved or denied, and will notify the Capacity Market Seller of its determination in writing, with a copy to the Market Monitoring Unit, by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences.

After the Market Monitoring Unit and the Office of the Interconnection have made their determinations of whether a resource meets the criteria to qualify for an exception to the

must-offer requirement, the Capacity Market Seller must notify the Market Monitoring Unit and the Office of the Interconnection whether it intends to exclude from its Sell Offer some or all of the subject capacity on the basis of an identified exception by no later than sixty-five (65) days prior to the date on which the offer period for the applicable RPM Auction commences. PJM does not make determinations of whether withholding of capacity constitutes market power. A Generation Capacity Resource that does not qualify for submission into an RPM Auction because it is not owned or controlled by the Capacity Market Seller for a full Delivery Year is not subject to the offer requirement hereunder; provided, however, that a Capacity Market Seller planning to transfer ownership or control of a Generation Capacity Resource during a Delivery Year pursuant to a sale or transfer agreement entered into after March 26, 2009 shall be required to satisfy the offer requirement hereunder for the entirety of such Delivery Year and may satisfy such requirement by providing for the assumption of this requirement by the transferee of ownership or control under such agreement.

If a Capacity Market Seller doesn't timely seek to remove a Generation Capacity Resource from Capacity Resource status or timely submit a request for an exception to the must-offer requirement, the Generation Capacity Resource shall only be removed from Capacity Resource status, and may only be approved for an exception to the must-offer requirement, upon the Capacity Market Seller requesting and receiving an order from FERC, prior to the close of the offer period for the applicable RPM Auction, directing the Office of the Interconnection to remove the resource from Capacity Resource status and/or granting an exception to the must-offer requirement or a waiver of the must-offer requirement as to such resource.

(h) Any existing generation resource located in the PJM Region that satisfies the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for the Base Residual Auction for a Delivery Year, that is not offered into such Base Residual Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All generation resources located in the PJM Region that satisfy the criteria in the definition of Existing Generation Capacity Resource as of the date on which bidding commences for an Incremental Auction for a particular Delivery Year, but that did not satisfy such criteria as of the date that on which bidding commenced in the Base Residual Auction for that Delivery Year, that is not offered into that Incremental Auction, and that does not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any subsequent Incremental Auctions conducted for such Delivery Year; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

All Existing Generation Capacity Resources that are offered into a Base Residual Auction or Incremental Auction for a particular Delivery Year but do not clear in such auction, that are

not offered into each subsequent Incremental Auction, and that do not meet any of the exceptions stated in the prior subsection (g): (i) may not participate in any Incremental Auctions conducted for such Delivery Year subsequent to such failure to offer; (ii) shall not receive any payments under section 5.14 for such Delivery Year for the capacity of such Generation Capacity Resources; and (iii) shall not be permitted to satisfy any LSE's Unforced Capacity Obligation, or any entity's obligation to obtain the commitment of Capacity Resources, for such Delivery Year.

Any such Existing Generation Capacity Resources may also be subject to further action by the Market Monitoring Unit under the terms of Attachment M and Attachment M – Appendix.

(i) In addition to the remedies set forth in subsections (g) and (h) above, if the Market Monitoring Unit determines that one or more Capacity Market Sellers' failure to offer part or all of one or more existing generation resources, for which the Office of the Interconnection has not approved an exception to the must-offer requirement, into an RPM Auction as required by this Section 6.6 would result in an increase of greater than five percent in any Zonal Capacity Price determined through such auction, and the Office of the Interconnection agrees with that determination, the Office of the Interconnection shall apply to FERC for an order, on an expedited basis, directing such Capacity Market Seller to participate in the relevant RPM Auction, or for other appropriate relief, and PJM will postpone clearing the auction pending FERC's decision on the matter. If the Office of the Interconnection disagrees with the Market Monitoring Unit's determination and does not apply to FERC for an order directing the Capacity Market Seller to participate in the auction or for other appropriate relief, the Market Monitoring Unit may exercise its powers to inform Commission staff of its concerns and to seek appropriate relief.

#### **6.6A Offer Requirement for Capacity Performance Resources**

(a) For the 2018/2019 Delivery Year and subsequent Delivery Years, the installed capacity of every Generation Capacity Resource located in the PJM Region that is capable (or that reasonably can become capable) of qualifying as a Capacity Performance Resource shall be offered as a Capacity Performance Resource by the Capacity Market Seller that owns or controls all or part of such resource (which may include submission as Self-Supply) in all RPM Auctions for each such Delivery Year, less any amount determined by the Office of the Interconnection to be eligible for an exception to the must-offer requirement, where installed capacity is determined as of the date on which bidding commences for each RPM Auction pursuant to Section 5.6.6 of Attachment DD of the Tariff.

(b) Determinations of EFORD and Unforced Capacity made under section 6.6 hereof as to a Generation Capacity Resource shall govern the offers required under this section as to the same Generation Capacity Resource.

(c) Exceptions to the requirement in subsection (a) shall be permitted only for a resource which the Capacity Market Seller demonstrates is reasonably expected to be physically incapable of satisfying the requirements of a Capacity Performance Resource. Intermittent Resources, Capacity Storage Resources, Demand Resources, and Energy Efficiency Resources shall not be required to offer as a Capacity Performance Resource, but shall not be

precluded from being offered as a Capacity Performance Resource at a level that demonstrably satisfies such requirements. Exceptions shall be determined using the same timeline and procedures as specified in section 6.6.

(d) A resource not exempted or excepted under subsection (c) hereof that is capable of qualifying as a Capacity Performance Resource and does not offer into an RPM Auction as a Capacity Performance Resource shall be subject to the same restrictions on subsequent offers, and other possible remedies, as specified in section 6.6.

## **6.7 Data Submission**

(a) Potential participants in any PJM Reliability Pricing Model Auction shall submit, together with supporting documentation for each item, to the Market Monitoring Unit and the Office of the Interconnection no later than one hundred twenty (120) days prior to the posted date for the conduct of such auction, a list of owned or controlled generation resources by PJM transmission zone for the specified Delivery Year, including the amount of gross capacity, the EFORd and the net (unforced) capacity. A potential participant intending to offer any Capacity Performance Resource choosing an offer cap at or below the Net Cost of New Entry must provide the associated offer cap and the MW to which the offer cap applies.

(b) Except as provided in subsection (c) below, potential participants in any PJM Reliability Pricing Model Auction in any LDA or Unconstrained LDA Group that request a unit specific Avoidable Cost Rate shall, in addition, submit the following data, together with supporting documentation for each item, to the Market Monitoring Unit no later than one hundred twenty (120) days prior to the commencement of the offer period for such auction:

i. If the Capacity Market Seller intends to submit a non-zero price in its Sell Offer in any such auction, the Capacity Market Seller shall submit a calculation of the Avoidable Cost Rate and Projected PJM Market Revenues, as defined in subsection (d) below, together with detailed supporting documentation.

ii. If the Capacity Market Seller intends to submit a Sell Offer based on opportunity cost, the Capacity Market Seller shall also submit a calculation of Opportunity Cost, as defined in subsection (d), with detailed supporting documentation.

(c) Potential auction participants identified in subsection (b) above need not submit the data specified in that subsection for any Generation Capacity Resource:

i. that is in an Unconstrained LDA Group or, if this is the relevant market, the entire PJM Region, and is in a resource class identified in the table below as not likely to include the marginal price-setting resources in such auction; or

ii. for which the potential participant commits that any Sell Offer it submits as to such resource shall not include any price above: (1) the applicable default level identified below for the relevant resource class, less (2) the Projected PJM Market Revenues for such resource, as determined in accordance with this Tariff.





CC-2 on 1 Frame F	\$35.18	\$49.90	\$36.54	\$51.83	\$38.03	\$53.94	\$35.81	\$50.79
CC-3 on 1 Frame E/Siemens	\$39.06	\$52.89	\$40.57	\$54.94	\$42.23	\$57.18	\$39.75	\$53.83
CC-3 or More on 1 or More Frame F	\$30.46	\$42.28	\$31.64	\$43.92	\$32.93	\$45.71	\$30.99	\$43.03
CC-NUG Cogen. Frame B or E Technology	\$130.76	\$175.71	\$135.82	\$182.52	\$141.36	\$189.97	\$133.09	\$178.83
CT - 1st & 2nd Gen. Aero (P&W FT 4)	\$27.96	\$37.19	\$29.04	\$38.63	\$30.22	\$40.21	\$28.45	\$37.85
CT - 1st & Gen. Frame B	\$27.63	\$36.87	\$28.70	\$38.30	\$29.87	\$39.86	\$28.11	\$37.52
CT - 2nd Gen. Frame E	\$26.26	\$35.14	\$27.28	\$36.50	\$28.39	\$37.99	\$26.73	\$35.77
CT - 3rd Gen. Aero (GE LM 6000)	\$63.57	\$93.70	\$66.03	\$97.33	\$68.72	\$101.30	\$64.70	\$95.37
CT - 3rd Gen. Aero (P&W FT - 8 TwinPak)	\$33.34	\$49.16	\$34.63	\$51.06	\$36.04	\$53.14	\$33.93	\$50.03
CT - 3rd Gen. Frame F	\$26.96	\$38.83	\$28.00	\$40.33	\$29.14	\$41.98	\$27.43	\$39.52
Diesel	\$29.92	\$37.98	\$31.08	\$39.45	\$32.35	\$41.06	\$30.44	\$38.66
Oil and Gas Steam	\$74.20	\$90.33	\$77.07	\$93.83	\$80.21	\$97.66	\$75.51	\$91.94

Commencing with the Base Residual Auction for the 2017/2018 Delivery Year, the Office of the Interconnection shall determine the default retirement and mothball Avoidable Cost Rates referenced in section (c)(ii) above, and post them on its website, by no later than one hundred fifty (150) days prior to the commencement of the offer period for each Base Residual Auction. To determine the applicable ACR rates, the Office of the Interconnection shall use the actual rate of change in the historical values from the Handy-Whitman Index of Public Utility Construction Costs or a comparable index approved by the Commission (“Handy-Whitman Index”) to the extent they are available to update the base values for the Delivery Year, and for future Delivery Years for which the updated Handy-Whitman Index values are not yet available the Office of the Interconnection shall update the base values for the Delivery Year using the most recent ten-calendar-year annual average rate of change. The ACR rates shall be expressed in dollar values for the applicable Delivery Year.

<p><b>Maximum Avoidable Cost Rates by Technology Class (Expressed in 2011 Dollars for the 2011/2012 Delivery Year)</b></p>
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<b>Technology</b>	<b>Mothball ACR (\$/MW-Day)</b>	<b>Retirement ACR (\$/MW-Day)</b>
Combustion Turbine - Industrial Frame	\$24.13	\$33.04
Coal Fired	\$136.91	\$157.83
Combined Cycle	\$29.58	\$40.69
Combustion Turbine - Aero Derivative	\$26.13	\$37.18
Diesel	\$25.46	\$32.33
Hydro	\$68.78	\$89.96
Oil and Gas Steam	\$63.16	\$76.90
Pumped Storage	\$20.12	\$28.26

To determine the default retirement and mothball ACR values for the 2017/2018 Delivery Year, the Office of the Interconnection shall multiply the base default retirement and mothball ACR values in the table above by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Indices for the 2011 to 2013 calendar years to determine updated base default retirement and mothball ACR values. The updated base default retirement and mothball ACR values shall then be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website.

To determine the default retirement and mothball ACR values for the 2018/2019 and subsequent Delivery Years, the Office of the Interconnection shall multiply the updated base default retirement and mothball ACR values from the immediately preceding Delivery Year by a factor equal to one plus the most recent annual average rate of change in the July Handy-Whitman Index. These values become the new adjusted base default retirement and mothball ACR values, as calculated by the Office of the Interconnection and posted to its website. These resulting adjusted base values for the Delivery Year shall be multiplied by a factor equal to one plus the most recent ten-calendar-year annual average rate of change in the applicable Handy-Whitman Index, taken to the fourth power, as calculated by the Office of the Interconnection and posted to its website; provided, however, that after the Handy-Whitman indexing methodology has been employed to determine the default retirement and mothball ACR values for the RPM Auctions for the 2017/2018 through 2020/2021 Delivery Years, the Office of the Interconnection shall: i) review the default retirement and mothball ACR values to determine whether any changes other than those produced by such methodology are warranted for subsequent Delivery Years (including seeking the analysis and advice of the Market Monitoring Unit on such matter) and report its conclusions to the Members in writing no later than June 1, 2017; and ii) file with FERC resulting changes, if any, to this section no later than October 1, 2017, to be effective for the Base Residual Auction for the 2021/2022 Delivery Year; provided further, that nothing herein precludes the Office of the Interconnection from filing with FERC changes to the default retirement and mothball ACR values or any other provision of this section prior to the deadline stated in the previous clause, or at any other time.

PJM shall also publish on its website the number of Generation Capacity Resources and

megawatts per LDA that use the retirement Avoidable Cost Rates.

After the Market Monitoring Unit conducts its annual review of the table of default Avoidable Cost Rates included in section 6.7(c) above in accordance with the procedure specified in section II.H of Attachment M – Appendix, it will provide updated values or notice of its determination that updated values are not needed to Office of the Interconnection. In the event that the Office of the Interconnection determines that the values should be updated, the Office of the Interconnection shall file its proposed values with the Commission by no later than October 30th prior to the commencement of the offer period for the first RPM Auction for which it proposes to apply the updated values.

(d) In order for costs to qualify for inclusion in the Market Seller Offer Cap, the Capacity Market Seller must provide to the Market Monitoring Unit and the Office of the Interconnection relevant unit-specific cost data concerning each data item specified as set forth in section 6 by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction. If cost data is not available at the time of submission for the time periods specified in section 6.8, costs may be estimated for such period based on the most recent data available, with an explanation of and basis for the estimate used, as may be further specified in the PJM Manuals. Based on the data and calculations submitted by the Capacity Market Sellers for each existing generation resource and the formulas specified below, the Market Monitoring Unit shall calculate the Market Seller Offer Cap for each such resource, and notify the Capacity Market Seller and the Office of the Interconnection in writing of its determination pursuant to section II.E of Attachment M-Appendix.

i. **Avoidable Cost Rate:** The Avoidable Cost Rate for an existing generation resource shall be determined using the formula below and applied to the unit's Base Offer Segment.

ii. **Opportunity Cost:** Opportunity Cost shall be the documented price available to an existing generation resource in a market external to PJM. In the event that the total MW of existing generation resources submitting opportunity cost offers in any auction for a Delivery Year exceeds the firm export capability of the PJM system for such Delivery Year, or the capability of external markets to import capacity in such year, the Office of the Interconnection will accept such offers on a competitive basis. PJM will construct a supply curve of opportunity cost offers, ordered by opportunity cost, and accept such offers to export starting with the highest opportunity cost, until the maximum level of such exports is reached. The maximum level of such exports is the lesser of the Office of the Interconnection's ability to permit firm exports or the ability of the importing area(s) to accept firm imports or imports of capacity, taking account of relevant export limitations by location. If, as a result, an opportunity cost offer is not accepted from an existing generation resource, the Market Seller Offer Cap applicable to Sell Offers relying on such generation resource shall be the Avoidable Cost Rate less the Projected Market Revenues for such resource (as defined in Section 6.4). The default Avoidable Cost Rate shall be the one year mothball Avoidable Cost Rate set forth in the tables in section 6.7(c) above unless Capacity Market Seller satisfies the criteria delineated in section 6.7(e) below.

iii. **Projected PJM Market Revenues:** Projected PJM Market Revenues are defined by section 6.8(d), for any Generation Capacity Resource to which the Avoidable Cost Rate is applied.

(e) In order for the retirement Avoidable Cost Rate set forth in the table in section 6.7(c) to apply, by no later than one hundred twenty (120) days prior to the commencement of the offer period for the applicable RPM Auction, a Capacity Market Seller must submit to the Office of the Interconnection and the Market Monitoring Unit a written sworn, notarized statement of a corporate officer representing that the Capacity Market Seller will retire the Generation Capacity Resource if it does not receive during the relevant Delivery Year at least the applicable retirement Avoidable Cost Rate because it would be uneconomic to continue to operate the Generation Capacity Resource in the Delivery Year without the retirement Avoidable Cost Rate, and specifying the date the Generation Capacity Resource would otherwise be retired.

## 6.8 Avoidable Cost Definition

### (a) Avoidable Cost Rate:

The Avoidable Cost Rate for a Generation Capacity Resource that is the subject of a Sell Offer shall be determined using the following formula, expressed in dollars per MW-year:

$$\text{Avoidable Cost Rate} = [\text{Adjustment Factor} * (\text{AOML} + \text{AAE} + \text{AFAE} + \text{AME} + \text{AVE} + \text{ATFI} + \text{ACC} + \text{ACLE}) + \text{ARPIR} + \text{APIR} + \text{CPQR}]$$

Where:

- **Adjustment Factor** equals 1.10 (to provide a margin of error for understatement of costs) plus an additional adjustment referencing the 10-year average Handy-Whitman Index in order to account for expected inflation from the time interval between the submission of the Sell Offer and the commencement of the Delivery Year.
- **AOML (Avoidable Operations and Maintenance Labor)** consists of the avoidable labor expenses related directly to operations and maintenance of the generating unit for the twelve months preceding the month in which the data must be provided. The categories of expenses included in AOML are those incurred for: (a) on-site based labor engaged in operations and maintenance activities; (b) off-site based labor engaged in on-site operations and maintenance activities directly related to the generating unit; and (c) off-site based labor engaged in off-site operations and maintenance activities directly related to generating unit equipment removed from the generating unit site.
- **AAE (Avoidable Administrative Expenses)** consists of the avoidable administrative expenses related directly to employees at the generating unit for twelve months preceding the month in which the data must be provided. The categories of expenses included in AAE are those incurred

for: (a) employee expenses (except employee expenses included in AOML); (b) environmental fees; (c) safety and operator training; (d) office supplies; (e) communications; and (f) annual plant test, inspection and analysis.

- **AFAE (Avoidable Fuel Availability Expenses)** consists of avoidable operating expenses related directly to fuel availability and delivery for the generating unit that can be demonstrated by the Capacity Market Seller based on data for the twelve months preceding the month in which the data must be provided, or on reasonable projections for the Delivery Year supported by executed contracts, published tariffs, or other data sufficient to demonstrate with reasonable certainty the level of costs that have been or shall be incurred for such purpose. The categories of expenses included in AFAE are those incurred for: (a) firm gas pipeline transportation; (b) natural gas storage costs; (c) costs of gas balancing agreements; and (d) costs of gas park and loan services. AFAE expenses are for firm fuel supply and apply solely for offers for a Capacity Performance Resource
- **AME (Avoidable Maintenance Expenses)** consists of avoidable maintenance expenses (other than expenses included in AOML) related directly to the generating unit for the twelve months preceding the month in which the data must be provided. The categories of expenses included in AME are those incurred for: (a) chemical and materials consumed during maintenance of the generating unit; and (b) rented maintenance equipment used to maintain the generating unit.
- **AVE (Avoidable Variable Expenses)** consists of avoidable variable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The categories of expenses included in AVE are those incurred for: (a) water treatment chemicals and lubricants; (b) water, gas, and electric service (not for power generation); and (c) waste water treatment.
- **ATFI (Avoidable Taxes, Fees and Insurance)** consists of avoidable expenses related directly to the generating unit incurred in the twelve months preceding the month in which the data must be provided. The categories of expenses included in AFTI are those incurred for: (a) insurance, (b) permits and licensing fees, (c) site security and utilities for maintaining security at the site; and (d) property taxes.
- **ACC (Avoidable Carrying Charges)** consists of avoidable short-term carrying charges related directly to the generating unit in the twelve months preceding the month in which the data must be provided. Avoidable short-term carrying charges shall include short term carrying charges for maintaining reasonable levels of inventories of fuel and spare

parts that result from short-term operational unit decisions as measured by industry best practice standards. For the purpose of determining ACC, short term is the time period in which a reasonable replacement of inventory for normal, expected operations can occur.

- **ACLE (Avoidable Corporate Level Expenses)** consists of avoidable corporate level expenses directly related to the generating unit incurred in the twelve months preceding the month in which the data must be provided. Avoidable corporate level expenses shall include only such expenses that are directly linked to providing tangible services required for the operation of the generating unit proposed for Deactivation. The categories of avoidable expenses included in ACLE are those incurred for: (a) legal services, (b) environmental reporting; and (c) procurement expenses.
- **CPQR (Capacity Performance Quantifiable Risk)** consists of the documented and quantifiable costs of mitigating the risks associated with submission of a Capacity Performance Resource offer, such as insurance expenses solely attributable to risks of being a Capacity Performance Resource. CPQR applies solely for offers for a Capacity Performance Resource.
- **APIR (Avoidable Project Investment Recovery Rate) = PI \* CRF**

Where:

- **PI** is the amount of project investment completed prior to June 1 of the Delivery Year, except for Mandatory Capital Expenditures (“CapEx”) for which the project investment must be completed during the Delivery Year, that is reasonably required to enable a Generation Capacity Resource that is the subject of a Sell Offer to continue operating or improve availability during Peak-Hour Periods during the Delivery Year.
- **CRF** is the annual capital recovery factor from the following table, applied in accordance with the terms specified below.

Age of Existing Units (Years)	Remaining Life of Plant (Years)	Levelized CRF
1 to 5	30	0.107
6 to 10	25	0.114
11 to 15	20	0.125
16 to 20	15	0.146
21 to 25	10	0.198
25 Plus	5	0.363

Mandatory CapEx	4	0.450
40 Plus Alternative	1	1.100

Unless otherwise stated, Age of Existing Unit shall be equal to the number of years since the Unit commenced commercial operation, up to and through the relevant Delivery Year.

Remaining Life of Plant defines the amortization schedule (i.e., the maximum number of years over which the Project Investment may be included in the Avoidable Cost Rate.)

### **Capital Expenditures and Project Investment**

For any given Project Investment, a Capacity Market Seller may make a one-time election to recover such investment using: (i) the highest CRF and associated recovery schedule to which it is entitled; or (ii) the next highest CRF and associated recovery schedule. For these purposes, the CRF and recovery schedule for the 25 Plus category is the next highest CRF and recovery schedule for both the Mandatory CapEx and the 40 Plus Alternative categories. The Capacity Market Seller using the above table must provide the Market Monitoring Unit with information, identifying and supporting such election, including but not limited to the age of the unit, the amount of the Project Investment, the purpose of the investment, evidence of corporate commitment (e.g., an SEC filing, a press release, or a letter from a duly authorized corporate officer indicating intent to make such investment), and detailed information concerning the governmental requirement (if applicable). Absent other written notification, such election shall be deemed based on the CRF such Seller employs for the first Sell Offer reflecting recovery of any portion of such Project Investment.

For any resource using the CRF and associated recovery schedule from the CRF table that set the Capacity Resource Clearing Price in any Delivery Year, such Capacity Market Seller must also provide to the Market Monitoring Unit, for informational purposes only, evidence of the actual expenditure of the Project Investment, when such information becomes available.

If the project associated with a Project Investment that was included in a Sell Offer using a CRF and associated recovery schedule from the above table has not entered into commercial operation prior to the end of the relevant Delivery Year, and the resource's Sell Offer sets the clearing price for the relevant LDA, the Capacity Market Seller shall be required to elect to either (i) pay a charge that is equal to the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR component of the Avoidable Cost Rate, this difference to be multiplied by the cleared MW volume from such Resource ("rebate payment"); (ii) hold such rebate payment in escrow, to be released to the Capacity Market Seller in the event that the project enters into commercial operation during the subsequent Delivery Year or rebated to LSEs in the relevant LDA if the project has not entered into commercial operation during the subsequent Delivery Year; or (iii) make a reasonable investment in the amount of the PI in other Existing Generation Capacity Resources owned or controlled by the Capacity Market Seller or its Affiliates in the relevant LDA. The revenue from such rebate payments shall be allocated pro rata to LSEs in the relevant LDA(s) that were charged a Locational Reliability Charge for such Delivery Year, based on their Daily Unforced Capacity Obligation in the relevant LDA(s). If the Sell Offer from the



Generation Capacity Resource did not set the Capacity Resource Clearing Price in the relevant LDA, no alternative investment or rebate payment is required. If the difference between the Capacity Resource Clearing Price for such LDA for the relevant Delivery Year and what the clearing price would have been absent the APIR amount does not exceed the greater of \$10 per MW-day or a 10% increase in the clearing price, no alternative investment or rebate payment is required.

### **Mandatory CapEx Option**

The Mandatory CapEx CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), to a resource that must make a Project Investment to comply with a governmental requirement that would otherwise materially impact operating levels during the Delivery Year, where: (i) such resource is a coal, oil or gas-fired resource that began commercial operation no fewer than fifteen years prior to the start of the first Delivery Year for which such recovery is sought, and such Project Investment is equal to or exceeds \$200/kW of capitalized project cost; or (ii) such resource is a coal-fired resource located in an LDA for which a separate VRR Curve has been established for the relevant Delivery Years, and began commercial operation at least 50 years prior to the conduct of the relevant BRA.

A Capacity Market Seller that wishes to elect the Mandatory CapEx option for a Project Investment must do so beginning with the Base Residual Auction for the Delivery Year in which such project is expected to enter commercial operation. A Sell Offer submitted in any Base Residual Auction for which the Mandatory CapEx option is selected may not exceed an offer price equivalent to 0.90 times the then-current Net CONE (on an unforced-equivalent basis).

### **40 Plus Alternative Option**

The 40 Plus Alternative CRF and recovery schedule is an option available, beginning in the third BRA (Delivery Year 2009-10), for a resource that is a gas- or oil-fired resource that began commercial operation no less than 40 years prior to the conduct of the relevant BRA (excluding, however, any resource in any Delivery Year for which the resource is receiving a payment under Part V of the PJM Tariff. Generation Capacity Resources electing this 40 Plus Alternative CRF shall be treated as At Risk Generation for purposes of the sensitivity runs in the RTEP process). Resources electing the 40 Plus Alternative option will be modeled in the RTEP process as “at-risk” at the end of the one-year amortization period.

A Capacity Market Seller that wishes to elect the 40 Plus Alternative option for a Project Investment must provide written notice of such election to the Office of the Interconnection no later than six months prior to the Base Residual Auction for which such election is sought; provided however that shorter notice may be provided if unforeseen circumstances give rise to the need to make such election and such seller gives notice as soon as practicable.

The Office of the Interconnection shall give market participants reasonable notice of such election, subject to satisfaction of requirements under the PJM Operating Agreement for protection of confidential and commercially sensitive information. A Sell Offer submitted in any Base Residual Auction for which the 40 Plus Alternative option is selected may not exceed an

offer price equivalent to the then-current Net CONE (on an unforced-equivalent basis).

### **Multi-Year Pricing Option**

A Seller submitting a Sell Offer with an APIR component that is based on a Project Investment of at least \$450/kW may elect this Multi-Year Pricing Option by providing written notice to such effect the first time it submits a Sell Offer that includes an APIR component for such Project Investment. Such option shall be available on the same terms, and under the same conditions, as are available to Planned Generation Capacity Resources under section 5.14(c) of this Attachment.

- **ARPIR (Avoidable Refunds of Project Investment Reimbursements)** consists of avoidable refund amounts of Project Investment Reimbursements payable by a Generation Owner to PJM under Part V, Section 118 of this Tariff or avoidable refund amounts of project investment reimbursements payable by a Generation Owner to PJM under a Cost of Service Recovery Rate filed under Part V, Section 119 of the Tariff and approved by the Commission.

(b) For the purpose of determining an Avoidable Cost Rate, avoidable expenses are incremental expenses directly required to operate a Generation Capacity Resource that a Generation Owner would not incur if such generating unit did not operate in the Delivery Year or meet Availability criteria during Peak-Hour Periods during the Delivery Year.

(c) For the purpose of determining an Avoidable Cost Rate, avoidable expenses shall exclude variable costs recoverable under cost-based offers to sell energy from operating capacity on the PJM Interchange Energy Market under the Operating Agreement.

(d) Projected PJM Market Revenues for any Generation Capacity Resource to which the Avoidable Cost Rate is applied shall include all actual unit-specific revenues from PJM energy markets, ancillary services, and unit-specific bilateral contracts from such Generation Capacity Resource, net of marginal costs for providing such energy (i.e., costs allowed under cost-based offers pursuant to Section 6.4 of Schedule 1 of the Operating Agreement) and ancillary services from such resource.

(i) For the first three BRAs (for Delivery Years 2007-08, 2008-09, 2009-10), the calculation of Projected PJM Market Revenues shall be equal to the simple average of such net revenues as described above for calendar years 2001-2006; and

(ii) For the fourth BRA (delivery year 2010-11) and thereafter, the calculation of Projected PJM Market Revenues shall be equal to the rolling simple average of such net revenues as described above from the three most recent whole calendar years prior to the year in which the BRA is conducted.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because the Generation Capacity Resource was not integrated into PJM

during the full period, then the Projected PJM Market Revenues shall be calculated using only those whole calendar years within the full period in which such Resource received PJM market revenues.

If a Generation Capacity Resource did not receive PJM market revenues during the entire relevant time period because it was not in commercial operation during the entire period, or if data is not available to the Capacity Market Seller for the entire period, despite the good faith efforts of such seller to obtain such data, then the Projected PJM Market Revenues shall be calculated based upon net revenues received over the entire period by comparable units, to be developed by the MMU and the Capacity Market Seller.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.7, OATT ATTACHMENT DD.7. GENERATION RESOURCE RATING TEST FAILUR, 1.0.0, A

Record Narrative Name: 7. GENERATION RESOURCE RATING TEST FAILURE CHARGE

Tariff Record ID: 1162

Tariff Record Collation Value: 671766614 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **7. GENERATION RESOURCE RATING TEST FAILURE CHARGE**

### **7.1 Generation Resource Rating Test Failure Charges**

A Generation Resource Rating Test Failure Charge shall be assessed on any Market Seller that commits a Generation Capacity Resource for a Delivery Year, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, if such resource fails a generation resource capacity test, as provided herein.

#### **a) Generation Resource Fails Capacity Test in Delivery Year**

Each Generation Capacity Resource committed for a Delivery Year shall be obligated to complete a generation resource capacity test, as described in the PJM Manuals. The Market Seller that committed the resource, or Locational UCAP Seller that sold the resource, may perform an unlimited number of tests during each such period. If none of the tests during a testing period certify full delivery of the megawatt amount of installed capacity the Market Seller committed, or Locational UCAP Seller sold, for such Delivery Year, the Market Seller or Locational UCAP Seller shall be assessed a daily Generation Resource Rating Test Failure Charge for each day from the first day of the Summer or Winter Season in which such resource failed the rating test through the last day of such Delivery Year, provided, however, that such a seller that fails or is expected to fail a rating test may obtain and commit Unforced Capacity from a replacement Capacity Resource meeting the same locational requirements. Such Unforced Capacity may include uncommitted or uncleared Sell Offer blocks from Generation Capacity Resources that were otherwise committed. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection, and shall reduce the amount of installed capacity committed from the Generation Capacity Resource, that

failed or was expected to fail such rating test, in accordance with the determination prescribed by subsection (b) below.

b) Generation Resource Rating Test Failure Charge

The Generation Resource Rating Test Failure Charge shall equal the Daily Deficiency Rate multiplied by the following megawatt quantity, converted to an Unforced Capacity basis using the Generation Capacity Resource's EFORD for the twelve months ending the September 30 last preceding the Delivery Year: (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the highest installed capacity rating determined for such resource in any test during the relevant testing period. The Daily Deficiency Rate shall equal the Capacity Resource Clearing Price (weighted as necessary to reflect the clearing prices in all RPM Auctions that resulted in installed capacity commitments from such resource), in \$/MW-day, applicable to the Generation Capacity Resource (for purposes of replacement capacity, including Locational UCAP transactions, the applicable Capacity Resource Clearing Price shall be the clearing price for the Locational Deliverability Area in which such resource is located) plus the greater of (iii) 0.20 times such weighted average Capacity Resource Clearing Price; or (iv) \$20/MW-Day, provided, however, if a resource is unavailable during the Delivery Year at less than the level committed in the Market Seller's cleared Sell Offer or Locational UCAP Seller's Locational UCAP sale due to derating, delay, or retirement, then such seller shall not be assessed a charge under this section to the extent (i.e., for the same megawatts and time period) that such seller is assessed a charge under section 8 for such unavailability; and provided further that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource capacity rating deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource capacity rating deficiency and Performance Shortfall. If a single resource is the basis for installed capacity commitments of multiple Capacity Market Sellers or Locational UCAP Sellers, the installed capacity shortfall determined under (i) and (ii) above shall be assessed upon such sellers on a pro-rata basis in accordance with the megawatts of capacity from such resource in their cleared Sell Offers, Locational UCAP sales, or other commitment as replacement capacity.

c) Allocation of Revenue Collected from Generation Resource Rating Test Failure Charges.

The revenue collected from Generation Resource Rating Test Failure Charges shall be distributed on a pro-rata basis to LSEs that were charged a Locational Reliability Charge for the Delivery Year for which the Generation Resource Rating Test Failure Charge was assessed. The charges shall be allocated on a pro-rata basis to LSEs based on their Daily Unforced

## Capacity Obligation.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
OATT ATT DD.8, OATT ATTACHMENT DD.8. CAPACITY RESOURCE DEFICIENCY CHARGE, 5.0.0, A  
Record Narrative Name: 8. CAPACITY RESOURCE DEFICIENCY CHARGE  
Tariff Record ID: 1163  
Tariff Record Collation Value: 672481717 Tariff Record Parent Identifier: 1132  
Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

## **8. CAPACITY RESOURCE DEFICIENCY CHARGE**

### **8.1**

A Capacity Resource Deficiency Charge shall be assessed on any Capacity Market Seller that commits a Capacity Resource, and on any Locational UCAP Seller that sells Locational UCAP for a Delivery Year based on a Generation Capacity Resource, for a Delivery Year that is unable or unavailable to deliver Unforced Capacity for all or any part of such Delivery Year for any reason, including but not limited to the following, and that does not obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resource, Extended Summer Demand Resource, or Limited Demand Resource) in the megawatt quantity required to satisfy the capacity committed from such resource by such seller as a result of all cleared Sell Offers from such seller based on such resource in any RPM Auctions for such Delivery Year, the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource:

a) Unit Derating – Such Capacity Resource is a Generation Capacity Resource and its capacity value is derated prior to or during the Delivery Year;

b) EFORD Increase – Such Capacity Resource is a Generation Capacity Resource and the EFORD value determined for such resource at least two (2) months prior to the Third Incremental Auction is higher than the EFORD value submitted in the Capacity Market Seller's cleared Sell Offer;

c) External Generation Resource – Such Capacity Resource is an Existing Generation Capacity Resource that is located outside of the PJM Control Area and arrangements for the firm delivery of the output of such resource to the interface with the PJM Region are not in place for such resource prior to the start of the Delivery Year;

d) Planned Generation Resource – Such Capacity Resource is a Planned Generation Capacity Resource and Interconnection Service has not commenced as to such resource prior to the start of the Delivery Year;

e) Planned Demand Resource - Such Capacity Resource is a Planned Demand

Resource or an Energy Efficiency Resource and the associated demand response program or energy efficiency measure is not installed prior to the start of the Delivery Year; or

f) Existing Demand Resource – Such Capacity Resource is an existing Demand Resource or Energy Efficiency Resource and, subject to section 8.4, is not capable of providing the megawatt quantity of load response specified in the cleared Sell Offer for the time periods of availability associated with the product type.

## **8.2. Capacity Resource Deficiency Charge**

The Capacity Resource Deficiency Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the megawatt quantity of deficiency below the level of capacity committed in such Capacity Market Seller's Sell Offer(s) or bilateral capacity commitments, or Locational UCAP Seller's Locational UCAP sale for each day such seller is deficient, provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource deficiency addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource deficiency and Performance Shortfall.

## **8.3. Allocation of Revenue Collected from Capacity Resource Deficiency Charges**

The revenue collected from the assessment of a Capacity Resource Deficiency Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

## **8.4 Relief from Charges**

A Capacity Market Seller or Locational UCAP Seller that is otherwise subject to the Capacity Resource Deficiency Charge solely as a result of section 8.1(f) may receive relief from such Charge if it demonstrates that the inability to provide the level of demand response specified in its Sell Offer is due to the permanent departure (due to plant closure, efficiency gains, or similar reasons) from the Transmission System of load that was relied upon for load response in such Sell Offer; provided, however, that such seller must provide the Office of the Interconnection with all information deemed necessary by the Office of the Interconnection to assess the merits of the request for relief. Such seller shall receive no RPM Auction Credit for the amount of reduction in the committed Existing Demand Resources.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.9, OATT ATTACHMENT DD.9. PEAK SEASON MAINTENANCE COMPLIANCE PEN, 3.0.0, A

Record Narrative Name: 9. PEAK SEASON MAINTENANCE COMPLIANCE PENALTY CHARGE.

Tariff Record ID: 1164

Tariff Record Collation Value: 673196820 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

## **9. PEAK SEASON MAINTENANCE COMPLIANCE PENALTY CHARGE.**

### **a) Purpose**

To preserve and maintain the reliability of the PJM Region and to recognize the impact of planned outages and maintenance outages of Generation Capacity Resources during the Peak Season, each Capacity Market Seller that commits a Generation Capacity Resource for a Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for a Delivery Year, must ensure that such Generation Capacity Resource has available sufficient Unforced Capacity during the Peak Season to satisfy the megawatt amount committed from such resource as a result of all Sell Offers by such seller based on such resource in any RPM Auctions for such Delivery Year the reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and the increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource.

### **b) Peak Season Requirement**

To the extent the Generation Capacity Resource will not be available due to a planned or maintenance outage that occurs during the Peak Season without the approval of the Office of the Interconnection, the Capacity Market Seller or Locational UCAP Seller must obtain replacement Unforced Capacity meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) from a Capacity Resource that is not already committed for such Delivery Year and that meets all characteristics specified in the Sell Offer or Locational UCAP transaction, including the megawatt quantity of Unforced Capacity committed for such Delivery Year (with such Unforced Capacity, in the case of a Generation Capacity Resource, determined on the basis of such Generation Capacity Resource's EFORD for the twelve months ending on the September 30 last preceding the Delivery Year), or otherwise, for Delivery Years through May 31, 2018, pay a Peak Season Maintenance Compliance Penalty Charge. The Capacity Market Seller or Locational UCAP Seller shall commit such replacement Capacity Resource in accordance with the procedure set forth in the PJM Manuals.

### **c) Peak Season Planned and Maintenance Outages**

The Office of the Interconnection shall adopt and maintain rules and procedures for determining the allowable Peak Season planned and maintenance outages.

### **d) Peak Season Maintenance Compliance Penalty Charge**

The Peak Season Maintenance Compliance Penalty Charge shall equal the Daily Deficiency Rate (as defined in section 7) multiplied by the unforced value of a positive shortfall calculated for the capacity committed for each day during the Peak Season that such resource is out-of-service on a

maintenance outage that is not authorized by the Office of the Interconnection. The shortfall shall equal (i) the annual average of the installed capacity committed for each day of such Delivery Year as a result of all cleared Sell Offers in all RPM Auctions for such Delivery Year relying on such resource, reduction in any such commitment for such resource to the extent and for the time period of any replacement capacity committed in lieu of such resource, and increase in any such commitment for such resource to the extent and for the time period that such resource is committed as replacement capacity for any other resource, minus (ii) the summer net dependable rating minus the amount of capacity out-of-service on unapproved planned or maintenance outage on a peak season day.

e) Allocation of Revenue Collected from Peak Season Maintenance Compliance Penalty Charges

The revenue collected from assessment of a Peak Season Maintenance Compliance Penalty Charge shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which the Capacity Resource Deficiency Charge was assessed. Such revenues shall be distributed on a pro-rata basis to all such LSEs based on their Daily Unforced Capacity Obligation.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.10, OATT ATTACHMENT DD.10. PEAK-HOUR-PERIOD AVAILABILITY CHARGES, 3.0.0, A

Record Narrative Name: 10. PEAK-HOUR-PERIOD AVAILABILITY CHARGES AND CREDITS

Tariff Record ID: 1165

Tariff Record Collation Value: 673911923 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **10. PEAK-HOUR-PERIOD AVAILABILITY CHARGES AND CREDITS**

(a) To preserve and maintain the reliability of the PJM Region and to encourage Capacity Market Sellers and Locational UCAP Sellers to maintain the availability of Generation Capacity Resources during critical peak hours of the Delivery Year, each Capacity Market Seller that commits a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, and each Locational UCAP Seller that sells Locational UCAP from a Generation Capacity Resource for the 2017/2018 Delivery Year and any prior Delivery Year, shall be credited or charged to the extent the critical peak-period availability of its committed Generation Capacity Resources exceeds or falls short, respectively, of the expected availability of such resources. Charges and credits hereunder shall not apply to wind or solar resources.

(b) Critical peak periods for purposes of this assessment (“Peak-Hour Periods”) shall be the hour ending 1500 local prevailing time through the hour ending 1900 local prevailing time on any day during the calendar months of June through August that is not a Saturday, Sunday, or federal holiday, and the hour ending 800 local prevailing time through the hour ending 900 local prevailing time and the hour ending 1900 local prevailing time through the hour ending 2000 local prevailing time on any day during the calendar months of January and February that is not a Saturday, Sunday or federal holiday.



(c) Peak-Period Equivalent Forced Outage Rate and Peak-Period Capacity Calculations

The Peak-Period Equivalent Forced Outage Rate shall be calculated for Peak-Hour Periods based on the following formula:

$$\text{EFORP (\%)} = (\text{FOH} + \text{EFPOH}) / (\text{SH} + \text{FOH})$$

where

FOH = full forced outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below);

EFPOH = equivalent forced partial outage hours when the unit was called upon, excluding those outages deemed as OMC (as defined below); and

SH = service hours as defined pursuant to NERC GADS standards.

The Peak-Period Capacity of a Generation Capacity Resource shall be calculated as follows:

$$\text{PCAP} = \text{ICAP} * (1.0 - \text{EFOR}_p)$$

where

ICAP = the installed capacity rating of such Generation Capacity Resource

(d) Determination of Expected EFOR<sub>p</sub> and PCAP for Generation Capacity Resources

For each Delivery Year, the expected EFOR<sub>p</sub> and PCAP of each Generation Capacity Resource committed to serve load in such Delivery Year shall be the EFORD and UCAP, respectively, calculated on a rolling-average basis using such resource's service history during the five consecutive annual periods of twelve consecutive months ending September 30 last preceding such Delivery Year. Such EFOR<sub>p</sub> and UCAP shall be determined in accordance with Schedule 5 of the Reliability Assurance Agreement, which excludes (for purposes of Capacity Resource UCAP calculations) outages deemed outside management control in accordance with the standards and guidelines of NERC, as defined in the Generating Availability Data System, Data Reporting Instructions in Attachment K or its successor ("Outside Plant Management Control" or "OMC").

(e) For each Delivery Year, the actual EFOR<sub>p</sub> and PCAP of each Generation Capacity Resource shall be calculated during the Peak-Hour Periods of such Delivery Year, provided however, that such calculation shall not include any day such a resource was unavailable if such unavailability resulted in a charge or penalty due to delay, cancellation, retirement, de-rating, or rating test failure. The full or partial forced outage hours when called upon shall be those outage hours during which the cost-based offer for energy from the resource would have been less than the applicable Locational Marginal Price for such resource, or when

the Office of the Interconnection would have called upon the resource (absent the outage) for Operating Reserves, in both cases as determined by the Office of the Interconnection in accordance with the procedures specified in the PJM Manuals (including, without limitation, respecting such unit's current operating constraints). In addition, for single-fueled, natural gas-fired units, a failure to perform during the winter Peak-Hour Period shall be excused for purposes of this section if the Capacity Market Seller, or Locational UCAP Seller, as applicable, can demonstrate to the Office of the Interconnection that such failure was due to non-availability of gas to supply the unit.

(f) If the calculation under subsection (e) for any Generation Capacity Resource for a Delivery Year results in fewer than fifty total Service Hours during Peak Hours, then the actual EFORP for purposes of such calculation shall be the lower of the resource's EFOR<sub>D</sub> (based on Delivery Year outage data) and its EFOR<sub>P</sub> and the actual PCAP for purposes of such calculation shall be, respectively, the resource's UCAP or its PCAP.

(g) For each Delivery Year, the excess or shortfall in Peak-Hour Period availability for each Generation Capacity Resource shall be determined by comparing such resource's expected and actual PCAP, subject to the limitation under subsection (i) below. The net Peak-Hour Period availability shortfall or excess for each Capacity Market Seller and FRR Entity in each Locational Deliverability Area shall be the net of the shortfalls and excesses of all Generation Capacity Resources in such Locational Deliverability Area committed by such Capacity Market Seller or Locational UCAP Seller for such Delivery Year. If there is a net positive Peak Hour Period availability shortfall in the LDA for such committed resources in the LDA, the sum of the excesses of all Generation Capacity Resources in such Locational Deliverability Area owned or controlled by such Capacity Market Seller, available for the Delivery Year but not committed for such Delivery Year, and satisfying all obligations of a committed Capacity Resource for such Delivery Year shall be used to reduce the net positive Peak Hour Period availability shortfall in the LDA of committed resources by the amount of the sum of the excesses of such available uncommitted resources; however, such reduction shall not result in a net Peak Hour Period availability excess in the LDA.

(h) As to any Generation Capacity Resource experiencing or expected to experience a full or partial outage during any Peak-Hour Period that would or could result in a shortfall under subsection (g) above, a Capacity Market Seller or Locational UCAP Seller may obtain and commit Unforced Capacity from a replacement Capacity Resource (not previously committed) meeting the same locational requirements and same or better temporal availability characteristics (i.e., Annual Resources) as such resource. Such Unforced Capacity shall be recognized for purposes of this section prospectively from the effective date of commitment of such replacement resource, and to the extent such replacement Unforced Capacity thereafter is available during Peak-Hour Periods, any shortfall that otherwise would have been calculated shall be reduced to that extent. Any such commitment of replacement capacity shall be effective upon no less than one day's notice to the Office of the Interconnection.

(i) The shortfall determined for any Generation Capacity Resource shall not exceed an amount equal to 0.50 times the Unforced Capacity of such resource; provided, however, that if such limitation is triggered as to any Generation Capacity Resource for a Delivery Year, then

the decimal multiplier for this calculation as to such resource in the immediately succeeding Delivery Year shall be increased to 0.75, and if such limitation again is triggered in such succeeding Delivery Year, then the multiplier shall be increased to 1.00. The multiplier shall remain at either such elevated level for each succeeding Delivery Year until the shortfall experienced by such resource is less than 0.50 times the Unforced Capacity of such resource for three consecutive Delivery Years.

(j) A Peak-Hour Period Availability Charge shall be assessed on each Capacity Market Seller or Locational UCAP Seller with a net shortfall in PCAP in an LDA, where such charge is equal to such shortfall times the Capacity Resource Clearing Price determined for such Locational Deliverability Area for such Delivery Year.

(k) The revenues from such charges shall be distributed to the Capacity Market Sellers, Locational UCAP Sellers, and FRR Entities that committed Generation Capacity Resources, in such Locational Deliverability Area that have net excess PCAP for such Delivery Year, provided however that any such seller shall be paid no more than the product of such seller's net excess PCAP times the Capacity Clearing Price determined for such Locational Deliverability Area for such Delivery Year. Any excess revenues remaining after such distribution shall be distributed on a pro-rata basis to all LSEs in the Zone that were charged the same Locational Reliability Charge for the Delivery Year for which the Peak Hour Availability Charge was assessed, and to all FRR Entities in the Zone that are LSEs and whose FRR Capacity Plan resources over-performed in the Delivery Year, on a pro-rata basis in accordance with each LSE's Daily Unforced Capacity Obligation.

(l) The Office of the Interconnection shall provide estimated charges and credits based on the summer Peak-Hour Periods within three calendar months after the end of the summer period. Final charges and credits for the Delivery Year shall be billed within three calendar months following the end of the Delivery Year.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.10A, OATT ATTACHMENT DD.10A CHARGES FOR NON-PERFORMANCE AND CREDI, 0.0.0, A

Record Narrative Name: 10A. CHARGES FOR NON-PERFORMANCE AND CREDITS FOR PERFORMANCE

Tariff Record ID: 1633

Tariff Record Collation Value: 673929733 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: NEW

Record Content Type: 1

Associated Filing Identifier:

## **10A. CHARGES FOR NON-PERFORMANCE AND CREDITS FOR PERFORMANCE**

(a) For the 2018/2019 Delivery Year and any subsequent Delivery Year (and for certain purposes for the 2016/2017 and 2017/2018 Delivery Years as provided in subsections (h) and (i) hereof), each Capacity Market Seller that commits a Capacity Resource for a Delivery Year (whether through an RPM Auction, a bilateral transaction, or as Locational UCAP), and each Locational UCAP Seller that sells Locational UCAP from a Capacity Resource for a Delivery Year, shall be charged to the extent the performance of each of its committed Capacity Resources during all or any part of a clock-hour when an Emergency Action is in effect falls short of the expected performance of such resources (as determined herein) and the revenue from such charges shall be provided to Market Participants with generation or demand response

resources that perform during such hour in excess of the level expected based on commitments (if any) of such resources.

(b) Performance shall be measured for purposes of this assessment during each Performance Assessment Hour.

(c) For each Performance Assessment Hour, the Office of the Interconnection shall determine whether, and the extent to which, the actual performance of each Capacity Resource and Locational UCAP has fallen short of the performance expected of such committed Capacity Resource, and the magnitude of any such shortfall, based on the following formula:

Performance Shortfall = Expected Performance - Actual Performance

Where the result of such formula is a positive number and where:

Expected Performance =

for Generation Capacity Resources and Capacity Storage Resources: [(Resource Committed Capacity / All Committed Generation and Storage Capacity) \* (All Actual Generation Performance, Storage Resource Performance, Net Energy Imports and Demand Response Bonus Performance)];

where

Resource Committed Capacity = the total megawatts of Unforced Capacity of the Capacity Resource committed by such Capacity Market Seller or Locational UCAP Seller;

All Committed Generation and Storage Capacity = the total megawatts of Unforced Capacity of all Generation Capacity Resources and all Capacity Storage Resources committed by all Capacity Market Sellers, FRR Entities, Locational UCAP Sellers;

All Actual Generation Performance and Storage Resource Performance = the total amount of Actual Performance for all generation resources and storage resources during the interval;

Net Energy Imports = the sum of interchange transactions importing energy into PJM not including those associated with external Capacity Resources and therefore included in All Actual Generation Performance minus the sum of interchange transactions exporting energy out of PJM, but not less than zero;

Demand Response Bonus Performance = the sum of Bonus performance provided by Demand Response resources as calculated in (g) below;

and for Demand Resources, Energy Efficiency Resources, and Qualifying Transmission Upgrades: Resource Committed Capacity;

where

Resource Committed Capacity = the total megawatts of capacity committed from such Capacity Resource committed capacity without making any adjustment for the Forecast Pool Requirement

and

Actual Performance =

for each generation resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each storage resource, the metered output of energy delivered by such resource plus the resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour;

for each Demand Resource, the demand response provided by such resource, plus such resource's real-time reserve or regulation assignment, if any, during the Performance Assessment Hour, as established through the PJM demand response settlement procedure consistent with the standards specified in Schedule 6 of the RAA;

for each Energy Efficiency Resource, the load reduction quantity approved by PJM subsequent to the pre-delivery year submittal of a post-installation measurement and verification report; and

for each Qualified Transmission Upgrade, the megawatt quantity cleared by such Qualified Transmission Upgrade if it is in service during the Performance Assessment Hour, and zero if it is not in service during such Performance Assessment Hour.

Such calculation shall encompass all resources located in the area defined by the Emergency Action. For such purpose, Qualifying Transmission Upgrades shall be deemed to be located in the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit, and a Qualifying Transmission Upgrade shall be included in calculations of Expected Performance and Actual Performance only if, and to the extent that, the declared Emergency Action encompasses the Locational Deliverability Area into which such upgrade increased the Capacity Emergency Transfer Limit. The Performance Shortfall shall be calculated for each Performance Assessment Hour, and any committed Capacity Resource for which the above calculation produces a negative number for a Performance Assessment Hour shall not have a Performance Shortfall for such Performance Assessment Hour.

(d) Notwithstanding subsection (c) above, a Capacity Resource or Locational UCAP of a Capacity Market Seller or Locational UCAP Seller shall not be considered in the calculation

of a Performance Shortfall for a Performance Assessment Hour to the extent such Capacity Resource or Locational UCAP was unavailable during such Performance Assessment Hour solely because the resource on which such Capacity Resource or Locational UCAP is based was on a Generator Planned Outage or Generator Maintenance Outage approved by the Office of the Interconnection, or was not scheduled to operate by the Office of the Interconnection, or was online but was scheduled down, by the Office of the Interconnection, for reasons other than (i) limitations specified by such seller in the resource operating parameters, or (ii) the submission by such seller of a market-based offer higher than its cost-based offer.

(e) Subject to the Non-Performance Charge Limit specified in subsection (f) hereof, each Capacity Market Seller and Locational UCAP Seller shall be assessed a Non-Performance Charge for each of its Capacity Resources or Locational UCAP that has a Performance Shortfall for a Performance Assessment Hour based on the following formula, applied to each such resource:

$$\text{Non-Performance Charge} = \text{Performance Shortfall} * \text{Non-Performance Charge Rate}$$

Where

For Capacity Performance Resources the Non-Performance Charge Rate = (Net Cost of New Entry (stated in terms of installed capacity) for the LDA and Delivery Year for which such calculation is performed \* (365 / 30)

and for Base Capacity Resources the Non-Performance Charge Rate = (Weighted Average Resource Clearing Price applicable to the resource \* (365 / 30)

(f) The Non-Performance Charge for each Capacity Performance Resource or (including Locational UCAP from such a resource) shall not exceed a Non-Performance Charge Limit equal to, for any calendar month of a Delivery Year, 0.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year, an amount equal to 1.5 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365. All references to Net Cost of New Entry in this section 10A shall be to the Net Cost of New Entry for the LDA and Delivery Year for which the calculation is performed. The Non-Performance Charge for each Base Capacity Resource (including Locational UCAP from such a resource) shall not exceed a Non-Performance Charge Limit equal to, for a Delivery Year, an amount equal to the total payments due such Capacity Resource or Locational UCAP under section 5.14 of this Attachment DD for such Delivery Year.

(g) Revenues collected from assessment of Non-Performance Charges for a Performance Assessment Hour shall be distributed to each Market Participant, whether or not such Market Participant committed a Capacity Resource or Locational UCAP for a Performance Assessment Hour, that provided energy or load reductions above the levels expected for such resource during such hour. For purposes of this provision, the performance expected of a resource, and the revenue distribution payment, if any, for a resource, shall be determined in accordance with the following formulae:

Formula 1: Market Participant Bonus Performance = Actual Performance – Expected Performance

And

Formula 2: Performance Payment = (Market Participant Bonus Performance / All Market Participants Bonus Performance) \* Non-Performance Charge Revenues.

Where the result of Formula 1 is a positive number and where:

Actual Performance is as defined in subsection (c), provided, however, that Actual Performance for purposes of this calculation shall not exceed the megawatt level at which such resource was scheduled by the Office of the Interconnection during the Performance Assessment Hours;

Expected Performance is as defined in subsection (c), provided, however, that for purposes of this calculation, Expected Performance shall be zero for any resource that is not a Capacity Resource or Locational UCAP, or that is a Capacity Resource or Locational UCAP, but for which the Performance Assessment Hour occurs outside the resource's capacity obligation period, including, without limitation, a Base Capacity Demand Resource providing demand response during non-summer months; and

All Market Participants Bonus Performance is the sum of the results of calculating Formula 1 of this subsection (g) for all Market Participants that have Bonus Performance during such Performance Assessment Hour.

(h) The provisions of this section 10A shall apply during the 2016/2017 Delivery Year, provided that:

- (i) Non-Performance Charges shall be determined solely for and assessed solely on, Capacity Performance Resources committed for such Delivery Year;
- (ii) The Non-Performance Charge shall be 0.5 times the Non-Performance Charge calculated under subsection (e) hereof; and
- (iii) The Non-Performance Charge Limit for any calendar month shall be 0.25 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.75 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(i) The provisions of this section 10A shall apply during the 2017-2018 Delivery Year, provided that:

- (i) Non-Performance Charges shall be determined solely for, and assessed solely on, Capacity Performance Resources committed for such Delivery

- Year;
- (ii) The Non-Performance Charge shall be 0.6 times the Non-Performance Charge calculated under subsection (e) hereof; and
  - (iii) The Non-Performance Charge Limit for any calendar month shall be 0.3 times the Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365; and for a Delivery Year shall be 0.9 times Net Cost of New Entry times the megawatts of Unforced Capacity committed by such resource times 365.

(j) The Office of the Interconnection shall bill charges and credits for performance during Performance Assessment Hours within three calendar months after the calendar month that included such Performance Assessment Hours, provided, for any Non-Performance Charge, the amount shall be divided by the number of months remaining in the Delivery Year for which no invoice has been issued, and the resulting amount shall be invoiced each such remaining month in the Delivery Year.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
 ATTACHMENT DD.11, OATT ATTACHMENT DD.11. DEMAND RESOURCE AND ILR COMPLIANCE PE, 7.0.0, A  
 Record Narrative Name: 11. DEMAND RESOURCE AND ILR COMPLIANCE PENALTY CHARGE  
 Tariff Record ID: 1166  
 Tariff Record Collation Value: 674627026 Tariff Record Parent Identifier: 1132  
 Proposed Date: 2015-04-01  
 Priority Order: 500  
 Record Change Type: CHANGE  
 Record Content Type: 1  
 Associated Filing Identifier:

## **11. DEMAND RESOURCE COMPLIANCE PENALTY CHARGE**

(a) The Office of the Interconnection shall separately evaluate compliance of each Demand Resource committed for a Delivery Year, in accordance with procedures set forth in the PJM Manuals and, for Delivery Years through May 31, 2018, shall assess a Demand Resource Compliance Penalty Charge on Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time. The compliance is evaluated separately by Load Management Event in each CAA for Demand Resources dispatched by the Office of Interconnection. The Demand Resource Compliance Penalty Charges will not be assessed to resources that are dispatched on a subzonal basis for the 2012/2013 and 2013/2014 Delivery Years. For the 2014/2015 Delivery Year, the Demand Resource Compliance Penalty Charge will not be assessed to resources that are dispatched on a subzonal basis unless such subzone is defined and publically posted the day before the Load Management Event as set forth in the PJM Manuals. To the extent a Demand Resource cannot respond, another Demand Resource in the same geographic location defined by the PJM dispatch instruction with the same designated lead time and comparable capacity commitment may be substituted. Any Demand Resource used as a substitute during a Load Management Event will have the same obligation to respond to future Load Management Event(s) as if it did not respond to such Load Management Event. Capacity Market Sellers that committed Demand Resources and Locational UCAP Sellers that sold Demand Resources that cannot demonstrate the hourly performance of such resource in real-time based on the capacity commitment shall be assessed a Demand Resource Compliance



Penalty Charge; provided, however, that such under compliance shall be determined on an aggregate basis for all dispatched Demand Resources committed by the same Capacity Market Seller or same Locational UCAP Seller in a CAA.

(b) The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the on-peak period, which includes all hours specified in the Reliability Assurance Agreement definition of the Limited Demand Resource, shall equal the lesser of (1/the number of Load Management Events during the on-peak period for which such Demand Resources were dispatched, or 0.50) times the weighted daily revenue rate for such seller resources dispatched, multiplied by the net under-compliance in such on-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. Net CAA under compliance for the Load Management Event will be prorated to individual under compliant registrations in the CAA based on performance of each registration in order to determine net under compliance(s). The Demand Resource Compliance Penalty Charge for a Capacity Market Seller in a CAA for the off-peak period, which includes all hours specified in the Reliability Assurance Agreement definitions of Extended Summer Demand Resource or Annual Demand Resource, but does not include all hours in the on-peak period, shall equal 1/52 times the weighted daily revenue rate for resources dispatched for such seller, multiplied by the net undercompliance in such off-peak period, if any, for such seller resulting from all dispatched resources it has committed for such Delivery Year for such CAA for each Load Management Event called by the Office of the Interconnection. If a Load Management Event is comprised of both an on-peak period and an off-peak period then such Demand Resource Compliance Penalty Charge will be the higher of the charges calculated under the prior two sentences. The total Compliance Penalty Charge for the Delivery Year is not to exceed the annual revenue received for such resources. The net CAA undercompliance for each such Load Management Event shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the megawatts of load reduction capability committed by such seller on the day of the Load Management Event for all dispatched resources minus (ii) the megawatts of load reduction actually provided by all such dispatched Demand Resources during such Load Management Event. A seller's net undercompliance in a CAA shall be reduced by the seller's total amount of Capacity Resource deficiency shortfalls on the day of the Load Management Event, determined pursuant to section 8 of Attachment DD of this Tariff, in a CAA for the seller's committed Demand Resources that are the same product(s) dispatched. The daily revenue rate for a Demand Resource shall be the Resource Clearing Price that the resource received in the auction in which it cleared, including any adjustment pursuant to Attachment DD-1, section C of this Tariff. The weighted daily revenue rate for a Capacity Market Seller shall be the average rate for all cleared Demand Resources, weighted by the megawatts cleared at each price. The total charge per megawatt that may be assessed on a Capacity Market Seller in a Delivery Year shall be capped at the weighted daily revenue rate the Capacity Market Seller would receive in the Delivery Year.

The Demand Resource Compliance Penalty Charges for a Load Management Event for Limited Demand Resources are assessed daily and initially billed by the later of the month of October during such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The initial billing for a Load Management Event for Limited Demand

Resources will reflect the amounts due from the start of the Delivery Year to the last day that is reflected in the initial billing. The remaining charges for such Load Management Event will be assessed daily and billed monthly through the remainder of the Delivery Year. The Demand Resource Compliance Penalty Charges for a Load Management Event for Annual or Extended Summer Demand Resources are assessed daily and billed by the later of the month of June following such Delivery Year or the third billing month following the Load Management Event that gave rise to such charge. The billing for the Load Management Event for Annual or Extended Summer Demand Resources will be in a lump sum and reflect the accrued charges for the entire Delivery Year.

c) Daily revenues from assessment of a Demand Resource Compliance Penalty Charge shall be distributed on a pro-rata basis to Demand Resource Providers and Locational UCAP Sellers that provided load reductions in excess of the amount such resources were committed to provide. Such revenue distribution, however, shall not exceed for any Capacity Market Seller the quantity of excess megawatts provided by such Capacity Market Seller during a single Load Management Event times 0.20 times the weighted daily revenue rate for such Capacity Market Seller for resources dispatched. To the extent any such revenues remain after such distribution, the remaining revenues shall be distributed to LSEs based on each LSE's Daily Unforced Capacity Obligation.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.11A, OATT ATTACHMENT DD.11A LOAD MANAGEMENT TEST FAILURE CHARGE, 5.0.0, A

Record Narrative Name: 11A LOAD MANAGEMENT TEST FAILURE CHARGE

Tariff Record ID: 1167

Tariff Record Collation Value: 675342129 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **11A DEMAND RESOURCES TEST FAILURE CHARGE**

a) Beginning with the Delivery Year that commences on June 1, 2009, Capacity Market Sellers that commit Demand Resources may be charged to the extent their committed resources fail performance tests, as set forth herein.

b)

(i) For Delivery Years through May 31, 2018:

For Limited Demand Resources: If a registration for a Limited Demand Resource committed by a Capacity Market Seller is not dispatched by the Office of the Interconnection for a Load Management event prior to August 15 of the relevant Delivery Year, then such registration must demonstrate that it was tested as described below in (iii), in a zone for a one-hour period during any hour when a PJM Load Management event may be called between June 1 and September 30, inclusive. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between August 16 and September 30,

no test will be required. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of Interconnection for a PJM Load Management event in a subzone between June 1 and September 30 of the 2012/2013 and 2013/2014 Delivery Years, and such registration performs at or above the nominated amount of capacity on the registration, no test will be required and no Demand Resources Test Failure Charges will be assessed for such registrations. If a registration for a Limited Demand Resource committed by a Capacity Market Seller is dispatched by the Office of the Interconnection for a PJM Load Management event in a zone between June 1 and September 30, inclusive, then Demand Resources Test Failure Charges will not be assessed.

For Annual Demand Resources: if an Annual Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then the Annual Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Annual Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the Interconnection for a Load Management event during the Delivery Year, then no test will be required.

For Extended Summer Demand Resources: if an Extended Summer Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through October or the following May, then the Extended Summer Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Extended Summer Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year.

- (ii) For the 2018/2019 Delivery Year and subsequent Delivery Years:

For Base Capacity Demand Resources: if an Base Capacity Demand Resource registration is not dispatched by the Office of the Interconnection for a Load Management event during June through September, then the Base Capacity Demand Resource registration committed by a Capacity Market Seller must demonstrate that the Base Capacity Demand Resource registration was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through September of the relevant Delivery Year.

For Demand Resources that commit as Capacity Performance Resources: if a Demand Resource that is a Capacity Performance Resource registration is not dispatched by the Office of the Interconnection for a Load Management event in a Delivery Year, then that Demand Resource registration committed by a Capacity Market Seller must demonstrate that that Demand Resource registration committed in a zone was tested as described below in (iii), for a one-hour period during any hour when a PJM Load Management event may be called during June through October or the following May of the relevant Delivery Year. If an Annual Demand Resource registration is dispatched by the Office of the Interconnection for a Load Management event during the Delivery Year, then no test will be required.

- (iii) All registrations in a zone required to test must be tested simultaneously for each product except that, when less than 25 percent (by megawatts) of a provider's total resources in a zone fail a test, the provider may conduct a re-test limited to all registrations that failed the prior test, provided that such re-test must be at the same time of day and under approximately the same weather conditions as the prior test, and provided further that all affiliated registrations must test simultaneously, where affiliated means registrations that have any ability to shift load and are owned or controlled by the same entity. If less than 25 percent of resources fail the test and the provider chooses to conduct a retest, the provider may elect to maintain the performance compliance result for registration(s) achieved during the test if provider: (1) notifies the Office of the Interconnection 48 hours prior to the retest under this election; and (2) the provider retests affiliated registrations under this election as set forth in the PJM Manual.

c) a Capacity Market Seller that committed Demand Resources shall be assessed a Demand Resources Test Failure Charge equal to the net capability testing shortfall for such products tested in a Zone during such test in the aggregate of all of such Seller's Demand Resources tested in such Zone times the Demand Resources Test Failure Charge Rate. The net capability testing shortfall in such Zone shall be the following megawatt quantity, converted to an Unforced Capacity basis using the applicable DR Factor and Forecast Pool Requirement: (i) the summer daily average of the megawatts of load reduction capability committed by such seller in such Zone for such product(s) tested minus (ii) the megawatts of load reduction actually provided by all such Demand Resources in such Zone during such test. The net capability testing shortfall in such Zone for such product(s) tested shall be reduced by the provider's summer daily average of the Capacity Resource deficiency shortfalls, determined pursuant to section 8 of Attachment DD of this Tariff, in such Zone for all of the provider's committed Demand Resources that are of the same product(s) tested.

d) the Demand Resources Test Failure Charge Rate shall equal such Seller's Weighted Daily Revenue Rate in such Zone for the product(s) tested plus the greater of (0.20 times the Weighted Daily Revenue Rate in such Zone for the product(s) tested or \$20/MW-day).

The Daily Demand Resources Test Failure Charge in a zone for the product(s) tested shall be equal to the net capability testing shortfall in such Zone for such product(s) tested times the Demand Resources Test Failure Charge Rate. Such charge shall be assessed daily and charged monthly (or otherwise in accordance with customary PJM billing practices in effect at the time); provided, however, that a lump sum payment may be required to reflect amounts due, as a result of a test failure, from the start of the Delivery Year to the day that charges are reflected in regular billing.

e) revenues collected from assessment of Demand Resources Test Failure Charges shall be distributed to Load Serving Entities that were charged a Locational Reliability Charge for the Delivery Year for which the Demand Resources Test Failure Charge was assessed, pro-rata based on such Load Serving Entities' Daily Unforced Capacity Obligations.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD.12, OATT ATTACHMENT DD.12. QUALIFYING TRANSMISSION UPGRADE COMPL, 1.0.0, A

Record Narrative Name: 12. QUALIFYING TRANSMISSION UPGRADE COMPLIANCE PENALTY CHARGE

Tariff Record ID: 1168

Tariff Record Collation Value: 676057232 Tariff Record Parent Identifier: 1132

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **12. QUALIFYING TRANSMISSION UPGRADE COMPLIANCE PENALTY CHARGE**

If a Qualifying Transmission Upgrade forming the basis of a Sell Offer that cleared in the Base Residual Auction for a Delivery Year is not in service at the commencement of such Delivery Year, and the Capacity Market Seller does not obtain replacement Capacity Resources in the LDA for which such upgrade was to increase CETL, such seller shall pay a compliance penalty charge for each day such upgrade is delayed during such Delivery Year equal to the megawatt quantity of Import Capability cleared in the Base Residual Auction based on such upgrade, multiplied by the greater of: (i) 1.2 times the Capacity Resource Clearing Price of the LDA into which the Qualifying Transmission Upgrade is cleared, in \$/MW-day; or (ii) the Net Cost of New Entry; provided, however, that a resource that is subject to a charge under this section that is also subject to a charge under Section 10A hereof for a Performance Shortfall during one or more Performance Assessment Hours occurring during the period of resource delay addressed by this section shall be assessed a charge equal to the greater of the charge determined under this section and the charge determined under Section 10A, but shall not be assessed a charge under both this section and Section 10A for such simultaneous occurrence of a resource delay and Performance Shortfall. The revenue collected from the assessment of Qualifying Transmission Upgrade Compliance Penalty Charges shall be distributed on a pro-rata basis to all LSEs that were charged a Locational Reliability Charge for the day for which such charge was assessed. Such revenues shall be distributed on a pro-rata basis to such LSEs based on their Daily Unforced Capacity Obligations.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

ATTACHMENT DD-1, OATT ATTACHMENT DD-1, 7.0.0, A

Record Narrative Name: ATTACHMENT DD-1

Tariff Record ID: 1174  
Tariff Record Collation Value: 680347850      Tariff Record Parent Identifier: 1132  
Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

## **ATTACHMENT DD-1**

Preface: The provisions of this Attachment incorporate into the Tariff for ease of reference the provisions of Schedule 6 of the Reliability Assurance Agreement among Load Serving Entities in the PJM Region. As a result, this Attachment will be modified, subject to FERC approval, so that the terms and conditions set forth herein remain consistent with the corresponding terms and conditions of Schedule 6 of the RAA. Capitalized terms used herein that are not otherwise defined in Attachment DD or elsewhere in this Tariff have the meaning set forth in the RAA.

### PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource, or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of

notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

- 1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;
- 2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;
- 3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,
- 4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand



Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) Summary Information. The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) Existing Demand Resources. The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) Planned Demand Resources. The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

- (i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:
- method(s) of achieving load reduction at customer site(s);
  - equipment to be controlled or installed at customer site(s), if any;
  - plan and ability to acquire customers;
  - types of customer targeted;
  - support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
  - assumptions regarding regulatory approval of program(s), if applicable; and
  - if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load

research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and

- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the current Delivery Year (at the time of plan submission) and two preceding Delivery Years;
- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program

that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.

C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.

D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.

E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.

F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.

G. PJM measures Demand Resources in the following four ways:

Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider’s market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

Firm Service Level (FSL) – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

Guaranteed Load Drop (GLD) – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

Customer Baseline Load (CBL) - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:

- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
- Supplemental status reports, detailing Demand Resources available, as requested by PJM;
- Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
- Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for Provider-initiated events, in accordance with established reporting guidelines.
- Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.

I. The Nominated Value of each Demand Resource shall be determined consistent

with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer's Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an "unrestricted" peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider's Demand Resources dispatched by the

Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.

For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$$(PLC) - (Load * LF)$$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection, for at least 30 minutes of the clock hour (i.e., "partial dispatch compliance hour"). The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched



during the clock hour and as defined in the Manuals. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer's Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer's retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or after June 1, 2012. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value.

- For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;
- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

- For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.

4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.

5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.

6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.

7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
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Record Narrative Name: RAA ARTICLE 1 -- DEFINITIONS  
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## **ARTICLE 1 – DEFINITIONS**

Unless the context otherwise specifies or requires, capitalized terms used herein shall have the respective meanings assigned herein or in the Schedules hereto for all purposes of this Agreement (such definitions to be equally applicable to both the singular and the plural forms of the terms defined). Unless otherwise specified, all references herein to Articles, Sections or Schedules, are to Articles, Sections or Schedules of this Agreement. As used in this Agreement:

### **1.1 Agreement**

Agreement shall mean this Reliability Assurance Agreement, together with all Schedules hereto, as amended from time to time.

#### **1.1A Annual Demand Resource**

Annual Demand Resource shall mean a resource that is placed under the direction of the Office of the Interconnection during the Delivery Year, and will be available for an unlimited number of interruptions during such Delivery Year by the Office of the Interconnection, and will be capable of maintaining each such interruption between the hours of 10:00AM to 10:00PM Eastern Prevailing Time for the months of June through October and the following May, and

6:00AM through 9:00PM Eastern Prevailing Time for the months of November through April unless there is an Office of the Interconnection approved maintenance outage during October through April. The Annual Demand Resource must be available in the corresponding Delivery year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Annual Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.1B Annual Energy Efficiency Resource**

Annual Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer and winter periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2 Applicable Regional Entity**

Applicable Regional Entity shall have the same meaning as in the PJM Tariff.

### **1.2A Base Capacity Demand Resource**

Base Capacity Demand Resource shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through September of a Delivery Year, and will be available to the Office of the Interconnection for an unlimited number of interruptions during such months, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Base Capacity Demand Resource must be available June through September in the corresponding Delivery Year to be offered for sale or self-supplied in an RPM Auction, or included as an Base Capacity Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

### **1.2B Base Capacity Energy Efficiency Resource**

Base Capacity Energy Efficiency Resource shall mean, for the 2018/2019 and 2019/2020 Delivery Years, a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the summer peak periods as described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Base Capacity Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.

### **1.2C Base Capacity Resource**

Base Capacity Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.3 Base Residual Auction**

Base Residual Auction shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.4 Behind The Meter Generation**

Behind The Meter Generation shall mean a generating unit that delivers energy to load without using the Transmission System or any distribution facilities (unless the entity that owns or leases the distribution facilities consented to such use of the distribution facilities and such consent has been demonstrated to the satisfaction of the Office of the Interconnection; provided, however, that Behind The Meter Generation does not include (i) at any time, any portion of such generating unit's capacity that is designated as a Capacity Resource or (ii) in any hour, any portion of the output of such generating unit that is sold to another entity for consumption at another electrical location or into the PJM Interchange Energy Market.

### **1.5 Black Start Capability**

Black Start Capability shall mean the ability of a generating unit or station to go from a shutdown condition to an operating condition and start delivering power without assistance from the power system.

### **1.6 Capacity Emergency Transfer Objective ("CETO")**

Capacity Emergency Transfer Objective ("CETO") shall mean the amount of electric energy that a given area must be able to import in order to remain within a loss of load expectation of one event in 25 years when the area is experiencing a localized capacity emergency, as determined in accordance with the PJM Manuals. Without limiting the foregoing, CETO shall be calculated based in part on EFORD determined in accordance with Paragraph C of Schedule 5.

### **1.7 Capacity Emergency Transmission Limit ("CETL")**

Capacity Emergency Transmission Limit ("CETL") shall mean the capability of the transmission system to support deliveries of electric energy to a given area experiencing a localized capacity emergency as determined in accordance with the PJM Manuals.

### **1.7A Capacity Import Limit**

Capacity Import Limit shall mean, (a) for the PJM Region, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines for each Delivery Year, through appropriate modeling and the application of engineering judgment, the transmission system can receive, in aggregate at the interface of the PJM Region with all external balancing authority areas and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus (2) the then-applicable Capacity Benefit Margin; and (b) for certain source zones identified in the PJM manuals as groupings of one or more balancing authority areas, (1) the maximum megawatt quantity of external Generation Capacity Resources that PJM determines the transmission system can receive at the interface of the PJM Region with each such source zone and deliver to load in the PJM Region under capacity emergency conditions without violating applicable reliability criteria on any bulk electric system facility of 100kV or greater, internal or external to the PJM Region, that has an electrically significant response to transfers on such interface, minus the then-applicable Capacity Benefit Margin times (2) the ratio of the maximum import quantity from each such source zone divided by the PJM total maximum import quantity. As more fully set forth in the PJM Manuals, PJM shall make such determination based on the latest peak load forecast for the studied period, the same computer simulation model of loads, generation and transmission topography employed in the determination of Capacity Emergency Transmission Limit for such Delivery Year, including external facilities from an industry standard model of the loads, generation, and transmission topography of the Eastern Interconnection under peak conditions. PJM shall specify in the PJM Manuals the areas and minimum distribution factors for identifying monitored bulk electric system facilities that have an electrically significant response to such transfers on the PJM interface. Employing such tools, PJM shall model increased power transfers from external areas into PJM to determine the transfer level at which one or more reliability criteria is violated on any monitored bulk electric system facilities that have an electrically significant response to such transfers. For the PJM Region Capacity Import Limit, PJM shall optimize transfers from other source areas not experiencing any reliability criteria violations as appropriate to increase the Capacity Import Limit. The aggregate megawatt quantity of transfers into PJM at the point where any increase in transfers on the interface would violate reliability criteria will establish the Capacity Import Limit. Notwithstanding the foregoing, a Capacity Resource located outside the PJM Region shall not be subject to the Capacity Import Limit if the Capacity Market Seller seeks an exception thereto by demonstrating to PJM, by no later than five (5) business days prior to the commencement of the offer period for the relevant RPM Auction, that such resource meets all of the following requirements:

(i) it has, at the time such exception is requested, met all applicable requirements to be treated as equivalent to PJM Region internal generation that is not subject to NERC tagging as an interchange transaction, or the Capacity Market Seller has committed in writing that it will meet such requirements, unless prevented from doing so by circumstances beyond the control of the Capacity Market Seller, prior to the relevant Delivery Year;

(ii) at the time such exception is requested, it has long-term firm transmission service confirmed on the complete transmission path from such resource into PJM; and

(iii) it is, by written commitment of the Capacity Market Seller, subject to the same obligations imposed on Generation Capacity Resources located in the PJM Region by section 6.6 of Attachment DD of the PJM Tariff to offer their capacity into RPM Auctions;

provided, however, that (a) the total megawatt quantity of all exceptions granted hereunder for a Delivery Year, plus the Capacity Import Limit for the applicable interface determined for such Delivery Year, may not exceed the total megawatt quantity of Network External Designated Transmission Service on such interface that PJM has confirmed for such Delivery Year; and (b) if granting a qualified exception would result in a violation of the rule in clause (a), PJM shall grant the requested exception but reduce the Capacity Import Limit by the quantity necessary to ensure that the total quantity of Network External Designated Transmission Service is not exceeded.

### **1.7B Capacity Performance Resource**

Capacity Performance Resource shall have the same meaning as in Attachment DD to the PJM Tariff.

### **1.8 Capacity Resources**

Capacity Resources shall mean megawatts of (i) net capacity from Existing Generation Capacity Resources or Planned Generation Capacity Resources meeting the requirements of Schedules 9 and 10 that are or will be owned by or contracted to a Party and that are or will be committed to satisfy that Party's obligations under this Agreement, or to satisfy the reliability requirements of the PJM Region, for a Delivery Year; (ii) net capacity from Existing Generation Capacity Resources or Planned Generation Capacity Resources not owned or contracted for by a Party which are accredited to the PJM Region pursuant to the procedures set forth in Schedules 9 and 10; and (iii) load reduction capability provided by Demand Resources or Energy Efficiency Resources that are accredited to the PJM Region pursuant to the procedures set forth in Schedule 6.

### **1.9 Capacity Transfer Right**

Capacity Transfer Right shall have the meaning specified in Attachment DD to the PJM Tariff.

#### **1.9.1 Compliance Aggregation Area (CAA)**

“Compliance Aggregation Area” or “CAA” shall have the same meaning as in the PJM Tariff.

### **1.10 Control Area**

Control Area shall mean an electric power system or combination of electric power systems bounded by interconnection metering and telemetry to which a common generation control scheme is applied in order to:

(a) match the power output of the generators within the electric power system(s) and

energy purchased from entities outside the electric power system(s), with the load within the electric power system(s);

(b) maintain scheduled interchange with other Control Areas, within the limits of Good Utility Practice;

(c) maintain the frequency of the electric power system(s) within reasonable limits in accordance with Good Utility Practice and the criteria of NERC and each Applicable Regional Entity;

(d) maintain power flows on transmission facilities within appropriate limits to preserve reliability; and

(e) provide sufficient generating capacity to maintain operating reserves in accordance with Good Utility Practice.

### **1.11 Daily Unforced Capacity Obligation**

Daily Unforced Capacity Obligation shall have the meaning set forth in Schedule 8 or, as to an FRR Entity, in Schedule 8.1.

### **1.12 Delivery Year**

Delivery Year shall mean a Planning Period for which a Capacity Resource is committed pursuant to the auction procedures specified in Attachment DD to the Tariff or pursuant to an FRR Capacity Plan.

### **1.13 Demand Resource**

Demand Resource or "DR" shall mean a Limited Demand Resource, Extended Summer Demand Resource, Annual Demand Resource, or Base Capacity Demand Resource with a demonstrated capability to provide a reduction in demand or otherwise control load in accordance with the requirements of Schedule 6 that offers and that clears load reduction capability in a Base Residual Auction or Incremental Auction or that is committed through an FRR Capacity Plan.

### **1.13A Demand Resource Officer Certification Form**

Demand Resource Officer Certification Form shall mean a certification as to an intended Demand Resource Sell Offer, in accordance with Schedules 6 and 8.1 of this Agreement and the PJM Manuals.

### **1.14 [Reserved for Future Use]**

### **1.14A Demand Resource Sell Offer Plan**



Demand Resource Sell Offer Plan shall mean the plan required by Schedules 6 and 8.1 of this Agreement in support of an intended offer of Demand Resources in an RPM Auction, or an intended inclusion of Demand Resources in an FRR Capacity Plan.

### **1.15 DR Factor**

DR Factor shall mean, for Delivery Years through May 31, 2018, that factor approved from time to time by the PJM Board used to determine the unforced capacity value of a Demand Resource in accordance with Schedule 6.

### **1.16 [Reserved for Future Use]**

### **1.17 Electric Cooperative**

Electric Cooperative shall mean an entity owned in cooperative form by its customers that is engaged in the generation, transmission, and/or distribution of electric energy.

### **1.18 Electric Distributor**

Electric Distributor shall mean an entity that owns or leases with rights equivalent to ownership electric distribution facilities that are providing electric distribution service to electric load within the PJM Region.

### **1.19 Emergency**

Emergency shall mean (i) an abnormal system condition requiring manual or automatic action to maintain system frequency, or to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property; or (ii) a fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel; or (iii) a condition that requires implementation of emergency procedures as defined in the PJM Manuals.

### **1.20 End-Use Customer**

End-Use Customer shall mean a Member that is a retail end-user of electricity within the PJM Region.

### **1.20A Energy Efficiency Resource**

Energy Efficiency Resource shall mean a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, meeting the requirements of Schedule 6 of this Agreement and exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during the periods described in Schedule 6 and the PJM Manuals) reduction in electric energy consumption that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such

Delivery Year, without any requirement of notice, dispatch, or operator intervention. Annual Energy Efficiency Resources and Base Capacity Energy Efficiency Resources are types of Energy Efficiency Resources.

#### **1.20A.1 Existing Demand Resource**

Existing Demand Resource shall mean a Demand Resource for which the Demand Resource Provider has identified existing end-use customer sites that are registered for the current Delivery Year with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the Delivery Year for which such resource is offered.

#### **1.20B Existing Generation Capacity Resource**

Existing Generation Capacity Resource shall mean, for purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource that, as of the date on which bidding commences for such auction: (a) is in full commercial operation and for which Interconnection Service has ever commenced for resources located in the PJM Region), or if it is physically and electrically interconnected to an external Control Area and is in full commercial operation (for resources not located in the PJM Region. The additional megawatts of a Generation Capacity Resource that is being, or has been, modified to increase the number of megawatts of available installed capacity thereof shall not be deemed to be an Existing Generation Capacity Resource until such time as those megawatts are in full commercial operation and Interconnection Service has commenced.

#### **1.20C Extended Summer Demand Resource**

Extended Summer Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will be available June through October and the following May, and will be available for an unlimited number of interruptions during such months by the Office of the Interconnection, and will be capable of maintaining each such interruption for at least a 10-hour duration between the hours of 10:00AM to 10:00PM Eastern Prevailing Time. The Extended Summer Demand Resource must be available June through October and the following May in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as an Extended Summer Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

#### **1.21 Facilities Study Agreement**

Facilities Study Agreement shall have the same meaning as in the PJM Tariff

#### **1.22 FERC**

FERC shall mean the Federal Energy Regulatory Commission or any successor federal agency, commission or department.

**1.23 Firm Point-To-Point Transmission Service**

Firm Point-To-Point Transmission Service shall mean Firm Transmission Service provided pursuant to the rates, terms and conditions set forth in Part II of the PJM Tariff.

**1.24 Firm Transmission Service**

Firm Transmission Service shall mean transmission service that is intended to be available at all times to the maximum extent practicable, subject to an Emergency, an unanticipated failure of a facility, or other event beyond the control of the owner or operator of the facility or the Office of the Interconnection.

**1.25 Fixed Resource Requirement Alternative or FRR Alternative**

Fixed Resource Requirement Alternative or FRR Alternative shall mean an alternative method for a Party to satisfy its obligation to provide Unforced Capacity hereunder, as set forth in Schedule 8.1 to this Agreement.

**1.26 Forecast Pool Requirement**

Forecast Pool Requirement or FPR shall mean the amount equal to one plus the unforced reserve margin (stated as a decimal number) for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

**1.27 [Reserved]**

**1.28 [Reserved]**

**1.29 FRR Capacity Plan or FRR Plan**

FRR Capacity Plan or FRR Plan shall mean a long-term plan for the commitment of Capacity Resources to satisfy the capacity obligations of a Party that has elected the FRR Alternative, as more fully set forth in Schedule 8.1 to this Agreement.

**1.30 FRR Entity**

FRR Entity shall mean, for the duration of such election, a Party that has elected the FRR Alternative hereunder.

**1.31 FRR Service Area**

FRR Service Area shall mean (a) the service territory of an IOU as recognized by state law, rule or order; (b) the service area of a Public Power Entity or Electric Cooperative as

recognized by franchise or other state law, rule, or order; or (c) a separately identifiable geographic area that is: (i) bounded by wholesale metering, or similar appropriate multi-site aggregate metering, that is visible to, and regularly reported to, the Office of the Interconnection, or that is visible to, and regularly reported to an Electric Distributor and such Electric Distributor agrees to aggregate the load data from such meters for such FRR Service Area and regularly report such aggregated information, by FRR Service Area, to the Office of the Interconnection; and (ii) for which the FRR Entity has or assumes the obligation to provide capacity for all load (including load growth) within such area. In the event that the service obligations of an Electric Cooperative or Public Power Entity are not defined by geographic boundaries but by physical connections to a defined set of customers, the FRR Service Area in such circumstances shall be defined as all customers physically connected to transmission or distribution facilities of such Electric Cooperative or Public Power Entity within an area bounded by appropriate wholesale aggregate metering as described above.

### **1.32 Full Requirements Service**

Full Requirements Service shall mean wholesale service to supply all of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

### **1.33 Generation Capacity Resource**

Generation Capacity Resource shall mean a generation unit, or the contractual right to capacity from a specified generation unit, that meets the requirements of Schedules 9 and 10 of this Agreement, and, for generation units that are committed to an FRR Capacity Plan, that meets the requirements of Schedule 8.1 of this Agreement. A Generation Capacity Resource may be an Existing Generation Capacity Resource or a Planned Generation Capacity Resource.

### **1.34 Generation Owner**

Generation Owner shall mean a Member that owns or leases with rights equivalent to ownership, facilities for the generation of electric energy that are located within the PJM Region. Purchasing all or a portion of the output of a generation facility shall not be sufficient to qualify a Member as a Generation Owner.

### **1.35 Generator Forced Outage**

Generator Forced Outage shall mean an immediate reduction in output or capacity or removal from service, in whole or in part, of a generating unit by reason of an Emergency or threatened Emergency, unanticipated failure, or other cause beyond the control of the owner or operator of the facility, as specified in the relevant portions of the PJM Manuals. A reduction in output or removal from service of a generating unit in response to changes in market conditions shall not constitute a Generator Forced Outage.

### **1.36 Generator Maintenance Outage**

Generator Maintenance Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit in order to perform repairs on specific components of the facility, if removal of the facility qualifies as a maintenance outage pursuant to the PJM Manuals.

### **1.37 Generator Planned Outage**

Generator Planned Outage shall mean the scheduled removal from service, in whole or in part, of a generating unit for inspection, maintenance or repair with the approval of the Office of the Interconnection in accordance with the PJM Manuals.

### **1.38 Good Utility Practice**

Good Utility Practice shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather is intended to include acceptable practices, methods, or acts generally accepted in the region.

### **1.39 [Reserved]**

### **1.40 Incremental Auction**

Incremental Auction shall mean the First Incremental Auction, the Second Incremental Auction, the Third Incremental Auction, or the Conditional Incremental Auction, each as defined in Attachment DD to the PJM Tariff.

### **1.41 Interconnection Agreement**

Interconnection Agreement shall have the same meaning as in the PJM Tariff.

### **1.42 [Reserved]**

### **1.43 IOU**

IOU shall mean an investor-owned utility with substantial business interest in owning and/or operating electric facilities in any two or more of the following three asset categories: generation, transmission, distribution.

### **1.43A Limited Demand Resource**

Limited Demand Resource shall mean, for Delivery Years through May 31, 2018, a resource that is placed under the direction of the Office of the Interconnection and that will, at a minimum, be available for interruption for at least 10 Load Management Events during the

summer period of June through September in the Delivery Year, and will be capable of maintaining each such interruption for at least a 6-hour duration. At a minimum, the Limited Demand Resource shall be available for such interruptions on weekdays, other than NERC holidays, from 12:00PM (noon) to 8:00PM Eastern Prevailing Time. The Limited Demand Resource must be available during the summer period of June through September in the corresponding Delivery Year to be offered for sale or Self-Supplied in an RPM Auction, or included as a Limited Demand Resource in an FRR Capacity Plan for the corresponding Delivery Year.

#### **1.44 Load Serving Entity or LSE**

Load Serving Entity or LSE shall mean any entity (or the duly designated agent of such an entity), including a load aggregator or power marketer, (i) serving end-users within the PJM Region, and (ii) that has been granted the authority or has an obligation pursuant to state or local law, regulation or franchise to sell electric energy to end-users located within the PJM Region. Load Serving Entity shall include any end-use customer that qualifies under state rules or a utility retail tariff to manage directly its own supply of electric power and energy and use of transmission and ancillary services.

#### **1.45 Locational Reliability Charge**

Locational Reliability Charge shall mean the charge determined pursuant to Schedule 8.

#### **1.46 Markets and Reliability Committee**

Markets and Reliability Committee shall mean the committee established pursuant to the Operating Agreement as a Standing Committee of the Members Committee.

#### **1.46A Maximum Emergency Service Level**

Maximum Emergency Service Level or MESL of Price Responsive Demand shall mean the level, determined at a PRD Substation level, to which Price Responsive Demand shall be reduced during the Delivery Year when a Maximum Generation Emergency is declared and the Locational Marginal Price exceeds the price associated with such Price Responsive Demand identified by the PRD Provider in its PRD Plan.

#### **1.47 Member**

Member shall mean an entity that satisfies the requirements of Sections 1.24 and 11.6 of the PJM Operating Agreement. In accordance with Article 4 of this Agreement, each Party to this Agreement also is a Member.

#### **1.48 Members Committee**

Members Committee shall mean the committee specified in Section 8 of the PJM Operating Agreement composed of the representatives of all the Members.

## **1.49 NERC**

NERC shall mean the North American Electric Reliability Council or any successor thereto.

### **1.49A Network External Designated Transmission Service**

Network External Designated Transmission Service shall mean the quantity of network transmission service confirmed by PJM for use by a market participant to import power and energy from an identified Generation Capacity Resource located outside the PJM Region, upon demonstration by such market participant that it owns such Generation Capacity Resource, has an executed contract to purchase power and energy from such Generation Capacity Resource, or has a contract to purchase power and energy from such Generation Capacity Resource contingent upon securing firm transmission service from such resource.

## **1.50 Network Resources**

Network Resources shall have the meaning set forth in the PJM Tariff.

## **1.51 Network Transmission Service**

Network Transmission Service shall mean transmission service provided pursuant to the rates, terms and conditions set forth in Part III of the PJM Tariff or transmission service comparable to such service that is provided to a Load Serving Entity that is also a Transmission Owner (as that term is defined in the PJM Tariff).

### **1.51A Nominal PRD Value**

Nominal PRD Value shall mean, as to any PRD Provider, an adjustment, determined in accordance with Schedule 6.1 of this Agreement, to the peak-load forecast used to determine the quantity of capacity sought through an RPM Auction, reflecting the aggregate effect of Price Responsive Demand on peak load resulting from the Price Responsive Demand to be provided by such PRD Provider.

### **1.52 Nominated Demand Resource Value**

Nominated Demand Resource Value shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.53 [Reserved]**

### **1.54 Non-Retail Behind the Meter Generation**

Non-Retail Behind the Meter Generation shall mean Behind the Meter Generation that is used by municipal electric systems, electric cooperatives, and electric distribution companies to

serve load.

### **1.55 Obligation Peak Load**

Obligation Peak Load shall have the meaning specified in Schedule 8 of this Agreement.

### **1.56 Office of the Interconnection**

Office of the Interconnection shall mean the employees and agents of PJM Interconnection, L.L.C., subject to the supervision and oversight of the PJM Board, acting pursuant to the Operating Agreement.

### **1.57 Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement**

Operating Agreement of PJM Interconnection, L.L.C. or Operating Agreement shall mean that certain agreement, dated April 1, 1997 and as amended and restated June 2, 1997 and as amended from time to time thereafter, among the members of the PJM Interconnection, L.L.C.

### **1.57A Operating Day**

Operating Day shall have the same meaning as provided in the Operating Agreement.

### **1.58 Operating Reserve**

Operating Reserve shall mean the amount of generating capacity scheduled to be available for a specified period of an Operating Day to ensure the reliable operation of the PJM Region, as specified in the PJM Manuals.

### **1.59 Other Supplier**

Other Supplier shall mean a Member that is (i) a seller, buyer or transmitter of electric capacity or energy in, from or through the PJM Region, and (ii) is not a Generation Owner, Electric Distributor, Transmission Owner or End-Use Customer.

### **1.60 Partial Requirements Service**

Partial Requirements Service shall mean wholesale service to supply a specified portion, but not all, of the power needs of a Load Serving Entity to serve end-users within the PJM Region that are not satisfied by its own generating facilities.

### **1.60A Performance Assessment Hour**

Performance Assessment Hour shall have the meaning specified in Attachment DD of the PJM Tariff.



### **1.61 Percentage Internal Resources Required**

Percentage Internal Resources Required shall mean, for purposes of an FRR Capacity Plan, the percentage of the LDA Reliability Requirement for an LDA that must be satisfied with Capacity Resources located in such LDA.

### **1.62 Party**

Party shall mean an entity bound by the terms of this Agreement.

### **1.63 PJM**

PJM shall mean the PJM Board and the Office of the Interconnection.

### **1.64 PJM Board**

PJM Board shall mean the Board of Managers of the PJM Interconnection, L.L.C., acting pursuant to the Operating Agreement.

### **1.65 PJM Manuals**

PJM Manuals shall mean the instructions, rules, procedures and guidelines established by the Office of the Interconnection for the operation, planning and accounting requirements of the PJM Region.

### **1.66 PJM Open Access Transmission Tariff or PJM Tariff**

PJM Open Access Transmission Tariff or PJM Tariff shall mean the tariff for transmission service within the PJM Region, as in effect from time to time, including any schedules, appendices, or exhibits attached thereto.

### **1.67 PJM Region**

PJM Region shall have the same meaning as provided in the Operating Agreement.

### **1.68 PJM Region Installed Reserve Margin**

PJM Region Installed Reserve Margin shall mean the percent installed reserve margin for the PJM Region required pursuant to this Agreement, as approved by the PJM Board pursuant to Schedule 4.1.

### **1.69 Planned Demand Resource**

Planned Demand Resource shall mean any Demand Resource that does not currently have the capability to provide a reduction in demand or to otherwise control load, but that is

scheduled to be capable of providing such reduction or control on or before the start of the Delivery Year for which such resource is to be committed, as determined in accordance with the requirements of Schedule 6. As set forth in Schedules 6 and 8.1 of this Agreement, a Demand Resource Provider submitting a DR Sell Offer Plan shall identify as Planned Demand Resources in such plan all Demand Resources in excess of those that qualify as Existing Demand Resources.

### **1.69A Planned External Generation Capacity Resource**

Planned External Generation Capacity Resource shall mean a proposed Generation Capacity Resource, or a proposed increase in the capability of a Generation Capacity Resource, that (a) is to be located outside the PJM Region, (b) participates in the generation interconnection process of a Control Area external to PJM, (c) is scheduled to be physically and electrically interconnected to the transmission facilities of such Control Area on or before the first day of the Delivery Year for which such resource is to be committed to satisfy the reliability requirements of the PJM Region, and (d) is in full commercial operation prior to the first day of such Delivery Year, such that it is sufficient to provide the Installed Capacity set forth in the Sell Offer forming the basis of such resource's commitment to the PJM Region. Prior to participation in any Base Residual Auction for such Delivery Year, the Capacity Market Seller must demonstrate that it has a fully executed system impact study agreement or other documentation which is (functionally equivalent to a System Impact Study Agreement under the PJM Tariff or, for resources which are greater than 20MWs participating in a Base Residual Auction for the 2019/2020 Delivery Year and subsequent Delivery Years, an agreement or other documentation which is functionally equivalent to a Facilities Study Agreement under the PJM Tariff), with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as applicable, the transmission provider. Prior to participating in any Incremental Auction for such Delivery Year, the Capacity Market Seller must demonstrate it has entered into an interconnection agreement, or such other documentation that is functionally equivalent to an Interconnection Service Agreement under the PJM Tariff, with the transmission owner to whose transmission facilities or distribution facilities the resource is being directly connected, and, as applicable, the transmission provider. A Planned External Generation Capacity Resource must provide evidence to PJM that it has been studied as a Network Resource, or such other similar interconnection product in such external Control Area, must provide contractual evidence that it has applied for or purchased transmission service to be deliverable to the PJM border, and must provide contractual evidence that it has applied for transmission service to be deliverable to the bus at which energy is to be delivered, the agreements for which must have been executed prior to participation in any Reliability Pricing Model Auction for such Delivery Year. Any such resource shall cease to be considered a Planned External Generation Capacity Resource as of the date that interconnection service commences as to such resource in which case it shall become an Existing Generation Capacity Resource for purposes of the mitigation of offers for any RPM Auction for all subsequent Delivery Years.

### **1.70 Planned Generation Capacity Resource**

Planned Generation Capacity Resource shall mean a Generation Capacity Resource, or additional megawatts to increase the size of a Generation Capacity Resource that is being or has

been modified to increase the number of megawatts of available installed capacity thereof, participating in the generation interconnection process under Part IV, Subpart A of the PJM Tariff, as applicable, for which: (i) Interconnection Service is scheduled to commence on or before the first day of the Delivery Year for which such resource is to be committed to RPM or to an FRR Capacity Plan; (ii) for any such resource seeking to offer into a Base Residual Auction, or for any such resource of 20 MWs or less seeking to offer into a Base Residual Auction, a System Impact Study Agreement (or, for resources for which a System Impact Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a System Impact Study Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; (iii) for any such resource of more than 20 MWs seeking to offer into a Base Residual Auction for the 2019/2020 Delivery Year and subsequent Delivery Years, a Facilities Study Agreement (or, for resources for which a Facilities Study Agreement is not required, has such other agreement or documentation that is functionally equivalent to a Facility Studies Agreement) has been executed prior to the Base Residual Auction for such Delivery Year; and (iv) an Interconnection Service Agreement has been executed prior to any Incremental Auction for such Delivery Year in which such resource plans to participate. For purposes of the must-offer requirement and mitigation of offers for any RPM Auction for a Delivery Year, a Generation Capacity Resource shall cease to be considered a Planned Generation Capacity Resource as of the date that the resource is in full commercial operation and Interconnection Service commences as to such resource, in which case it shall become an Existing Generation Capacity Resource.

### **1.71 Planning Period**

Planning Period shall mean the 12 months beginning June 1 and extending through May 31 of the following year, or such other period approved by the Members Committee.

#### **1.71A PRD Curve**

PRD Curve shall mean a price-consumption curve at a PRD Substation level, if available, and otherwise at a Zonal (or sub-Zonal LDA, if applicable) level, that details the base consumption level of Price Responsive Demand and the decreasing consumption levels at increasing prices.

#### **1.71B PRD Provider**

PRD Provider shall mean (i) a Load Serving Entity that provides PRD; or (ii) an entity without direct load serving responsibilities that has entered contractual arrangements with end-use customers served by a Load Serving Entity that satisfy the eligibility criteria for Price Responsive Demand.

#### **1.71C PRD Provider's Zonal Expected Peak Load Value of PRD**

PRD Provider's Zonal Expected Peak Load Value of PRD shall mean the expected contribution to Delivery Year peak load of a PRD Provider's Price Responsive Demand, were such demand not to be reduced in response to price, based on the contribution of the end-use

customers comprising such Price Responsive Demand to the most recent prior Delivery Year's peak demand, escalated to the Delivery Year in question, as determined in a manner consistent with the Office of the Interconnection's load forecasts used for purposes of the RPM Auctions.

#### **1.71D PRD Reservation Price**

PRD Reservation Price shall mean an RPM Auction clearing price identified in a PRD Plan for Price Responsive Demand load below which the PRD Provider desires not to commit the identified load as Price Responsive Demand.

#### **1.71E PRD Substation**

PRD Substation shall mean an electrical substation that is located in the same Zone or in the same sub-Zonal LDA as the end-use customers identified in a PRD Plan or PRD registration and that, in terms of the electrical topography of the Transmission Facilities comprising the PJM Region, is as close as practicable to such loads.

#### **1.71F Price Responsive Demand**

Price Responsive Demand or PRD shall mean end-use customer load registered by a PRD Provider pursuant to Schedule 6.1 of the PJM Reliability Assurance Agreement that have, as set forth in more detail in the PJM Manuals, the metering capability to record electricity consumption at an interval of one hour or less, Supervisory Control capable of curtailing such load (consistent with applicable RERRA requirements) at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency declared by the Office of the Interconnection, and a retail rate structure, or equivalent contractual arrangement, capable of changing retail rates as frequently as an hourly basis, that is linked to or based upon changes in real-time Locational Marginal Prices at a PRD Substation level and that results in a predictable automated response to varying wholesale electricity prices.

#### **1.71G Price Responsive Demand Credit**

Price Responsive Demand Credit shall mean a credit, based on committed Price Responsive Demand, as determined under Schedule 6.1 of this Agreement.

#### **1.71H Price Responsive Demand Plan or PRD Plan**

Price Responsive Demand Plan or PRD Plan shall mean a plan, submitted by a PRD Provider and received by the Office of the Interconnection in accordance with Schedule 6.1 of this Agreement and procedures specified in the PJM Manuals, claiming a peak demand limitation due to Price Responsive Demand to support the determination of such PRD Provider's Nominal PRD Value.

#### **1.72 Public Power Entity**

Public Power Entity shall mean any agency, authority, or instrumentality of a state or of a

political subdivision of a state, or any corporation wholly owned by any one or more of the foregoing, that is engaged in the generation, transmission, and/or distribution of electric energy.

### **1.73 Qualifying Transmission Upgrades**

Qualifying Transmission Upgrades shall have the meaning specified in Attachment DD to the PJM Tariff.

### **1.74 [Reserved for Future Use]**

#### **1.74A Relevant Electric Retail Regulatory Authority**

Relevant Electric Retail Regulatory Authority or RERRA shall have the meaning specified in the PJM Operating Agreement.

### **1.75 Reliability Principles and Standards**

Reliability Principles and Standards shall mean the principles and standards established by NERC or an Applicable Regional Entity to define, among other things, an acceptable probability of loss of load due to inadequate generation or transmission capability, as amended from time to time.

### **1.76 Required Approvals**

Required Approvals shall mean all of the approvals required for this Agreement to be modified or to be terminated, in whole or in part, including the acceptance for filing by FERC and every other regulatory authority with jurisdiction over all or any part of this Agreement.

### **1.77 Self-Supply**

Self-Supply shall have the meaning provided in Attachment DD to the PJM Tariff.

#### **1.77A Small Commercial Customer**

“Small Commercial Customer” shall have the same meaning as in the PJM Tariff.

### **1.78 [Reserved for Future Use]**

### **1.79 [Reserved for Future Use]**

### **1.80 State Consumer Advocate**

State Consumer Advocate shall mean a legislatively created office from any State, all or any part of the territory of which is within the PJM Region, and the District of Columbia established, inter alia, for the purpose of representing the interests of energy consumers before

the utility regulatory commissions of such states and the District of Columbia and the FERC.

### **1.81 State Regulatory Structural Change**

State Regulatory Structural Change shall mean as to any Party, a state law, rule, or order that, after September 30, 2006, initiates a program that allows retail electric consumers served by such Party to choose from among alternative suppliers on a competitive basis, terminates such a program, expands such a program to include classes of customers or localities served by such Party that were not previously permitted to participate in such a program, or that modifies retail electric market structure or market design rules in a manner that materially increases the likelihood that a substantial proportion of the customers of such Party that are eligible for retail choice under such a program (a) that have not exercised such choice will exercise such choice; or (b) that have exercised such choice will no longer exercise such choice, including for example, without limitation, mandating divestiture of utility-owned generation or structural changes to such Party's default service rules that materially affect whether retail choice is economically viable.

#### **1.81A Supervisory Control**

Supervisory Control shall mean the capability to curtail, in accordance with applicable RERRA requirements, load registered as Price Responsive Demand at each PRD Substation identified in the relevant PRD Plan or PRD registration in response to a Maximum Generation Emergency declared by the Office of the Interconnection. Except to the extent automation is not required by the provisions of this Agreement, the curtailment shall be automated, meaning that load shall be reduced automatically in response to control signals sent by the PRD Provider or its designated agent directly to the control equipment where the load is located without the requirement for any action by the end-use customer.

### **1.82 Threshold Quantity**

Threshold Quantity shall mean, as to any FRR Entity for any Delivery Year, the sum of (a) the Unforced Capacity equivalent (determined using the Pool-Wide Average EFORD) of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan for such Delivery Year, plus (b) the lesser of (i) 3% of the Unforced Capacity amount determined in (a) above or (ii) 450 MW. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base FRR Scaling Factor (as determined in accordance with Schedule 8.1).

### **1.83 Transmission Facilities**

Transmission Facilities shall mean facilities that: (i) are within the PJM Region; (ii) meet the definition of transmission facilities pursuant to FERC's Uniform System of Accounts or have been classified as transmission facilities in a ruling by FERC addressing such facilities; and (iii) have been demonstrated to the satisfaction of the Office of the Interconnection to be

integrated with the PJM Region transmission system and integrated into the planning and operation of the PJM Region to serve all of the power and transmission customers within the PJM Region.

#### **1.84 Transmission Owner**

Transmission Owner shall mean a Member that owns or leases with rights equivalent to ownership Transmission Facilities. Taking transmission service shall not be sufficient to qualify a Member as a Transmission Owner.

#### **1.85 Transmission Owners Agreement**

Transmission Owners Agreement shall mean that certain Consolidated Transmission Owners Agreement, dated as of December 15, 2005 and as amended from time to time, among transmission owners within the PJM Region.

#### **1.86 Unforced Capacity**

Unforced Capacity shall mean installed capacity rated at summer conditions that is not on average experiencing a forced outage or forced derating, calculated for each Capacity Resource on the 12-month period from October to September without regard to the ownership of or the contractual rights to the capacity of the unit.

#### **1.87 [Reserved for Future Use]**

#### **1.88 Zonal Capacity Price**

Zonal Capacity Price shall mean the price of Unforced Capacity in a Zone that an LSE that has not elected the FRR Alternative is obligated to pay for a Delivery Year as determined pursuant to Attachment DD to the PJM Tariff.

#### **1.89 Zone or Zonal**

Zone or Zonal shall refer to an area within the PJM Region, as set forth in Schedule 15, or as such areas may be (i) combined as a result of mergers or acquisitions or (ii) added as a result of the expansion of the boundaries of the PJM Region. A Zone shall include any Non-Zone Network Load (as defined in the PJM Tariff) located outside the PJM Region that is served from such Zone under Schedule H-A of the PJM Tariff.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 5, RAA SCHEDULE 5, 2.0.0, A

Record Narrative Name: SCHEDULE 5

FORCED OUTAGE RATE CALCULATION

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## SCHEDULE 5

### FORCED OUTAGE RATE CALCULATION

A. The equivalent demand forced outage rate ("EFOR<sub>D</sub>") shall be calculated as follows:

$$\text{EFOR}_D (\%) = \{(f_f * \text{FOH} + f_p * \text{EFPOH}) / (\text{SH} + f_f * \text{FOH})\} * 100$$

where

$f_f$  = full outage factor

$f_p$  = partial outage factor

FOH = full forced outage hours

EFPOH = equivalent forced partial outage hours

SH = service hours

B. Calculation of EFOR<sub>D</sub> for individual Generation Capacity Resources.

For each Delivery Year, EFOR<sub>D</sub> shall be calculated at least one month prior to the start of the Third Incremental Auction for: (i) each Generation Capacity Resource for which a sell offer will be submitted in such Third Incremental Auction; and (ii) each Generation Capacity Resource previously committed to serve load in such Delivery Year pursuant to an FRR Capacity Plan or prior auctions for such Delivery Year. Such calculation shall be based upon such resource's service history in the twelve (12) consecutive months ending September 30 last preceding such auction. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments approved by the Members Committee to adjust the parameters of a designated unit. For purposes of the calculations under this Paragraph B, for Delivery Years through May 31, 2018, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered.

1. The EFOR<sub>D</sub> of a unit in service twelve or more full calendar months prior to the calculation month shall be the average rate experienced by such unit during the twelve-month period specified above. Historical data shall be based on official reports of the Parties under rules and practices set forth in the PJM Manuals.
2. The EFOR<sub>D</sub> of a unit in service at least one full calendar month but less than the twelve-month period specified above shall be the average of the EFOR<sub>D</sub> experienced by the unit weighted by full months of service, and the class average rate for units with that capability and of that type weighted by a factor of [(twelve) minus (the number of months the unit was in service)]. Historical data shall be based on official reports of the Parties under rules and practices set forth



in the PJM Manuals.

C. Calculation of average EFOR<sub>D</sub> for the PJM Region

The forecast average EFOR<sub>D</sub> for the PJM Region in a Delivery Year shall be the average of the forced outage rates, weighted for unit capability and expected time in service, attributable to all of the Generation Capacity Resources within the PJM Region, that are planned to be in service during the Delivery Year, including Generation Capacity Resources purchased from specified units and excluding Generation Capacity Resources sold outside the PJM Region from specified units. Such rate shall also include (i) an adjustment, if any, for capacity unavailable due to energy limitations determined in accordance with definitions and criteria set forth in the PJM Manuals and (ii) any other adjustments developed by the Office of Interconnection and maintained in the PJM Manuals to adjust the parameters of a designated unit when such parameters are or will be used to determine a future PJM Region reserve requirement and such adjustment is required to more accurately predict the future performance of such unit in light of extraordinary circumstances. For the purposes of this Schedule, the average EFOR<sub>D</sub> shall be the average of the capacity-weighted EFOR<sub>D</sub>s of all units committed to serve load in the PJM Region; and for purposes of the EFOR<sub>D</sub> calculations under this Paragraph C for any Delivery Year beginning after May 31, 2010, outages deemed to be outside plant management control in accordance with NERC guidelines shall not be considered, and for the 2018/2019 Delivery Year and all subsequent Delivery Years, outages deemed to be outside plant management control in accordance with NERC guidelines shall be considered. All rates shall be in percent.

1. The EFOR<sub>D</sub> of a unit not yet in service or which has been in service less than one full calendar year at the time of forecast shall be the class average rate for units with that capability and of that type, as estimated and used in the calculation of the Forecast Pool Requirement.
2. The EFOR<sub>D</sub> of a unit in service five or more full calendar years at the time of forecast shall be the average rate experienced by such unit during the five most recent calendar years. Historical data shall be based on official reports of the Parties under rules and practices developed by the Office of Interconnection and maintained in the PJM Manuals.
3. The EFOR<sub>D</sub> of a unit in service at least one full calendar year but less than five full calendar years at the time of the forecast shall be determined as follows:

Full Calendar  
Years of Service

- |   |  |
|---|--|
| 1 | One-fifth the rate experienced during the calendar year, plus four-fifths the class average rate.                |
| 2 | Two-fifths the average rate experienced during the two calendar years, plus three-fifths the class average rate. |

- 3 Three-fifths the average rate experienced during the three calendar years, plus two-fifths the class average rate.
- 4 Four-fifths the average rate experienced during the four calendar years, plus one-fifth the class average rate.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

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PROCEDURES FOR DEMAND RESOURCES, ILR, AND ENERGY EFFICIENCY

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## SCHEDULE 6

### **PROCEDURES FOR DEMAND RESOURCES AND ENERGY EFFICIENCY**

A. Parties can partially or wholly offset the amounts payable for the Locational Reliability Charge with Demand Resources that are operated under the direction of the Office of the Interconnection. FRR Entities may reduce their capacity obligations with Demand Resources that are operated under the direction of the Office of the Interconnection and detailed in such entity's FRR Capacity Plan. Demand Resources qualifying under the criteria set forth below may be offered for sale or designated as Self-Supply in the Base Residual Auction, included in an FRR Capacity Plan, or offered for sale in any Incremental Auction, for any Delivery Year for which such resource qualifies. Qualified Demand Resources generally fall in one of three categories, i.e., Guaranteed Load Drop, Firm Service Level, or Direct Load Control, as further specified in section G and the PJM Manuals. Qualified Demand Resources may be provided by a Curtailment Service Provider, notwithstanding that such Curtailment Service Provider is not a Party to this Agreement. Such Curtailment Service Providers must satisfy the requirements hereof and the PJM Manuals.

1. A Party must formally notify, in accordance with the requirements of the PJM Manuals and section F hereof, as applicable, the Office of the Interconnection of the Demand Resource that it is placing under the direction of the Office of the Interconnection. A Party must further notify the Office of the Interconnection whether the resource is a Limited Demand Resource, an Extended Summer Demand Resource, a Base Capacity Demand Resource or an Annual Demand Resource.

2. A Demand Resource must achieve its full load reduction within the following time period:

(a) For the 2014/2015 Delivery Year, Curtailment Service Providers may elect a notification time period from the Office of the Interconnection of 30, 60 or 120 minutes prior to their Demand Resources being required to fully respond to a Load Management Event.

(b) For the 2015/2016 Delivery Year and subsequent Delivery Years, a Demand Resource must be able to fully respond to a Load Management Event within 30 minutes of notification from the Office of the Interconnection. This default 30 minute prior notification shall apply unless a Curtailment Service Provider obtains an exception from the Office of the Interconnection due to physical operational limitations that prevent the Demand Resource from reducing load within that timeframe. In such case, the Curtailment Service Provider shall submit a request for an exception to the 30 minute prior notification requirement to the Office of the Interconnection, at the time the Registration Form for that resource is submitted in accordance with Attachment K-Appendix of this Tariff. The only alternative notification times that the Office of Interconnection will permit, upon approval of an exception request, are 60 minutes and 120 minutes prior to a Load Management Event. The Curtailment Service Provider shall indicate in writing, in the appropriate application, that it seeks an exception to permit a prior notification time of 60 minutes or 120 minutes, and the reason(s) for the requested exception. A Curtailment Service Provider shall not submit a request for an exception to the default 30 minute notification period unless it has done its due diligence to confirm that the Demand Resource is physically incapable of responding within that timeframe based on one or more of the reasons set forth below and as may be further defined in the PJM Manuals and has obtained detailed data and documentation to support this determination.

In order to establish that a Demand Resource is reasonably expected to be physically unable to reduce load in that timeframe, the Curtailment Service Provider that registered the resource must demonstrate that:

- 1) The manufacturing processes for the Demand Resource require gradual reduction to avoid damaging major industrial equipment used in the manufacturing process, or damage to the product generated or feedstock used in the manufacturing process;
- 2) Transfer of load to back-up generation requires time-intensive manual process taking more than 30 minutes;
- 3) On-site safety concerns prevent location from implementing reduction plan in less than 30 minutes; or,
- 4) The Demand Resource is comprised of mass market residential customers or Small Commercial Customers which collectively cannot be notified of a Load Management Event within a 30-minute timeframe due to unavoidable communications latency, in which case the requested notification time shall be no longer than 120 minutes.

The Office of the Interconnection may request data and documentation from the Curtailment Service Provider and such Curtailment Service Provider shall provide to the Office of the Interconnection within three (3) business days of a request therefor, a copy of all of the data and documentation supporting the exception request. Failure to provide a timely response to such request shall cause the exception to terminate the following Operating Day.

At its sole option and discretion, the Office of the Interconnection may review the data and documentation provided by the Curtailment Service Provider to determine if the Demand

Resource has met one or more of the criteria above. The Office of the Interconnection will notify the Curtailment Service Provider in writing of its determination by no later than ten (10) business days after receipt of the data and documentation.

The Curtailment Service Provider shall provide written notification to the Office of the Interconnection of a material change to the facts that supported its exception request within three (3) business days of becoming aware of such material change in facts, and, if the Office of Interconnection determines that the physical limitation criteria above are no longer being met, the Demand Resource shall be subject to the default notification period of 30 minutes immediately upon such determination.

3. The initiation of load reduction, upon the request of the Office of the Interconnection, must be within the authority of the dispatchers of the Party. No additional approvals should be required.

4. The initiation of load reduction upon the request of the Office of the Interconnection is considered a pre-emergency or emergency action and must be implementable prior to a voltage reduction.

5. A Curtailment Service Provider intending to offer for sale or designate for self-supply, a Demand Resource in any RPM Auction, or intending to include a Demand Resource in any FRR Capacity Plan must demonstrate, to PJM's satisfaction, that such resource shall have the capability to provide a reduction in demand, or otherwise control load, on or before the start of the Delivery Year for which such resource is committed. As part of such demonstration, each such Curtailment Service Provider shall submit a Demand Resource Sell Offer Plan in accordance with the standards and procedures set forth in section A-1 of Schedule 6, Schedule 8.1 (as to FRR Capacity Plans) and the PJM Manuals, no later than 15 business days prior to, as applicable, the RPM Auction in which such resource is to be offered, or the deadline for submission of the FRR Capacity Plan in which such resource is to be included. PJM may verify the Curtailment Service Provider's adherence to the Demand Resource Sell Offer Plan at any time. A Curtailment Service Provider with a PJM-approved Demand Resource Sell Offer Plan will be permitted to offer up to the approved Demand Resource quantity into the subject RPM Auction or include such resource in its FRR Capacity Plan.

6. Selection of a Demand Resource in an RPM Auction results in commitment of capacity to the PJM Region. Demand Resources that are so committed must be registered to participate in the Full Program Option or as a Capacity Only resource of the Emergency Load Response and Pre-Emergency Load Response Program and thus available for dispatch during PJM-declared pre-emergency events and emergency events.

A-1. A Demand Resource Sell Offer Plan shall consist of a completed template document in the form posted on the PJM website, requiring the information set forth below and in the PJM Manuals, and a Demand Resource Officer Certification Form signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification. The Demand Resource Sell Offer Plan must provide information that supports the Demand Resource Provider's intended Demand Resource Sell Offers and demonstrates that the Demand Resources

are being offered with the intention that the MW quantity that clears the auction is reasonably expected to be physically delivered through Demand Resource registrations for the relevant Delivery Year. The Demand Resource Sell Offer Plan shall include all Existing Demand Resources and all Planned Demand Resources that the Demand Resource Provider intends to offer into an RPM Auction or include in an FRR Capacity Plan.

1. Demand Resource Sell Offer Plan Template. The Demand Resource Sell Offer Plan template, in the form provided on the PJM website, shall require the Demand Resource Provider to provide the following information and such other information as specified in the PJM Manuals:

(a) Summary Information. The completed template shall include the Demand Resource Provider's company name, contact information, and the Nominated DR Value in ICAP MWs by Zone/sub-Zone that the Demand Resource Provider intends to offer, stated separately for Existing Demand Resources and Planned Demand Resources. The total Nominated DR Value in MWs for each Zone/sub-Zone shall be the sum of the Nominated DR Value of Existing Demand Resources and the Nominated DR Value of Planned Demand Resources, and shall be the maximum MW amount the Provider intends to offer in the RPM Auction for the indicated Zone/sub-Zone, provided that nothing herein shall preclude the Demand Resource Provider from offering in the auction a lesser amount than the total Nominated DR Value shown in its Demand Resource Sell Offer Plan.

(b) Existing Demand Resources. The Demand Resource Provider shall identify all Existing Demand Resources by identifying end-use customer sites that are currently registered with PJM (even if not registered by such Demand Resource Provider) and that the Demand Resource Provider reasonably expects to have under a contract to reduce load based on PJM dispatch instructions by the start of the auction Delivery Year.

(c) Planned Demand Resources. The Demand Resource Provider shall provide the details of, and key assumptions underlying, the Planned Demand Resource quantities (i.e., all Demand Resource quantities in excess of Existing Demand Resource quantities) contained in the Demand Resource Sell Offer Plan, including:

(i) key program attributes and assumptions used to develop the Planned Demand Resource quantities, including, but not limited to, discussion of:

- method(s) of achieving load reduction at customer site(s);
- equipment to be controlled or installed at customer site(s), if any;
- plan and ability to acquire customers;
- types of customer targeted;
- support of market potential and market share for the target customer base, with adjustments for Existing Demand Resource customers within this market and the potential for other Demand Resource Providers targeting the same customers;
- assumptions regarding regulatory approval of program(s), if applicable; and

- if applicable, Direct Load Control (DLC) program details such as: a description of the cycling control strategy, any assumptions regarding switch operability rate, and a list (and copy) of all load research studies used to develop the estimated nominated ICAP value per customer (i.e., the per-participant impact).

(ii) Zone/sub-Zone information by end-use customer segment for all Nominated DR Values for which an end-use customer site is not identified, to include the number in each segment of end-use customers expected to be registered for the subject Delivery Year, the average Peak Load Contribution per end-use customer for such segment, and the average Nominated DR Value per customer for such segment. End-use customer segments may include residential, commercial, small industrial, medium industrial, and large industrial, as identified and defined in the PJM Manuals, provided that nothing herein or in the Manuals shall preclude the Provider from identifying more specific customer segments within the commercial and industrial categories, if known.

(iii) Information by end-use customer site to the extent required by subsection A-1(1)(c)(iv) or, if not required by such subsection, to the extent known at the time of the submittal of the Demand Resource Sell Offer Plan, to include: customer EDC account number (if known), customer name, customer premise address, Zone/sub-Zone in which the customer is located, end-use customer segment, current Peak Load Contribution value (or an estimate if actual value not known) and an estimate of expected Peak Load Contribution for the subject Delivery Year, and an estimated Nominated DR Value.

(iv) End-use customer site-specific information shall be required for any Zones or sub-Zones identified by PJM pursuant to this subsection for the portion, if any, of a Demand Resource Provider's intended offer in such Zones or sub-Zones that exceeds a Sell Offer threshold determined pursuant to this subsection, as any such excess quantity under such conditions should reflect Planned Demand Resources from end-use customer sites that the Provider has a high degree of certainty it will physically deliver for the subject Delivery Year. In accordance with the procedures in subsection A-1(3) below, PJM shall identify, as requiring site-specific information, all Zones and sub-Zones that comprise any LDA group (from a list of LDA groups stated in the PJM Manuals) in which [the quantity of cleared Demand Resources from the most recent Base Residual Auction] plus [the quantity of Demand Resources included in FRR Capacity Plans for the Delivery Year addressed by the most recent Base Residual Auction] in any Zone or sub-Zone of such LDA group exceeds the greater of:

- the maximum Demand Resources quantity registered with PJM

for such Zone for any Delivery Year from the current (at time of plan submission) Delivery Year and the two preceding Delivery Years; and

- the potential Demand Resource quantity for such Zone estimated by PJM based on an independent published assessment of demand response potential that is reasonably applicable to such Zone, as identified in the PJM Manuals.

For each such Zone and sub-Zone, the Sell Offer threshold for each Demand Resource Provider shall be the higher of:

- the Demand Resource Provider's maximum Demand Resource quantity registered with PJM for such Zone/sub-Zone over the current Delivery Year (at the time of plan submission) and two preceding Delivery Years;
- the Demand Resource Provider's maximum for any single Delivery Year of [such provider's cleared Demand Resource quantity] plus [such provider's quantity of Demand Resources included in FRR Capacity Plans] from the three forward Delivery Years addressed by the three most recent Base Residual Auctions for such Zone/sub-Zone; and
- 10 MW.

(d) Schedule. The Demand Resource Provider shall provide an approximate timeline for procuring end-use customer sites as needed to physically deliver the total Nominated DR Value (for both Existing Demand Resources and Planned Demand Resources) by Zone/sub-Zone in the Demand Resource Sell Offer Plan. The Demand Resource Provider must specify the cumulative number of customers and the cumulative Nominated DR Value associated with each end-use customer segment within each Zone/sub-Zone that the Demand Resource Provider expects (at the time of plan submission) to have under contract as of June 1 each year between the time of the auction and the subject Delivery Year.

2. Demand Resource Officer Certification Form. Each Demand Resource Sell Offer Plan must include a Demand Resource Officer Certification, signed by an officer of the Demand Resource Provider that is duly authorized to provide such a certification, in the form shown in the PJM Manuals, which form shall include the following certifications:

(a) that the signing officer has reviewed the Demand Resource Sell Offer Plan and the information supplied to PJM in support of the Plan is true and correct as of the date of the certification; and

(b) that the Demand Resource Provider is submitting the Plan with the reasonable expectation, based upon its analyses as of the date of the certification, to physically

deliver all megawatts that clear the RPM Auction through Demand Resource registrations by the specified Delivery Year.

As set forth in the form provided in the PJM manuals, the certification shall specify that it does not in any way abridge, expand, or otherwise modify the current provisions of the PJM Tariff, Operating Agreement and/or RAA, or the Demand Resource Provider's rights and obligations thereunder, including the Demand Resource Provider's ability to adjust capacity obligations through participation in PJM incremental auctions and bilateral transactions.

3. Procedures. No later than December 1 prior to the Base Residual Auction for a Delivery Year, PJM shall post to the PJM website a list of Zones and sub-Zones, if any, for which end-use customer site-specific information shall be required under the conditions specified in subsection A-1(1)(c)(iv) above for all RPM Auctions conducted for such Delivery Year. Once so identified, a Zone or sub-Zone shall remain on the list for future Delivery Years until the threshold determined under subsection A-1(1)(c)(iv) above is not exceeded for three consecutive Delivery Years. No later than 15 business days prior to the RPM Auction in which a Demand Resource Provider intends to offer a Demand Resource, the Demand Resource Provider shall submit to PJM a completed Demand Resource Sell Offer Plan template and a Demand Resource Officer Certification Form signed by a duly authorized officer of the Provider. PJM will review all submitted DR Sell Offer Plans. No later than 10 business days prior to the subject RPM Auction, PJM shall notify any Demand Resource Providers that have identified the same end-use customer site(s) in their respective DR Sell Offer Plans for the same Delivery Year. In such event, the MWs associated with such site(s) will not be approved for inclusion in a Sell Offer in an RPM Auction by any of the Demand Resource Providers, unless a Demand Resource Provider provides a letter of support from the end-use customer indicating that it is likely to execute a contract with that Demand Resource Provider for the relevant Delivery Year, or provides other comparable evidence of likely commitment. Such letter of support or other supporting evidence must be provided to PJM no later than 7 business days prior to the subject RPM Auction. If an end-use customer provides letters of support for the same site for the same Delivery Year to multiple Demand Resource Providers, the MWs associated with such end-use customer site shall not be approved as a Demand Resource for any of the Demand Resource Providers. No later than 5 business days prior to the subject RPM Auction, PJM will notify each Demand Resource Provider of the approved Demand Resource quantity, by Zone/sub-Zone, that such Demand Resource Provider is permitted to offer into such RPM Auction.

B. The Unforced Capacity value of a Demand Resource will be determined as:

for the Delivery Years through May 31, 2018, the product of the Nominated Value of the Demand Resource, times the DR Factor, times the Forecast Pool Requirement, and for the 2018/2019 Delivery Year and subsequent Delivery Years, the product of the Nominated Value of the Demand Resource times the Forecast Pool Requirement. Nominated Values shall be determined and reviewed in accordance with sections I and J, respectively, and the PJM Manuals. The DR Factor is a factor established by the PJM Board with the advice of the Members Committee to reflect the increase in the peak load carrying capability in the PJM Region due to Demand Resources. Peak load carrying capability is defined to be the peak load that the PJM Region is able to serve at the loss of



load expectation defined in the Reliability Principles and Standards. The DR Factor is the increase in the peak load carrying capability in the PJM Region due to Demand Resources, divided by the total Nominated Value of Demand Resources in the PJM Region. The DR Factor will be determined using an analytical program that uses a probabilistic approach to determine reliability. The determination of the DR Factor will consider the reliability of Demand Resources, the number of interruptions, and the total amount of load reduction.

- C. Demand Resources offered and cleared in a Base Residual or Incremental Auction shall receive the corresponding Capacity Resource Clearing Price as determined in such auction, in accordance with Attachment DD of the PJM Tariff. For Delivery Years beginning with the Delivery Year that commences on June 1, 2013, any Demand Resources located in a Zone with multiple LDAs shall receive the Capacity Resource Clearing Price applicable to the location of such resource within such Zone, as identified in such resource's offer. Further, the Curtailment Service Provider shall register its resource in the same location within the Zone as specified in its cleared sell offer, and shall be subject to deficiency charges under Attachment DD of this Tariff to the extent it fails to provide the resource in such location consistent with its cleared offer. For either of the Delivery Year commencing on June 1, 2010 or commencing on June 1, 2012, if the location of a Demand Resource is not specified by a Seller in the Sell Offer on an individual LDA basis in a Zone with multiple LDAs, then Demand Resources cleared by such Seller will be paid a DR Weighted Zonal Resource Clearing Price, determined as follows: (i) for a Zone that includes non-overlapping LDAs, calculated as the weighted average of the Resource Clearing Prices for such LDAs, weighted by the cleared Demand Resources registered by such Seller in each such LDA; or (ii) for a Zone that contains a smaller LDA within a larger LDA, calculated treating the smaller LDA and the remaining portion of the larger LDA as if they were separate LDAs, and weight-averaging in the same manner as (i) above.
- D. The Party, Electric Distributor, or Curtailment Service Provider that establishes a contractual relationship (by contract or tariff rate) with a customer for load reductions is entitled to receive the compensation specified in section C for a committed Demand Resource, notwithstanding that such provider is not the customer's energy supplier.
- E. Any Party hereto shall demonstrate that its Demand Resources performed during periods when load management procedures were invoked by the Office of the Interconnection. The Office of the Interconnection shall adopt and maintain rules and procedures for verifying the performance of such resources, as set forth in section K hereof and the PJM Manuals. In addition, committed Demand Resources that do not comply with the directions of the Office of the Interconnection to reduce load during an emergency shall be subject to the penalty charge set forth in Attachment DD to the PJM Tariff.
- F. Parties may elect to place Demand Resources associated with Behind The Meter Generation under the direction of the Office of the Interconnection for a Delivery Year by submitting a Sell Offer for such resource (as Self Supply, or with an offer price) in the Base Residual Auction for such Delivery Year. This election shall remain in effect for

the entirety of such Delivery Year. In the event such an election is made, such Behind The Meter Generation will not be netted from load for the purposes of calculating the Daily Unforced Capacity Obligations under this Agreement.

G. PJM measures Demand Resources in the following four ways:

Direct Load Control (DLC) – Load management that is initiated directly by the Curtailment Service Provider’s market operations center or its agent, employing a communication signal to cycle equipment (typically water heaters or central air conditioners). DLC programs are qualified based on load research and customer subscription data. Curtailment Service Providers may rely on the results of load research studies identified in the PJM Manuals to set the per-participant load reduction for DLC programs. Each Curtailment Service Provider relying on DLC load management must periodically update its DLC switch operability rates, in accordance with the PJM Manuals.

Firm Service Level (FSL) – Load management achieved by an end-use customer reducing its load to a pre-determined level (the Firm Service Level), upon notification from the Curtailment Service Provider’s market operations center or its agent.

Guaranteed Load Drop (GLD) – Load management achieved by an end-use customer reducing its load by a pre-determined amount (the Guaranteed Load Drop), upon notification from the Curtailment Service Provider’s market operations center or its agent. Typically, the load reduction is achieved through running customer-owned backup generators, or by shutting down process equipment.

Customer Baseline Load (CBL) - Load management achieved by an end-use customer as measured by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

H. Each Curtailment Service Provider must satisfy (or contract with another LSE, Curtailment Service Provider, or electric distribution company to provide) the following requirements:

- A point of contact with appropriate backup to ensure single call notification from PJM and timely execution of the notification process;
- Supplemental status reports, detailing Demand Resources available, as requested by PJM;
- Entry of customer-specific Demand Resource credit information, for planning and verification purposes, into the designated PJM electronic system.
- Customer-specific compliance and verification information for each PJM-initiated Demand Resource event, as well as aggregated Provider load drop data for

Provider-initiated events, in accordance with established reporting guidelines.

- Load drop estimates for all Demand Resource events, prepared in accordance with the PJM Manuals.

- I. The Nominated Value of each Demand Resource shall be determined consistent with the process for determination of the capacity obligation for the customer.

The Nominated Value for a Firm Service Level customer will be based on the peak load contribution for the customer, as determined by the 5CP methodology utilized to determine other ICAP obligation values. The maximum Demand Resource load reduction value for a Firm Service Level customer will be equal to Peak Load Contribution – Firm Contract Level adjusted for system losses.

The Nominated Value for a Guaranteed Load Drop customer will be the guaranteed load drop amount, adjusted for system losses, as established by the customer's contract with the Curtailment Service Provider. The maximum credit nominated shall not exceed the customer's Peak Load Contribution.

The Nominated Value for a Direct Load Control program will be based on load research and customer subscription. The maximum value of the program is equal to the approved per-participant load reduction multiplied by the number of active participants, adjusted for system losses. The per-participant impact is to be estimated at long-term average local weather conditions at the time of the summer peak.

Customer-specific Demand Resource information (EDC account number, peak load, notification period, etc.) will be entered into the designated PJM electronic system to establish credit values. Additional data may be required, as defined in sections J and K.

- J. Nominated Values shall be reviewed based on documentation of customer-specific data and Demand Resource information, to verify the amount of load management available and to set a maximum allowable Nominated Value. Data is provided by both the zone EDC and the Curtailment Service Provider on templates supplied by PJM, and must include the EDC meter number or other unique customer identifier, Peak Load Contribution (5CP), contract firm service level or guaranteed load drop values, applicable loss factor, zone/area location of the load drop, LSE contact information, number of active participants, etc. Such data must be uploaded and approved prior to the first day of the Delivery Year for such resource as a Demand Resource. Curtailment Service Providers must provide this information concurrently to host EDCs.

For Firm Service Level and Guaranteed Load Drop customers, the 5CP values, for the zone and affected customers, will be adjusted to reflect an "unrestricted" peak for a zone, based on information provided by the Curtailment Service Provider. Load drop levels shall be estimated in accordance with guidelines in the PJM Manuals.

For Direct Load Control programs, the Curtailment Service Provider must provide

information detailing the number of active participants in each program. Other information on approved DLC programs will be provided by PJM.

- K. Compliance is the process utilized to review Provider performance during PJM-initiated Demand Resource events. Compliance will be established for each Provider on an event specific basis for the Curtailment Service Provider's Demand Resources dispatched by the Office of the Interconnection during such event. PJM will establish and communicate reasonable deadlines for the timely submittal of event data to expedite compliance reviews. Compliance reviews will be completed as soon after the event as possible, with the expectation that reviews of a single event will be completed within two months of the end of the month in which the event took place. Curtailment Service Providers are responsible for the submittal of compliance information to PJM for each PJM-initiated event during the compliance period.
- For Load Management Events occurring through the May 31, 2018 and for Load Management Events occurring during the months of June through September of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance for Direct Load Control programs will consider only the transmission of the control signal. Curtailment Service Providers are required to report the time period (during the Demand Resource event) that the control signal was actually sent.

Compliance is checked on an individual customer basis for FSL, by comparing actual load during the event to the firm service level. Curtailment Service Providers must submit actual customer load levels (for the event period) for the compliance report. Compliance for FSL will be based on:

End use customer's current Delivery Year peak load contribution ("PLC") minus the metered load ("Load") multiplied by the loss factor ("LF"). The calculation is represented by:

$$(PLC) - (Load * LF)$$

Compliance is checked on an individual customer basis for GLD, and will be based on:

- (i) the lesser of (a) comparison load used to best represent what the load would have been if PJM did not declare a Load Management Event or the CSP did not initiate a test as outlined in the PJM Manuals, minus the Load and then multiplied by the LF, or (b) the PLC minus the Load multiplied by the LF. A load reduction will only be recognized for capacity compliance if the Load multiplied by the LF is less than the PLC.
- (iii) Curtailment Service Providers must submit actual loads and comparison loads for all hours during the day of the Load Management Event or the Load Management performance test, and for all hours during any other days as required by the Office of the Interconnection to calculate the load reduction. Comparison loads must be developed from the guidelines in the PJM Manuals, and note which method was employed.

Compliance is averaged over the Load Management Event for non-interval metered DLC programs. Compliance is averaged over the Load Management Event, for each FSL and GLD customer dispatched by the Office of the Interconnection for at least 30 minutes of the clock hour (i.e., “partial dispatch compliance hour”. The registered capacity commitment for the partial dispatch compliance hour will be prorated based on the number of minutes dispatched during the clock hour and as defined in the Manual. Curtailment Service Provider may submit 1 minute load data for use in capacity compliance calculations for partial dispatch compliance hours subject to PJM approval and in accordance with the PJM Manuals where: (a) metering meets all Tariff and Manual requirements, (b) 1 minute load data shall be submitted to PJM for all locations on the registration, and (c) 1 minute load data measures energy consumption over the minute.

For Load Management Events occurring during the months of October through May of the 2018/2019 Delivery Year and subsequent Delivery Years:

Compliance is determined on an individual customer basis by comparing actual metered load to an end-use customer’s Customer Baseline Load or alternative CBL determined in accordance with the provisions of Section 3.3A.2 or 3.3A.2.01 of the Operating Agreement.

For all Delivery Years:

Demand Resources may not reduce their load below zero (i.e., export energy into the system). No compliance credit will be given for an incremental load drop below zero. Compliance will be totaled over all FSL and GLD customers and DLC programs to determine a net compliance position for the event for each Provider by Zone, for all Demand Resources committed by such Provider and dispatched by the Office of the Interconnection in the zone. Deficiencies shall be as further determined in accordance with section 11 of Schedule DD to the PJM Tariff.

#### L. Energy Efficiency Resources

1. An Energy Efficiency Resource is a project, including installation of more efficient devices or equipment or implementation of more efficient processes or systems, exceeding then-current building codes, appliance standards, or other relevant standards, designed to achieve a continuous (during peak summer and winter periods as described herein) reduction in electric energy consumption at the End-Use Customer’s retail site that is not reflected in the peak load forecast prepared for the Delivery Year for which the Energy Efficiency Resource is proposed, and that is fully implemented at all times during such Delivery Year, without any requirement of notice, dispatch, or operator intervention.
2. An Energy Efficiency Resource may be offered as a Capacity Resource in the Base Residual or Incremental Auctions for any Delivery Year beginning on or

after June 1, 2011. No later than 30 days prior to the auction in which the resource is to be offered, the Capacity Market Seller shall submit to the Office of the Interconnection a notice of intent to offer the resource into such auction and a measurement and verification plan. The notice of intent shall include all pertinent project design data, including but not limited to the peak-load contribution of affected customers, a full description of the equipment, device, system or process intended to achieve the load reduction, the load reduction pattern, the project location, the project development timeline, and any other relevant data. Such notice also shall state the seller's proposed Nominated Energy Efficiency Value,

- For Delivery Years through May 31, 2018, the seller's proposed Nominated Energy Efficiency Value shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday;
- For the 2018/2019 and 2019/2020 Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Base Capacity Energy Efficiency Resource shall be the expected average load reduction between the hour ending 15:00 EPT and the hour ending 18:00 EPT during all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday; and
- For the 2018/2019 Delivery Year and subsequent Delivery Years, the seller's proposed Nominated Energy Efficiency Value for any Annual Energy Efficiency Resources, shall be the expected average load reduction, for all days from June 1 through August 31, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 15:00 EPT and the hour ending 18:00 EPT. In addition, the expected average load reduction for all days from January 1 through February 28, inclusive, of such Delivery Year that is not a weekend or federal holiday, between the hour ending 8:00 EPT and the hour ending 9:00 EPT and between the hour ending 19:00 EPT and the hour ending 20:00 EPT shall not be less than the Nominated Energy Efficiency Value.

The measurement and verification plan shall describe the methods and procedures, consistent with the PJM Manuals, for determining the amount of the load reduction and confirming that such reduction is achieved. The Office of the Interconnection shall determine, upon review of such notice, the Nominated Energy Efficiency Value that may be offered in the Reliability Pricing Model Auction.

3. An Energy Efficiency Resource may be offered with a price offer or as Self-Supply. If an Energy Efficiency Resource clears the auction, it shall receive the applicable Capacity Resource Clearing Price, subject to section 5 below. A Capacity Market Seller offering an Energy Efficiency Resource must comply with all applicable credit requirements as set forth in Attachment Q to the PJM Tariff. For Delivery Years through May 31, 2018, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated

Energy Efficiency value times the DR Factor and the Forecast Pool Requirement. For the 2018/2019 Delivery Year and subsequent Delivery Years, the Unforced Capacity value of an Energy Efficiency Resource offered into an RPM Auction shall be the Nominated Energy Efficiency Value times the Forecast Pool Requirement.

4. An Energy Efficiency Resource that clears an auction for a Delivery Year may be offered in auctions for up to three additional consecutive Delivery Years, but shall not be assured of clearing in any such auction; provided, however, an Energy Efficiency Resource may not be offered for any Delivery Year in which any part of the peak season is beyond the expected life of the equipment, device, system, or process providing the expected load reduction; and provided further that a Capacity Market Seller that offers and clears an Energy Efficiency Resource in a BRA may elect a New Entry Price Adjustment on the same terms as set forth in section 5.14(c) of this Attachment DD.
5. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than 30 days prior to each Auction an updated project status and measurement and verification plan subject to the criteria set forth in the PJM Manuals.
6. For every Energy Efficiency Resource clearing an RPM Auction for a Delivery Year, the Capacity Market Seller shall submit to the Office of the Interconnection, by no later than the start of such Delivery Year, an updated project status and detailed measurement and verification data meeting the standards for precision and accuracy set forth in the PJM Manuals. The final value of the Energy Efficiency Resource during such Delivery Year shall be as determined by the Office of the Interconnection based on the submitted data.
7. The Office of the Interconnection may audit, at the Capacity Market Seller's expense, any Energy Efficiency Resource committed to the PJM Region. The audit may be conducted any time including the Performance Hours of the Delivery Year.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
RAA SCHEDULE 8, RAA SCHEDULE 8, 3.0.0, A  
Record Narrative Name: RAA SCHEDULE 8

DETERMINATION OF UNFORCED CAPACITY OBLIGATIONS

Tariff Record ID: 280  
Tariff Record Collation Value: 970679668      Tariff Record Parent Identifier: 205  
Proposed Date: 2015-04-01  
Priority Order: 500  
Record Change Type: CHANGE  
Record Content Type: 1  
Associated Filing Identifier:

**SCHEDULE 8**

## **DETERMINATION OF UNFORCED CAPACITY OBLIGATIONS**

- A. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of a Party that has not elected the FRR Alternative for such Delivery Year shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = OPL x Final Zonal RPM Scaling Factor x FPR

Where:

OPL = Obligation Peak Load, defined as:

The Parties' share of the Zonal Obligation Peak Load as assigned by the EDC for the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal RPM Scaling Factor = the factor determined as set forth in sections B and C of this Schedule

FPR = the Forecast Pool Requirement

Netting of Behind the Meter Generation for a Party with regard to Non-Retail Behind the Meter Generation shall be subject to the following limitation:

For the 2006/2007 Planning Period, 100 percent of the operating Non-Retail Behind the Meter Generation shall be netted, provided that the total amount of Non-Retail Behind the Meter Generation in the PJM Region does not exceed 1500 megawatts ("Non-Retail Threshold"). For each Planning Period/Delivery Year thereafter, the Non-Retail threshold shall be proportionately increased based on load growth in the PJM Region but shall not be greater than 3000 megawatts. Load growth shall be determined by the Office of the Interconnection based on the most recent forecasted weather-adjusted coincident summer peak for the PJM Region divided by the weather-adjusted coincident peak for the previous summer for the same area. After the load growth factor is applied, the Non-Retail Threshold will be rounded up or down to the nearest whole megawatt and the rounded number shall be the Non-Retail Threshold for the current Planning Period and the base amount for calculating the Non-Retail Threshold for the succeeding planning period. If the Non-Retail Threshold is exceeded, the amount of operating Non-Retail Behind the Meter Generation that a Party may net shall be adjusted according to the following formula:

Party Netting Credit = (NRT/ PJM NRBTMG) \* Party Operating NRBTMG



Where: NRBTMG is Non-Retail Behind the Meter Generation

NRT is the Non-Retail Threshold

PJM NRBTMG is the total amount of Non-Retail Behind the Meter Generation in the PJM Region

The total amount of Non-Retail Behind the Meter Generation that is eligible for netting in the PJM Region is 3000 megawatts. Once this 3000 megawatt limit is reached, any additional Non-Retail Behind the Meter Generation which operates in the PJM Region will be ineligible for netting under this section.

In addition, the Party NRBTMG Netting Credit shall be adjusted pursuant to Schedule 16 of this Agreement, if applicable.

A Party shall be required to report to PJM such information as is required to facilitate the determination of its NRBTMG Netting Credit in accordance with the procedures set forth in the PJM Manuals.

B. Following the Base Residual Auction and each Incremental Auction for a Delivery Year, the Office of the Interconnection shall determine the RTO Unforced Capacity Obligation, as well as the Zonal RPM Scaling Factor and the Zonal Unforced Capacity Obligation for each Zone for such Delivery Year. The RTO Unforced Capacity Obligation for a Delivery Year shall be equal to the sum of the Unforced Capacity obligations satisfied through the Base Residual Auction and all Incremental Auctions conducted for such Delivery Year. The Unforced Capacity obligation satisfied in an Incremental Auction may be negative if capacity is decommitted in such auction.

For Delivery Years through May 31, 2018, the Zonal Obligation Peak Load for a Zone shall be equal to the weather-normalized summer peak for the Zone for the summer concluding prior to the most recent RPM Auction conducted for such Delivery Year; and, the Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro rata share of the RTO Unforced Capacity Obligation for the Delivery Year based on the Zonal Peak Load Forecast made one month prior to the most recent RPM Auction conducted for such Delivery Year. The Zonal RPM Scaling Factor shall be equal to the Zonal Unforced Capacity Obligation divided by (FPR times the Zonal Obligation Peak Load).

For the 2018/2019 Delivery Year and subsequent Delivery Years, the Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance Assessment Hour from each day containing Performance Assessment Hours),

occurring in the twelve month period ending October 31 of the calendar year prior to the most recent RPM Auction conducted for such Delivery Year; and, the Zonal Unforced Capacity Obligation for a Zone shall be equal to such Zone's pro-rata share of the RTO Unforced Capacity Obligation for the Delivery Year based on the Zonal Obligation Peak Load. The Zonal RPM Scaling Factor shall be equal to the Zonal Unforced Capacity Obligation divided by (FPR times the the Zonal Obligation Peak Load).

- C.
1. No later than five months prior to the start of each Delivery Year, the Electric Distributor for a Zone shall allocate the most recent Zonal Obligation Peak Load for such Zone to determine the peak load contribution for each end-use customer within such Zone.
  2. During the Delivery Year, no later than 36 hours prior to the start of each Operating Day, the Electric Distributor shall provide to PJM for each Party to this Agreement serving load in such Electric Distributor's Zone the Obligation Peak Load. The Electric Distributor may submit corrections to the Obligation Peak Load data up to 12:00PM Eastern Prevailing Time of the next business day following the Operating Day.
  3. For purposes of such allocations, the daily sum of the Obligation Peak Loads of all Parties serving load in a Zone must equal the Zonal Obligation Peak Load for such Zone.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 8.1.C, RAA SCHEDULE 8.1.C-Election, and Termination of Election, 2.0.0, A

Record Narrative Name: RAA SCHEDULE 8.1.C-Election, and Termination of Election, of FRR Alternative

Tariff Record ID: 284

Tariff Record Collation Value: 973540080 Tariff Record Parent Identifier: 281

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

### **C. Election, and Termination of Election, of FRR Alternative**

1. No less than two months before the conduct of the Base Residual Auction for the first Delivery Year for which such election is to be effective, any Party seeking to elect the FRR Alternative shall notify the Office of the Interconnection in writing of such election. Such election shall be for a minimum term of five consecutive Delivery Years. No later than one month before such Base Residual Auction, such Party shall submit its FRR Capacity Plan demonstrating its commitment of Capacity Resources for the term of such election sufficient to meet such Party's Daily Unforced Capacity Obligation (and all other applicable obligations under this Schedule) for the load identified in such plan. At the same time an FRR Entity submits its (i) first FRR Capacity Plan (for FRR Entities electing the FRR Alternative to be effective starting with the 2018/2019 Delivery Year) or (ii) extended or updated FRR Capacity Plan (for FRR Entities which elected the FRR Alternative to be effective starting with Delivery Years prior the 2018/2019 Delivery Year), the FRR Entity must also elect whether it seeks to be subject to the Non-Performance Charge, as provided in section 10A of Attachment DD of the

PJM Tariff, and described in section G.1 of this Schedule 8.1, or to physical non-performance assessments, as described in section G.2 of this Schedule 8.1. This is a one-time election that will apply for the remainder of the FRR Alternative commitment.

2. An FRR Entity may terminate its election of the FRR Alternative effective with the commencement of any Delivery Year following the minimum five Delivery Year commitment by providing written notice of such termination to the Office of the Interconnection no later than two months prior to the Base Residual Auction for such Delivery Year. An FRR Entity that has terminated its election of the FRR Alternative shall not be eligible to re-elect the FRR Alternative for a period of five consecutive Delivery Years following the effective date of such termination.

3. Notwithstanding subsections C.1 and C.2 of this Schedule, in the event of a State Regulatory Structural Change, a Party may elect, or terminate its election of, the FRR Alternative effective as to any Delivery Year by providing written notice of such election or termination to the Office of the Interconnection in good faith as soon as the Party becomes aware of such State Regulatory Structural Change but in any event no later than two months prior to the Base Residual Auction for such Delivery Year.

4. To facilitate the elections and notices required by this Schedule, the Office of the Interconnection shall post, in addition to the information required by Section 5.11(a) of Attachment DD to the PJM Tariff, the percentage of Capacity Resources required to be located in each Locational Deliverability Area by no later than one month prior to the deadline for a Party to provide such elections and notices.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 8.1.D, RAA SCHEDULE 8.1.D-FRR Capacity Plans, 8.0.0, A

Record Narrative Name: RAA SCHEDULE 8.1.D-FRR Capacity Plans

Tariff Record ID: 285

Tariff Record Collation Value: 974255183 Tariff Record Parent Identifier: 281

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **D. FRR Capacity Plans**

1. Each FRR Entity shall submit its initial FRR Capacity Plan as required by subsection C.1 of this Schedule, and shall annually extend and update such plan by no later than one month prior to the Base Residual Auction for each succeeding Delivery Year in such plan. Each FRR Capacity Plan shall indicate the nature and current status of each resource, including the status of each Planned Generation Capacity Resource or Planned Demand Resource, the planned deactivation or retirement of any Generation Capacity Resource or Demand Resource, and the status of commitments for each sale or purchase of capacity included in such plan.

1.1 Beginning with the 2020/2021 Delivery Year and for all subsequent Delivery Years, the FRR Capacity Plan shall comprise only Capacity Performance Resources as defined in section 5.5A of Attachment DD of the PJM Tariff.

2. The FRR Capacity Plan of each FRR Entity that commits that it will not sell surplus

Capacity Resources as a Capacity Market Seller in any auction conducted under Attachment DD of the PJM Tariff, or to any direct or indirect purchaser that uses such resource as the basis of any Sell Offer in such auction, shall designate Capacity Resources in a megawatt quantity no less than the Forecast Pool Requirement for each applicable Delivery Year times the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast for such Delivery Year, as determined in accordance with procedures set forth in the PJM Manuals. For the 2016/2017 Delivery Year and prior Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must meet the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation. For the 2017/2018 Delivery Year, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Limited Resource Constraints and the Sub-Annual Resource Constraints applicable to the FRR Entity's capacity obligation. For the 2018/2019 and 2019/2020 Delivery Years, the set of Capacity Resources designated in the FRR Capacity Plan must satisfy the Base Capacity Resource Constraints and Base Capacity Demand Resource Constraints applicable to the FRR Entity's capacity obligation. If the FRR Entity is not responsible for all load within a Zone, the Preliminary Forecast Peak Load for such entity shall be the FRR Entity's Obligation Peak Load last determined prior to the Base Residual Auction for such Delivery Year, times the Base Zonal FRR Scaling Factor. The FRR Capacity Plan of each FRR Entity that does not commit that it will not sell surplus Capacity Resources as set forth above shall designate Capacity Resources at least equal to the Threshold Quantity. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast exceeds the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan shall be updated to designate additional Capacity Resources in an amount no less than the Forecast Pool Requirement times such increase; provided, however, any excess megawatts of Capacity Resources included in such FRR Entity's previously designated Threshold Quantity, if any, may be used to satisfy the capacity obligation for such increased load. To the extent the FRR Entity's allocated share of the Final Zonal Peak Load Forecast is less than the FRR Entity's allocated share of the Preliminary Zonal Peak Load Forecast, such FRR Entity's FRR Capacity Plan may be updated to release previously designated Capacity Resources in an amount no greater than the Forecast Pool Requirement times such decrease. Peak load values referenced in this section shall be adjusted as necessary to take into account any applicable Nominal PRD Values approved pursuant to Schedule 6.1 of this Agreement. Any FRR Entity seeking an adjustment to peak load for Price Responsive Demand must submit a separate PRD Plan in compliance with Section 6.1 (provided that the FRR Entity shall not specify any PRD Reservation Price), and shall register all PRD-eligible load needed to satisfy its PRD commitment and be subject to compliance charges as set forth in that Schedule under the circumstances specified therein; provided that for non-compliance by an FRR Entity, the compliance charge rate shall be equal to 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the FRR Entity's Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in the RPM auctions for such Delivery Year; and provided further that an alternative PRD Provider may provide PRD in an FRR Service Area by agreement with the FRR Entity responsible for the load in such FRR Service Area, subject to the same terms and conditions as if the FRR Entity had provided the PRD.

3. For the Delivery Years through May 31, 2018, as to any FRR Entity, the Base Zonal FRR

Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZWNSP$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZWNSP$  = Zonal Weather-Normalized Summer Peak Load for such Zone for the summer concluding four years prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and all subsequent Delivery Years, as to any FRR Entity, the Base Zonal FRR Scaling Factor for each Zone in which it serves load for a Delivery Year shall equal  $ZPLDY/ZOPL$ , where:

$ZPLDY$  = Preliminary Zonal Peak Load Forecast for such Zone for such Delivery Year; and

$ZOPL$  = the Preliminary Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single performance hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 four years prior to the commencement of such Delivery Year.

4. Capacity Resources identified and committed in an FRR Capacity Plan shall meet all requirements under this Agreement, the PJM Tariff, and the PJM Operating Agreement applicable to Capacity Resources, including, as applicable, requirements and milestones for Planned Generation Capacity Resources and Planned Demand Resources. A Capacity Resource submitted in an FRR Capacity Plan must be on a unit-specific basis, and may not include “slice of system” or similar agreements that are not unit specific. An FRR Capacity Plan may include bilateral transactions that commit capacity for less than a full Delivery Year only if the resources included in such plan in the aggregate satisfy all obligations for all Delivery Years. All demand response, load management, energy efficiency, or similar programs on which such FRR Entity intends to rely for a Delivery Year must be included in the FRR Capacity Plan, subject to the Base Capacity Demand Resource Constraint, submitted three years in advance of such Delivery Year and must satisfy all requirements applicable to Demand Resources or Energy Efficiency Resources, as applicable, including, without limitation, those set forth in Schedule 6 to this Agreement and the PJM Manuals; provided, however, that previously uncommitted Unforced Capacity from such programs may be used to satisfy any increased capacity obligation for such FRR Entity resulting from a Final Zonal Peak Load Forecast applicable to such FRR Entity. Without limiting the generality of the foregoing, the FRR Entity must submit a Demand Resource Sell Offer Plan 15 business days before the deadline for submitting an FRR Capacity Plan as to any Demand Resources it intends to include in such FRR Capacity Plan and may only include in such FRR Capacity Plan Demand Resources that are approved by PJM following review of such Demand Resource Sell Offer Plan. The requirements, standards, and procedures for a Demand Resource Sell Offer Plan shall be as set forth in Schedule 6 of this Agreement, provided that all references (including deadlines) in Schedule 6, section A-1 to submission or clearing of a Demand Resource offer in an RPM Auction shall be understood for purposes of FRR Entities as referring to inclusion of a Demand Resource in an FRR Capacity Plan, and a

distinct Demand Resource Officer Certification Form shall be applicable to FRR Entities, as shown in the PJM Manuals and provided on the PJM website.

5. For each LDA for which the Office of the Interconnection has established a separate Variable Resource Requirement Curve for any Delivery Year addressed by such FRR Capacity Plan, the plan must include a Percentage Internal Resources Required. For the 2018/2019 and 2019/2020 Delivery Years, the Percentage Internal Resources Required may be satisfied with one or more Capacity Performance Resources, Base Capacity Resources, Base Capacity Demand Resources, or Base Capacity Energy Efficiency Resources, subject to the Base Capacity Resource Constraint and Base Capacity Demand Response Constraint. The Percentage Internal Resources Required will be calculated as the LDA Reliability Requirement less the CETL for the Delivery Year, as determined by the RTEP process as set forth in the PJM Manuals. Such requirement shall be expressed as a percentage of the Unforced Capacity Obligation based on the Preliminary Zonal Peak Load Forecast multiplied by the Forecast Pool Requirement.

6. An FRR Entity may reduce the Percentage Internal Resources Required as to any LDA to the extent the FRR Entity commits to a transmission upgrade that increases the capacity emergency transfer limit for such LDA. Any such transmission upgrade shall adhere to all requirements for a Qualified Transmission Upgrade as set forth in Attachment DD to the PJM Tariff. The increase in CETL used in the FRR Capacity Plan shall be that approved by PJM prior to inclusion of any such upgrade in an FRR Capacity Plan. The FRR Entity shall designate specific additional Capacity Resources located in the LDA from which the CETL was increased, to the extent of such increase.

7. The Office of the Interconnection will review the adequacy of all submittals hereunder both as to timing and content. A Party that seeks to elect the FRR Alternative that submits an FRR Capacity Plan which, upon review by the Office of the Interconnection, is determined not to satisfy such Party's capacity obligations hereunder, shall not be permitted to elect the FRR Alternative. If a previously approved FRR Entity submits an FRR Capacity Plan that, upon review by the Office of the Interconnection, is determined not to satisfy such Party's capacity obligations hereunder, the Office of the Interconnection shall notify the FRR Entity, in writing, of the insufficiency within five (5) business days of the submittal of the FRR Capacity Plan. If the FRR Entity does not cure such insufficiency within five (5) business days after receiving such notice of insufficiency, then such FRR Entity shall be assessed an FRR Commitment Insufficiency Charge, in an amount equal to two times the Cost of New Entry for the relevant location, in \$/MW-day, times the shortfall of Capacity Resources below the FRR Entity's capacity obligation (including any Threshold Quantity requirement) in such FRR Capacity Plan, for the remaining term of such plan.

8. In a state regulatory jurisdiction that has implemented retail choice, the FRR Entity must include in its FRR Capacity Plan all load, including expected load growth, in the FRR Service Area, notwithstanding the loss of any such load to or among alternative retail LSEs. In the case of load reflected in the FRR Capacity Plan that switches to an alternative retail LSE, where the state regulatory jurisdiction requires switching customers or the LSE to compensate the FRR Entity for its FRR capacity obligations, such state compensation mechanism will prevail. In the absence of a state compensation mechanism, the applicable alternative retail LSE shall

compensate the FRR Entity at the capacity price in the unconstrained portions of the PJM Region, as determined in accordance with Attachment DD to the PJM Tariff, provided that the FRR Entity may, at any time, make a filing with FERC under Sections 205 of the Federal Power Act proposing to change the basis for compensation to a method based on the FRR Entity's cost or such other basis shown to be just and reasonable, and a retail LSE may at any time exercise its rights under Section 206 of the FPA.

9. Notwithstanding the foregoing, in lieu of providing the compensation described above, such alternative retail LSE may, for any Delivery Year subsequent to those addressed in the FRR Entity's then-current FRR Capacity Plan, provide to the FRR Entity Capacity Resources sufficient to meet the capacity obligation described in paragraph D.2 for the switched load. Such Capacity Resources shall meet all requirements applicable to Capacity Resources pursuant to this Agreement, the PJM Tariff, and the PJM Operating Agreement, all requirements applicable to resources committed to an FRR Capacity Plan under this Agreement, and shall be committed to service to the switched load under the FRR Capacity Plan of such FRR Entity. The alternative retail LSE shall provide the FRR Entity all information needed to fulfill these requirements and permit the resource to be included in the FRR Capacity Plan. The alternative retail LSE, rather than the FRR Entity, shall be responsible for any performance charges or compliance penalties related to the performance of the resources committed by such LSE to the switched load. For any Delivery Year, or portion thereof, the foregoing obligations apply to the alternative retail LSE serving the load during such time period. PJM shall manage the transfer accounting associated with such compensation and shall administer the collection and payment of amounts pursuant to the compensation mechanism.

Such load shall remain under the FRR Capacity Plan until the effective date of any termination of the FRR Alternative and, for such period, shall not be subject to Locational Reliability Charges under Section 7.2 of this Agreement.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 8.1.E, RAA SCHEDULE 8.1.E-Conditions on Purchases and Sales of Ca, 3.0.0, A

Record Narrative Name: RAA SCHEDULE 8.1.E-Conditions on Purchases and Sales of Capacity Resources by FRR Entities

Tariff Record ID: 286

Tariff Record Collation Value: 974970286 Tariff Record Parent Identifier: 281

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **E. Conditions on Purchases and Sales of Capacity Resources by FRR Entities**

1. An FRR Entity may not include in its FRR Capacity Plan for any Delivery Year any Capacity Resource that has cleared in any auction under Attachment DD of the PJM Tariff for such Delivery Year. Nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan any Capacity Resource that has not cleared such an auction for such Delivery Year. Furthermore, nothing herein shall preclude an FRR Entity from including in its FRR Capacity Plan a Capacity Resource obtained from a different FRR Entity, provided, however, that each FRR Entity shall be individually responsible for meeting its capacity obligations hereunder, and provided further that the same megawatts of Unforced Capacity shall not be committed to more than one FRR Capacity Plan for any given Delivery Year.

2. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may offer to sell Capacity Resources in excess of that needed for the Threshold Quantity in any auction conducted under Attachment DD of the PJM Tariff for such Delivery Year, but may not offer to sell Capacity Resources in the auctions for any such Delivery Year in excess of an amount equal to the lesser of (a) 25% times the Unforced Capacity equivalent of the Installed Reserve Margin for such Delivery Year multiplied by the Preliminary Forecast Peak Load for which such FRR Entity is responsible under its FRR Capacity Plan(s) for such Delivery Year, or (b) 1300 MW.

3. An FRR Entity that designates Capacity Resources in its FRR Capacity Plan(s) for a Delivery Year based on the Threshold Quantity may not offer to sell such resources in any Reliability Pricing Model auction, but may use such resources to meet any increased capacity obligation resulting from unanticipated growth of the loads in its FRR Capacity Plan(s), subject to the limitations described in Subsection D.2 above, or may sell such resources to serve loads located outside the PJM Region, or to another FRR Entity, subject to subsection E.1 above.

4. A Party that has selected the FRR Alternative for only part of its load in the PJM Region pursuant to Section B.2 of this Schedule that designates Capacity Resources as Self-Supply in a Reliability Pricing Model Auction to meet such Party's expected Daily Unforced Capacity Obligation under Schedule 8 shall not be required, solely as a result of such designation, to identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity; provided, however, that such Party may not so designate Capacity Resources in an amount in excess of the lesser of (a) 25% times such Party's total expected Unforced Capacity obligation (under both Schedule 8 and Schedule 8.1), or (b) 200 MW. A Party that wishes to avoid the foregoing limitation must identify Capacity Resources in its FRR Capacity Plan(s) based on the Threshold Quantity.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 8.1.F, RAA SCHEDULE 8.1.F-FRR Daily Unforced Capacity Obligations, 5.0.0, A

Record Narrative Name: RAA SCHEDULE 8.1.F-FRR Daily Unforced Capacity Obligations and Deficiency Charges

Tariff Record ID: 287

Tariff Record Collation Value: 975685389 Tariff Record Parent Identifier: 281

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **F. FRR Daily Unforced Capacity Obligations and Deficiency Charges**

1. For each billing month during a Delivery Year, the Daily Unforced Capacity Obligation of an FRR Entity shall be determined on a daily basis for each Zone as follows:

Daily Unforced Capacity Obligation = [(OPL \* Final Zonal FRR Scaling Factor) – Nominal PRD Value committed by the FRR Entity] \* FPR

where:



For for Delivery Years through May 31, 2018,

OPL = Obligation Peak Load, defined as:

the daily summation of the weather-adjusted coincident summer peak, last preceding the Delivery Year, of the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals; and

Final Zonal FRR Scaling Factor = FZPLDY/FZWNSP;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZWNSP = Zonal Weather-Normalized Peak Load for the summer concluding prior to the commencement of such Delivery Year.

For the 2018/2019 Delivery Year and subsequent Delivery Years,

OPL = Obligation Peak Load, defined as:

for the 2018/2019 Delivery Year and subsequent Delivery Years, the Parties' share of the Final Zonal Obligation Peak Load as assigned by the EDC for the end-users in such Zone (net of operating Behind The Meter Generation, but not to be less than zero) for which such Party was responsible on that billing day, as determined in accordance with the procedures set forth in the PJM Manuals

Final Zonal FRR Scaling Factor = FZPLDY/FZOPL;

FZPLDY = Final Zonal Peak Load Forecast for such Delivery Year; and

FZOPL = the Final Zonal Obligation Peak Load for a Zone shall be equal to the average zonal peak load at the time of: (i) the four highest RTO summer peak hours, (ii) the single highest RTO winter peak hour, and (iii) the highest RTO load occurring during Performance Assessment Hours (only considering a single Performance Assessment Hour from each day containing Performance Assessment Hours), occurring in the twelve month period ending October 31 prior to the commencement of such Delivery Year.

2. An FRR Entity shall be assessed an FRR Capacity Deficiency Charge in each Zone addressed in such entity's FRR Capacity Plan for each day during a Delivery Year that it fails to satisfy its Daily Unforced Capacity Obligation in each Zone. Such FRR Capacity Deficiency Charge shall be in an amount equal to the deficiency below such FRR Entity's Daily Unforced Capacity Obligation for such Zone times (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions).

3. If an FRR Entity acquires load that is not included in the Preliminary Zonal Peak Load Forecast such acquired load shall be treated in the same manner as provided in Sections H.1 and H.2 of this Schedule.

4. The shortages in meeting the minimum requirement within the constrained zones and the shortage in meeting the total obligation are first calculated. The shortage in the unconstrained area is calculated as the total shortage less shortages in constrained zones and excesses in constrained zones (the shortage is zero if this is a negative number). The Capacity Deficiency Charge is charged to the shortage in each zone and in the unconstrained area separately. This procedure is used to allow the use of capacity excesses from constrained zones to reduce shortage in the unconstrained area and to disallow the use of capacity excess from unconstrained area to reduce shortage in constrained zones.

5. For Delivery Years during the period starting June 1, 2014 and ending May 31, 2017, the shortages in meeting the Minimum Annual Resource Requirement and the Minimum Extended Summer Resource Requirement associated with the FRR Entity's capacity obligation are calculated separately. For such period, the applicable penalty rate is calculated for Annual Resources, Extended Summer Demand Resources, and Limited Resources as (1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing such Zone, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions). For Delivery Years beginning June 1, 2017, the FRR Entity shall receive no credit for Limited Demand Resources to the extent committed in excess of the applicable Limited Resource Constraint and shall receive no credit for the sum of Limited Demand Resources and Extended Summer Demand Resources to the extent the sum of the Unforced Capacity of such resources exceeds the applicable Sub-Annual Resource Constraint.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:  
 RAA SCHEDULE 8.1.G, RAA SCHEDULE 8.1.G-Capacity Resource Performance, 4.0.0, A  
 Record Narrative Name: RAA SCHEDULE 8.1.G-Capacity Resource Performance  
 Tariff Record ID: 288  
 Tariff Record Collation Value: 976400492 Tariff Record Parent Identifier: 281  
 Proposed Date: 2015-04-01  
 Priority Order: 500  
 Record Change Type: CHANGE  
 Record Content Type: 1  
 Associated Filing Identifier:

## **G. Capacity Resource Performance**

1. Any Capacity Resource committed by an FRR Entity in an FRR Capacity Plan for a Delivery Year shall be subject during such Delivery Year to the charges set forth in sections 7, 9, 10, 10A, 11, and 13 of Attachment DD to the PJM Tariff; provided, however: (i) the Daily Deficiency Rate under sections 7, 9, and 13 thereof shall be 1.20 times the Capacity Resource Clearing Price resulting from all RPM Auctions for such Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged for the Delivery Year based on the prices established and quantities cleared in such auctions); (ii) the charges set forth in section 10A of Attachment DD to the PJM Tariff shall apply only to those FRR Entities which opted to be subject to the Non-Performance Charge under section C.1 of this Schedule 8.1 and the charge

rates under section 10A thereof for Base Capacity Resources shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above; and (iii) the charge rates under section 10 thereof, shall be the Capacity Resource Clearing Price resulting from the RPM Auctions for the Delivery Year for the LDA encompassing the Zone of the FRR Entity, weight-averaged as described above. An FRR Entity shall have the same opportunities to cure deficiencies and avoid or reduce associated charges during the Delivery Year that a Market Seller has under sections 7, 9, 10, and 10A of Attachment DD to the PJM Tariff. An FRR Entity may cure deficiencies and avoid or reduce associated charges prior to the Delivery Year by procuring replacement Unforced Capacity outside of any RPM Auction and committing such capacity in its FRR Capacity Plan.

2. For any FRR Entity which opted to be subject to physical non-performance assessments under section C.1. of this Schedule 8.1, such FRR Entity will not be subject to charges under section 10A of Attachment DD of the PJM Tariff, but, rather, it will be required to update its FRR Capacity Plan with an additional 0.5 MW of Capacity Performance Resources for each megawatt of Performance Shortfall using the formulae contained in section 10A(c) of Attachment DD of the PJM Tariff. Such FRR Entity shall not be eligible for, or subject to, the revenue allocation described in section 10A(g) of Attachment DD of the PJM Tariff.

Record Content Description, Tariff Record Title, Record Version Number, Option Code:

RAA SCHEDULE 8.1.H, RAA SCHEDULE 8.1.H-Annexation of service territory by Public, 2.0.0, A  
Record Narrative Name: RAA SCHEDULE 8.1.H-Annexation of service territory by Public Power Entity  
Tariff Record ID: 289

Tariff Record Collation Value: 977115595 Tariff Record Parent Identifier: 281

Proposed Date: 2015-04-01

Priority Order: 500

Record Change Type: CHANGE

Record Content Type: 1

Associated Filing Identifier:

## **H. Annexation of service territory by Public Power Entity**

1. In the event a Public Power Entity that is an FRR Entity annexes service territory to include new customers on sites where no load had previously existed, then the incremental load on such a site shall be treated as unanticipated load growth, and such FRR Entity shall be required to commit sufficient resources to cover such obligation in the relevant Delivery Year.

2. In the event a Public Power Entity that is an FRR Entity annexes service territory to include load from a Party that has not elected the FRR Alternative, then:

- a. For any Delivery Year for which a Base Residual Auction already has been conducted, such acquiring FRR Entity shall meet its obligations for the incremental load by paying PJM for incremental obligations (including any additional demand curve obligation) at the Capacity Resource Clearing Price for the relevant location. Any such revenues shall be used to pay Capacity Resources that cleared in the Base Residual Auction for that LDA.
- b. For any Delivery Year for which a Base Residual Auction has not been conducted, such acquiring FRR Entity shall include such incremental load in its FRR Capacity Plan.

3. Annexation whereby a Party that has not elected the FRR Alternative acquires load from an FRR entity:
  - a. For any Delivery Year for which a Base Residual Auction already has been conducted, PJM would consider shifted load as unanticipated load growth for purposes of determining whether to hold a Second Incremental Auction. If a Second Incremental Auction is held, FRR entity would have a must offer requirement for sufficient capacity to meet the load obligation of such shifted load. If no Second Incremental Auction is conducted, the FRR Entity may sell the associated quantity of capacity into an RPM Auction or bilaterally.
  - b. For any Delivery Year for which a Base Residual Auction has not been conducted, the FRR Entity that lost such load would no longer include such load in its FRR Capacity Plan, and PJM would include such shifted load in future BRAs.

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