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July 19, 2021

The 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. ER17-1433-\_\_\_\_*  
*FTR Forfeiture Rule Compliance Filing*

Dear Secretary Bose,

In compliance with the Federal Energy Regulatory Commission's ("FERC" or the "Commission") May 20, 2021 Order,<sup>1</sup> PJM Interconnection, L.L.C. ("PJM") hereby submits for filing proposed revisions to the PJM Open Access Transmission Tariff ("Tariff") and the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. ("Operating Agreement")<sup>2</sup> related to the Financial Transmission Rights ("FTR") forfeiture rule.<sup>3</sup>

PJM respectfully requests that the Commission set the effective date for the proposed Tariff and Operating Agreement revisions submitted herein as the first day of the first month following the date of the Commission's order on the proposed Tariff and

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,137 (2021) ("May 20, 2021 Order").

<sup>2</sup> T The Tariff and Operating Agreement are currently located under PJM's "Intra-PJM Tariffs" eTariff title. *PJM Interconnection, L.L.C. - Intra-PJM Tariffs*, Federal Energy Regulatory Commission, <https://etariff.ferc.gov/TariffBrowser.aspx?tid=1731> (last visited July 16, 2021). Terms not otherwise defined herein shall have the same meaning as set forth in the Tariff, Operating Agreement, and the Reliability Assurance Agreement Among Load-Serving Entities in the PJM Region ("RAA").

<sup>3</sup> The FTR forfeiture rule, which has been in PJM's market rules in some form since 2000, is designed to prevent market participants from using Virtual Transactions to create congestion that benefits their related FTR positions. *See* May 20, 2021 Order at P 5.

Operating Agreement revisions. Given the need for settlement systems recoding to implement the Commission's order on this compliance filing, any FTR forfeiture charges incurred as of the proposed effective date will be reflected (along with any corresponding credits) in billing statements beginning two months after the Commission order.

## **I. BACKGROUND**

On January 19, 2017, the Commission issued an order following a multi-year Federal Power Act ("FPA") section 206<sup>4</sup> investigation related to PJM's application of the FTR forfeiture rule to Up-to Congestion ("UTC") transactions and how uplift is, or should be, allocated to all Virtual Transactions in PJM.<sup>5</sup> In ordering paragraph (A) of the January 19, 2017 Order, the Commission held that "*PJM's existing Tariff with respect to the application of the FTR forfeiture rule to virtual transactions is hereby found unjust and unreasonable and PJM must implement, to be effective as of the date of this order, the modifications discussed in the body of this order.*"<sup>6</sup> The Commission accordingly directed PJM to submit a compliance filing within 90 days of the date of the January 19, 2017 Order proposing modifications to the Tariff and Operating Agreement language applicable to the FTR forfeiture rule.<sup>7</sup>

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<sup>4</sup> 16 U.S.C. § 824e.

<sup>5</sup> *PJM Interconnection, L.L.C.*, 158 FERC ¶ 61,038 (2017) ("January 19, 2017 Order").

<sup>6</sup> *Id.* at ordering para. (A) (emphasis added).

<sup>7</sup> *Id.* at ordering para. (B).

On April 18, 2017, PJM timely submitted the requisite compliance filing.<sup>8</sup> On June 2, 2017, PJM submitted an amendment to its compliance filing to address certain issues raised in protests to the April 18, 2017 compliance filing.<sup>9</sup>

In the May 20, 2021 Order, the Commission rejected PJM's April and June 2017 compliance filings, and directed PJM to submit an additional compliance filing within 60 days of the date of the order.<sup>10</sup>

## **II. SATISFACTION OF COMPLIANCE DIRECTIVES**

### **A. *Revised FTR Impact Test.***

#### *1. Directive from the May 20, 2021 Order.*

In the May 20, 2021 Order, the Commission found that PJM's April and June 2017 Compliance Filings "generally comply with the January [19,] 2017 Order's directives to: (1) use a portfolio approach when determining a market participant's virtual transactions' net impact on constraints related to its FTR positions; (2) apply the FTR Forfeiture Rule to all FTRs, including FTR counterflows; (3) use the load-weighted reference bus; and (4) consider all virtual transactions held by entities that share common ownership as part of the same portfolio, and are generally just and reasonable."<sup>11</sup>

However, the Commission nonetheless stated that "we cannot accept PJM's Compliance Filings as the just and reasonable replacement rate because the one-cent FTR

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<sup>8</sup> *PJM Interconnection, L.L.C.*, Compliance Filing Concerning the FTR Forfeiture Rule, Docket No. ER17-1433-000 (Apr. 18, 2017) ("April 2017 Compliance Filing").

<sup>9</sup> *PJM Interconnection, L.L.C.*, Amended Compliance Filing Concerning the FTR Forfeiture Rule, Docket No. ER17-1433-001 (June 2, 2017) ("June 2017 Compliance Filing").

<sup>10</sup> May 20, 2021 Order at ordering para. (A), (B).

<sup>11</sup> *Id.* at P 26.

Impact Test, a major component of the Compliance Filings, is unjust and unreasonable as it fails to strike a reasonable balance between deterring manipulative behavior and not burdening legitimate hedging activity.”<sup>12</sup> Specifically, the Commission found that “the FTR Impact Test — a test to determine whether the net flow impacts the absolute value of an FTR by one-cent or greater — is not just and reasonable as it does not always reflect a material or significant increase in the value of an FTR to justify forfeiture of FTR profits.”<sup>13</sup> The Commission explained that the FTR Impact Test “includes a de minimis one-cent threshold that would likely result in an overly broad application of the FTR Forfeiture Rule, which may penalize holders of FTRs that are only incidentally affected by a virtual energy portfolio, including those engaged in legitimate hedging activity.”<sup>14</sup>

Accordingly, the Commission directed PJM to propose “either a different threshold than the current de minimis one-cent threshold for the FTR Impact Test, or an alternative approach to . . . forfeiture that, like PJM’s proposed FTR Impact Test, sufficiently deters manipulative behavior, but unlike PJM’s proposal, does so without so significantly burdening legitimate hedging activity.”<sup>15</sup>

## 2. *PJM Response.*

In response to the directive in the May 20, 2021 Order, PJM is proposing to eliminate the \$0.01 threshold for the FTR Impact test, i.e. the “penny test,” that was originally proposed in the April and June 2017 Compliance Filings. In its place, PJM

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<sup>12</sup> *Id.* at P 27.

<sup>13</sup> *Id.* at P 35.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.* at P 52.

proposes to base the final amount of a given FTR forfeiture exclusively on the increased FTR value that results from each specific qualifying constraint. That increased value is the constraint shadow price,<sup>16</sup> multiplied by the FTR net distribution factor (“DFAX”)<sup>17</sup> on that constraint. This focus on the impact of individual qualifying constraints replaces the current approach which bases the final FTR forfeiture amount on the entire hourly FTR profit (where FTR profit equals the hourly FTR target allocation minus FTR hourly cost).

Each FTR is defined from a point of receipt (source point of the FTR) to a point of delivery (sink point of the FTR). For each hour in which congestion exists on the Transmission System between the receipt and delivery points specified in the FTR, the holder of the FTR is awarded a share of the Transmission Congestion Charges collected from Market Participants. The FTR “target credit,” or the day-ahead value of an FTR, is calculated using the day-ahead congestion component of LMP at the point of delivery, minus the day-ahead congestion component of LMP at the point of receipt, multiplied by the FTR megawatt (“MW”) amount.

The contribution of each constraint in the day-ahead market to the value of an FTR can be calculated. The FTR target credit (the value of the FTR), can be calculated as the sum of the products of the FTR net DFAX times the constraint shadow price, for each hourly binding constraint in the Day-ahead Energy Market. In other words, because the FTR target credit is functionally composed of individual constraints, the contribution of

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<sup>16</sup> The shadow price at a constraint multiplied by the shift factor to a pricing node reflects that constraint’s impact on the congestion component of Locational Marginal Price (“LMP”). In essence, the shadow price represents the market cost to redispatch generation to relieve the congestion on a given constraint.

<sup>17</sup> In this context, the “net distribution factor” refers to the difference between the distribution factor of the FTR delivery and receipt buses.

each individual constraint to the value of a specific FTR can be calculated. PJM's revised approach to triggering forfeiture uses this constraint specific calculation.

In the January 19, 2017 Order, the Commission found that, to trigger a forfeiture, the net flow across a given constraint attributable to a participant's portfolio of Virtual Transactions must meet two criteria: (1) the net flow must be in the direction to increase the value of an FTR; and (2) the net flow must exceed a certain percentage of the physical limit of a binding constraint.<sup>18</sup> PJM proposed two separate tests to meet these requirements in its April and June 2017 Compliance Filings. For the first criteria, PJM proposed the aforementioned "penny test." For the second criteria, PJM proposed a 10% threshold of the physical limit of a binding constraint that the total net virtual activity (including affiliates) must meet.

The conceptual foundation for the penny test was to ensure that, in order to trigger a forfeiture, a participant's portfolio of Virtual Transactions must be in the direction that increases the value of an FTR, with no defined level regarding what acceptable "net flow" is. However, in the May 20, 2021 Order, the Commission found that this one-cent threshold "would likely result in an overly broad application of the FTR Forfeiture Rule, which may penalize holders of FTRs that are only incidentally affected by a virtual energy portfolio, including those engaged in legitimate hedging activity."<sup>19</sup> Accordingly, PJM proposes to modify this aspect of the FTR forfeiture rule to use a more precise test. Specifically, PJM is proposing to eliminate the "penny test," and modify the calculation for the dollar amount forfeited when both of the above criteria are met. In instances where

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<sup>18</sup> See May 20, 2021 Order at P 14 (citing January 19, 2017 Order at P 60).

<sup>19</sup> *Id.* at P 35.

(1) the net flow exceeds 10% of the physical limit of a binding constraint; and (2) the net flow is in the direction that increases the value of the FTR, and the net flow is consistent with the divergence of day-ahead and real-time congestion pricing, PJM would calculate the relevant forfeiture as the contribution of the identified constraint(s) to the value of the FTR.<sup>20</sup> Functionally this means that when a Market Participant or set of affiliates impacts the net flow on a day-ahead constraint by 10% or more, and that net flow is in the direction that increases the value of the FTR, the Market Participant will forfeit only the specific value contributed to the FTR by that specific individual constraint. Under the constraint approach, both virtual activity that decreases congestion (make less negative) on a constraint contributing negative CLMP value to an FTR, and virtual activity that increases congestion on a constraint contributing positive CLMP value to an FTR, increase the value of the FTR. Mathematically, the calculation for this forfeiture amount equals the absolute value of the net DFAX of the FTR (sink – source) multiplied by the constraint actual value, i.e. shadow price, for the hour. The forfeiture amount would be capped at the total profit for the hour.

This modified forfeiture amount calculation is just and reasonable for the following reasons. First, it meets the criteria that the Commission established in the January 19, 2017 Order by ensuring that any net flow in the direction to increase the value of an FTR will be flagged, without imposing a numeric (and potentially arbitrary) threshold under which potentially manipulative behavior is considered acceptable. Second, this new rule creates a much more precise and proportional impact to the identified virtual activity. This is

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<sup>20</sup> Multiple constraints could be implicated for each individual FTR.

highlighted by the data from PJM analysis provided below, showing a significant decrease in forfeiture dollars as compared with the penny test from June 2020 to May 2021.

June 2020 – May 2021 Summary	Forfeiture if Constraint Value to FTR >= \$0.01 (Status Quo)	Forfeiture Based on Constraint Value
Market Participants with Forfeiture	74	61
Forfeitures (\$)	\$5.5 Million	\$0.3 Million

Under the penny test, if a Market Participant increased the value of their FTR position by \$0.01, the Market Participant would forfeit the *entire* profit of the FTR, irrespective of the electrical distance from the business activity that the FTR was intended to support. However, under PJM’s revised approach, the Market Participant would only forfeit the value contributed by the specific constraint, and would not be subject to forfeiting value based on constraints where the participant did not contribute to more than 10 percent of the flow limit. This more tailored approach directly addresses the Commission’s concerns regarding “an overly broad application of the FTR Forfeiture Rule, which may penalize holders of FTRs that are only incidentally affected by a virtual energy portfolio, including those engaged in legitimate hedging activity.”<sup>21</sup> In doing so, it will “strike[] a more appropriate balance between deterring manipulative behavior and not burdening legitimate hedging activity.”<sup>22</sup>

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<sup>21</sup> *Id.* at P 35.

<sup>22</sup> *Id.* at P 3.

***B. “Such Other Percentage” and “Certain Circumstances” Language.***

***1. Directive from the May 20, 2021 Order.***

In the May 20, 2021 Order, the Commission noted that PJM had amended its Tariff and Operating Agreement language to provide that, under the Constraint Impact Test, to potentially trigger a forfeiture, the net flow of a Market Participant’s virtual energy portfolio position must exceed the physical limit of a binding constraint by greater than 0.1 MW or 10%, “or such other percentage under certain circumstances further defined in the PJM Manuals.”<sup>23</sup> The Commission found that because the “such other percentage” and “certain circumstances” would be exceptions from the default “0.1 MW or 10 percent” trigger threshold that could result in the application of the FTR forfeiture rule, these provisions significantly affect the rates, terms, and conditions of FTRs and are key provisions that are subject to Commission review.<sup>24</sup> Accordingly, the Commission stated that, to the extent that PJM proposes the Constraint Impact Test or a similar construct in its future compliance filing, it was directing PJM to specify any “certain circumstances” and “such other percentage” that would be exceptions from the “0.1 MW or 10 percent” trigger threshold as part of its proposed Operating Agreement or Tariff revisions.<sup>25</sup>

***2. PJM Response.***

In order to resolve any issues stemming from the ambiguity associated with this language, PJM proposes to remove the applicable sentence from the Tariff and Operating Agreement revisions submitted herein.<sup>26</sup>

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<sup>23</sup> *Id.* at P 66 (citation omitted).

<sup>24</sup> *Id.*

<sup>25</sup> *Id.* at P 67.

<sup>26</sup> PJM would also remove the applicable language in PJM Manual 6, section 8.6: “In general, the threshold

***C. Feasibility of Publishing Day-ahead Market Constraint Limits.***

***1. Directive from the May 20, 2021 Order.***

While the Commission in the May 20, 2021 Order noted that use of Firm Flow Entitlements for evaluation of the FTR forfeiture rule for jointly-managed facilities is just and reasonable, it directed PJM to explain in its future compliance filing whether it is feasible for PJM to publish its day-ahead market constraint limits each day prior to the deadline for submitting bids into the day-ahead market so that Market Participants may avoid triggering forfeitures.<sup>27</sup>

***2. PJM Response.***

Currently, PJM posts its applicable network model and temperature sets, from which day-ahead constraint limits can be derived.<sup>28</sup> Beyond this, PJM can confirm that it is feasible for PJM to also directly publish its expected day-ahead market constraint limits each day prior to the deadline for submitting bids into the Day-ahead Energy Market so that Market Participants may be better equipped to avoid triggering forfeitures. PJM is currently exploring options internally to achieve this objective, and targeting the end of 2021 for implementation.

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noted above will be set at the greater of 10% or 0.1MW. However, the Office of the Interconnection may utilize different percentage thresholds under certain circumstances. Some of these circumstances may include but are not limited to the Day-ahead binding constraint voltage level (i.e. low vs. high voltage) or outage conditions that may isolate an FTR path (i.e. radial path). If a percentage below 10% is utilized, the Office of the Interconnection will notify the membership at the earliest possible opportunity.” *PJM Manual 06, Financial Transmission Rights, Rev. 26*, PJM Interconnection, L.L.C, section 8.6 (Jan. 27, 2021), <https://www.pjm.com/-/media/documents/manuals/m06.ashx> (“PJM Manual 6”).

<sup>27</sup> May 20, 2021 Order at P 82.

<sup>28</sup> This information is posted on PJM.com and can be accessed with CEII clearance.

***D. Information Related to Potential Refunds.***

***1. Directive from the May 20, 2021 Order.***

In the May 20, 2021 Order, the Commission determined that while the January 19, 2017 Order prescribed the elements of the revised FTR forfeiture rule, the order “did not provide PJM market participants with sufficient detail on each element that they could determine when their transactions would be subject to forfeiture.”<sup>29</sup> Therefore, the Commission ruled, the establishment of a “replacement rate” governing FTR forfeitures for Virtual Transactions must await another compliance filing and a future order of the Commission.<sup>30</sup> By extension, the May 20, 2021 Order found that, in such circumstances, “PJM began implementing its Compliance Filings prematurely, in violation of the filed rate doctrine,”<sup>31</sup> and the Commission invoked its discretion under FPA section 309<sup>32</sup> to issue potential retroactive refunds and surcharges.<sup>33</sup> To this end, the Commission directed PJM to include in its compliance filing the following information “to enable the Commission to determine whether the equities warrant refunds and surcharges:” (i) the method by which PJM would calculate refunds and surcharges based on the prior rate on file; (ii) details of the parties who would receive refunds or be charged surcharges with the associated debits and credits for each party; and (iii) information on the magnitude of the refunds and surcharges.<sup>34</sup> In issuing its directive, the Commission noted that “PJM should indicate any

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<sup>29</sup> May 20, 2021 Order at P 110.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> 16 U.S.C. § 825h.

<sup>33</sup> May 20, 2021 Order at P 111

<sup>34</sup> *Id.*

concerns with the availability of information necessary to calculate the refunds and surcharges.”<sup>35</sup>

## 2. *PJM Response.*

As PJM understands this directive, PJM is being asked to provide information that would allow a comparison between: (i) the FTR forfeiture charges PJM actually assessed on Market Participants (and the resulting revenues distributed as credits to Market Participants) since January 19, 2017; and (ii) the FTR forfeitures that would have been assessed (and resulting revenues distributed as credits) if the version of the FTR forfeiture rule that was in effect prior to PJM’s April and June 2017 compliance filings in this proceeding (the “Pre-2017 Rule”) had remained in effect from and after January 19, 2017. As Mr. Brian Chmielewski explains in his Affidavit, the Pre-2017 Rule differs in major ways from the version—set forth in PJM’s April and June 2017 Compliance Filings—that PJM actually applied between January 19, 2017 and May 20, 2021.<sup>36</sup> In particular, forfeiture under the Pre-2017 Rule is triggered if the net DFAX between the transaction bus and the “worst-case scenario” bus is at least 0.75 (i.e., at least 75% of the energy flowing between those two points is reflected in the constrained FTR path).<sup>37</sup> Moreover, the Pre-2017 Rule contains none of the FTR forfeiture rule components that PJM implemented as of January 19, 2017, and that the Commission found generally just and reasonable in the May 20, 2021 Order.<sup>38</sup> The Pre-2017 Rule thus omits: (i) the use of a

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<sup>35</sup> *Id.* at P 111 n.163.

<sup>36</sup> Affidavit of Brian Chmielewski on Behalf of PJM Interconnection, L.L.C. (Attachment A) ¶¶ 7, 10-11 (“Chmielewski Aff.”).

<sup>37</sup> *Id.* ¶ 7.

<sup>38</sup> *Id.*

portfolio approach when determining a market participant's virtual transactions' net impact on constraints related to its FTR positions; (ii) the application of the FTR forfeiture rule to all FTRs, including FTR counterflows; (iii) the use of the load-weighted reference bus; and (iv) the consideration of all virtual transactions held by entities that share common ownership as part of the same portfolio.<sup>39</sup>

As Mr. Chmielewski explains, "PJM is not presently capable of providing details regarding the specific parties who would receive refunds or be charged surcharges (with the associated debits and credits for each party) as a result of such comparison; nor is PJM presently capable of providing information on the magnitude of the refunds and surcharges."<sup>40</sup> As he also explains, "[i]t also is not clear to PJM at this time what method it could use to produce a reasonable comparison between what would have happened if the Pre-2017 Rule had remained in effect versus what actually happened."<sup>41</sup> As to identifying affected Market Participants and the extent of any charges or credits in a comparison of the Pre-2017 Rule and the rule actually implemented, Mr. Chmielewski explains that absent considerable software development and testing work that would take months to complete, "PJM is unable to identify if and when any Market Participant would have violated the Pre-2017 Rule, the extent of the resulting charge, and the extent (and recipients) of any credit."<sup>42</sup> As he elaborates:

PJM is presently incapable of conducting this comparison because it does not currently have reliable software code for the Pre-2017 Rule. The Statistical Analysis System ("SAS")

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<sup>39</sup> *Id.*

<sup>40</sup> *Id.* ¶ 8.

<sup>41</sup> *Id.*

<sup>42</sup> *Id.* ¶ 9.

code used to implement the Pre-2017 Rule employed an entirely different format than what PJM has used for the past four-plus years between the January 19, 2017 Order and the May 20, 2021 Order. The old code therefore has not been maintained in any manner. In addition, once resurrected in form, the code would have to be significantly rewritten to account for structural database changes as a result of subsequent major PJM market design modifications that have occurred in the last four and a half years. Chief among these is the implementation of five-minute settlements. By our estimate, the work needed to resurrect, rewrite, test, and implement a production release of this code would likely take months and significant resources.<sup>43</sup>

As to “the method by which PJM would calculate refunds and surcharges based on the prior rate on file,”<sup>44</sup> Mr. Chmielewski explains that PJM also faces a major obstacle in establishing a method to compare what would have happened under the Pre-2017 Rule versus what actually happened in the 52-months between the January 19, 2017 Order and the May 20, 2021 Order—what reasonable assumptions to make about Market Participant behavior?<sup>45</sup> As Mr. Chmielewski explains, Market Participants arranged their practices and procedures to avoid violating the FTR forfeiture rule as PJM was then applying it. But the practices and procedures a Market Participant *would have* adopted to avoid application of the Pre-2017 Rule would have been significantly different from the practices and procedures they *actually followed*, given the material differences between the two versions of the rule.<sup>46</sup> Thus, as Mr. Chmielewski rightly concludes, “it would be unreasonable for PJM to adopt a method for this comparison that assumes that Market Participants would

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<sup>43</sup> *Id.* (citation omitted).

<sup>44</sup> *Id.* ¶ 5.

<sup>45</sup> *Id.* ¶ 10.

<sup>46</sup> *Id.*

have behaved in *exactly the same way* had they known the Pre-2017 Rule was in effect, as they actually behaved knowing that the version of the FTR forfeiture rule in PJM's April and June 2017 compliance filings was in effect."<sup>47</sup>

If granted that a change in behavior is a reasonable assumption for the requested comparative analysis, the question then becomes what specific assumption(s) should the analytical method make about Market Participant behavior under the Pre-2017 Rule? As Mr. Chmielewski observes, "whatever assumptions PJM makes about Market Participant behavior would, by their counter-factual nature, involve a considerable exercise of discretionary judgment on the part of PJM" and, at the same time, "would likely have a substantial impact on the calculation of credits and surcharges, so they would need to be well-supported."<sup>48</sup> In sum, "PJM is not presently able to define a reasonable, well-supported method for determining the FTR forfeiture charges that would have been assessed had the Pre-2017 Rule remained in effect from January 2017 to May 2021."<sup>49</sup>

Mr. Chmielewski also notes two other significant complications associated with acting as if the Pre-2017 Rules remained in effect. First, at the end of each planning period, PJM calculates final available congestion dollars and the associated FTR pay-out ratios. Reopening prior planning periods to reapply different forfeiture rules would, by definition, require a corresponding resettlement of every Market Participant's positive FTR positions pro rata; and the time it would take to construct the requisite systems to conduct the

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<sup>47</sup> *Id.*

<sup>48</sup> *Id.* ¶ 11.

<sup>49</sup> *Id.*

necessary market-reruns, and to actually execute the market re-runs for the four and a half year period, would likely exceed one year.<sup>50</sup>

Second, even if PJM were able to identify with meaningful accuracy the applicable Market Participants subject to each forfeiture over the last four and a half years, some of those entities may not exist, or may have been acquired or divested by other entities. Untangling the corporate relationship of these entities over the last four and a half years would be a significant investment of time and resources on behalf of PJM, and would likely take months.<sup>51</sup>

Based on these considerations, as further explained in the Chmielewski Affidavit, PJM strongly urges the Commission, as an exercise of its remedial discretion under FPA section 309, to decline to order retroactive refunds and/or surcharges for the period from January 19, 2017 to May 20, 2021.

### **III. EFFECTIVE DATE**

On July 16, 2021, the Commission granted in part PJM's June 21, 2021 request for clarification, or in the alternative, rehearing, of the May 20, 2021 order.<sup>52</sup> In the July 16, 2021 Order, the Commission clarified, among other things, that "there will be no FTR Forfeiture Rule in effect between May 20, 2021 and the date the Commission imposes a replacement rate."<sup>53</sup> Accordingly, PJM respectfully requests that the Commission set the effective date for the proposed Tariff and Operating Agreement revisions submitted herein

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<sup>50</sup> *Id.* ¶ 12.

<sup>51</sup> *Id.* ¶ 13.

<sup>52</sup> *PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,027 (2021) ("July 16, 2021 Order").

<sup>53</sup> *Id.* at P 5.

as the first day of the first month following the date of the Commission's order on the proposed Tariff and Operating Agreement revisions. Given the need for settlement systems recoding to implement the Commission's order on this compliance filing, any FTR forfeiture charges incurred as of the proposed effective date will be reflected (along with any corresponding credits) in billing statements beginning two months after the Commission order.

#### **IV. COMMUNICATIONS**

PJM requests that all communications regarding this filing be directed to the following persons:

Craig Glazer	Thomas DeVita
Vice President – Federal Government Policy	Senior Counsel
PJM Interconnection, L.L.C.	PJM Interconnection, L.L.C.
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#### **V. DOCUMENTS INCLUDED WITH THIS FILING**

In accordance with the requirements of Order No. 714<sup>54</sup> and the Commission's eTariff regulations, PJM hereby submits an eTariff XML filing package consisting of the following materials:

1. This transmittal letter;
2. Attachment A – The Affidavit of Brian Chmielewski
3. Attachment B – Revisions to the Tariff and Operating Agreement, in redlined format; and

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<sup>54</sup> *Electronic Tariff Filings*, Order No. 714, 124 FERC ¶ 61,270 (2008), *final rule*, Order No. 714-A, 147 FERC ¶ 61,115 (2014).

4. Attachment C – Revisions to the Tariff and Operating Agreement, in clean format.

## **VI. 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>55</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.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>56</sup> alerting them that this filing has been made by PJM today and is available by following such link.

## **VII. CONCLUSION**

In accordance with the foregoing, PJM respectfully requests that the Commission accept the proposed revisions to the PJM Tariff and Operating Agreement, and the other responses provided herein, as being in full compliance with the May 20, 2021 Order.

Respectfully submitted,

Craig Glazer  
Vice President – Federal Government Policy  
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/s/ Thomas DeVita  
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<sup>55</sup> See 18 C.F.R §§ 35.2(e) and 385.2010(f)(3).

<sup>56</sup> PJM already maintains, updates, and regularly uses e-mail lists for all PJM members and affected commissions.

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*On behalf of  
PJM Interconnection, L.L.C.*

## **CERTIFICATE OF SERVICE**

I hereby certify that I have this 19th day of July, 2021 caused a copy of the foregoing document to be served upon each person designated on the official service list compiled by the Secretary in this proceeding.

/s/ Thomas DeVita

Thomas DeVita

Sr. Counsel

PJM Interconnection, L.L.C.

2750 Monroe Boulevard

Audubon, PA 19403

610-666-8994

Thomas.DeVita@pjm.com

# **Attachment A**

**Affidavit of Brian Chmielewski  
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. ER17-1433-\_\_**

**AFFIDAVIT OF BRIAN CHMIELEWSKI  
ON BEHALF OF PJM INTERCONNECTION, L.L.C.**

1. My name is Brian Chmielewski. My business address is 2750 Monroe Blvd., Audubon, Pennsylvania, 19403. I am the Manager of PJM Interconnection, L.L.C.'s ("PJM") Market Simulation Department. I am submitting this affidavit on behalf of PJM, in support of its July 19, 2021 compliance filing in this proceeding.
2. In this affidavit, I describe the challenges associated with calculating and effectuating retroactive refunds and/or surcharges using the prior version of the Financial Transmission Rights ("FTR") forfeiture rule, as contemplated by the Federal Energy Regulatory Commission's ("Commission") May 20, 2021 Order<sup>1</sup> in this proceeding.

**Qualifications**

3. I joined PJM in June of 2008. As the Manager of PJM's Market Simulation Department, I am responsible for the daily operations of the PJM Auction Revenue Rights ("ARR")/FTR market and for overseeing the execution of PJM's economic planning protocol. Prior to this position, I served as a Sr. Consultant in the Market Simulation Department.
4. I hold a Bachelor's degree in Mathematics from Drexel University and a Masters of Business Administration degree from Pennsylvania State University.

**Background**

5. The Commission has asked PJM to include in this compliance filing certain information "to enable the Commission to determine whether the equities warrant refunds and surcharges:" i.e., (i) the method by which PJM would calculate refunds and surcharges based on the prior rate on file; (ii) details of the parties who would receive refunds or be charged surcharges with the associated debits and credits for each party; and (iii) information on the magnitude of the refunds and surcharges.<sup>2</sup> However, the Commission also noted that "PJM should indicate any concerns with the availability of information necessary to calculate the refunds and surcharges."<sup>3</sup>

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<sup>1</sup> *PJM Interconnection, L.L.C.*, 175 FERC ¶ 61,137 (2021) ("May 20, 2021 Order").

<sup>2</sup> *Id.* at PP 3, 111.

<sup>3</sup> *Id.* at P 111 n.163.

## **Challenges Associated with Calculating and Effectuating Retroactive Refunds/Surcharges**

6. As I (informed by PJM counsel) understand the Commission's request, PJM is being asked to provide information that would allow a comparison between: (i) the FTR forfeiture charges PJM actually assessed on Market Participants (and the resulting revenues distributed as credits to Market Participants) since January 19, 2017; and (ii) the FTR forfeitures that would have been assessed (and resulting revenues distributed as credits) if the version of the FTR forfeiture rule that was in effect prior to PJM's April and June 2017 compliance filings in this proceeding had remained in effect from and after January 19, 2017.
7. I will refer in this affidavit to that prior version of the FTR forfeiture rule as the "Pre-2017 Rule." Under that rule, forfeiture is triggered if the net distribution factor (dFAX) between the transaction bus and the "worst-case scenario" bus is at least 0.75 (i.e., at least 75% of the energy flowing between those two points is reflected in the constrained FTR path). In addition, the Pre-2017 Rule contains none of the FTR forfeiture rule components that PJM implemented as of January 19, 2017, and that the Commission found generally just and reasonable in the May 20, 2021 Order—namely, (i) the use of a portfolio approach when determining a Market Participant's Virtual Transactions' net impact on constraints related to its FTR positions; (ii) the application of the FTR forfeiture rule to all FTRs, including FTR counterflows; (iii) the use of the load-weighted reference bus; and (iv) the consideration of all Virtual Transactions held by entities that share common ownership as part of the same portfolio.<sup>4</sup>
8. PJM is not presently capable of providing details regarding the specific parties who would receive refunds or be charged surcharges (with the associated debits and credits for each party) as a result of such comparison; nor is PJM presently capable of providing information on the magnitude of the refunds and surcharges. It also is not clear to PJM at this time what method it could use to produce a reasonable comparison between what would have happened if the Pre-2017 Rule had remained in effect versus what actually happened.
9. PJM is presently incapable of conducting this comparison because it does not currently have reliable software code for the Pre-2017 Rule. The Statistical Analysis System ("SAS") code used to implement the Pre-2017 Rule employed an entirely different format than what PJM has used for the past four-plus years between the January 19, 2017 Order<sup>5</sup> and the May 20, 2021 Order. The old code therefore has not been maintained in any manner. In addition, once resurrected in form, the code would have to be significantly rewritten to account for structural database changes as a result of subsequent major PJM market design modifications that have occurred in the last four and a half years. Chief among these is the implementation of five-minute settlements. By our estimate, the work needed to resurrect, rewrite, test, and implement a production release of this code would likely take months and significant resources. Absent that work, PJM is unable to identify if and when any Market Participant would have violated the Pre-2017 Rule, the extent of the resulting charge, and the extent (and recipients) of any credit.

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<sup>4</sup> *Id.* at P 26.

<sup>5</sup> *PJM Interconnection, L.L.C.*, 158 FERC ¶ 61,038 (2017) ("January 19, 2017 Order").

10. PJM also faces a major obstacle in establishing a method to compare what would have happened under the Pre-2017 Rule versus what actually happened in the 52-months between the January 19, 2017 Order and the May 20, 2021 Order—what reasonable assumptions to make about Market Participant behavior? As I noted above, the Pre-2017 Rule included not only the 75% test, but also analysis of the need for forfeiture on an individual, rather than portfolio, basis, and application of the “worst-case-bus” rule, among other things. The rules PJM actually applied during this time were very different, and PJM made clear to Market Participants in this very docket<sup>6</sup> that it was applying those rules as of January 19, 2017. Market Participants accordingly arranged their practices and procedures to avoid violating the FTR forfeiture rule as PJM was then applying it. It is reasonable to assume, however, that the practices and procedures a Market Participant *would have* adopted to avoid application of the Pre-2017 Rule would have been significantly different from the practices and procedures they *actually followed*, given the material differences between the two versions of the rule. In other words, it would be unreasonable for PJM to adopt a method for this comparison that assumes that Market Participants would have behaved in *exactly the same way* had they known the Pre-2017 Rule was in effect, as they actually behaved knowing that the version of the FTR forfeiture rule in PJM’s April and June 2017 compliance filings was in effect.
11. If we grant that a change in behavior is a reasonable assumption for the requested comparative analysis (and in my view, this assumption is reasonable), the question then becomes what specific assumption(s) should the analytical method make about Market Participant behavior under the Pre-2017 Rule? It is not clear to PJM what particular changes in Market Participant behavior PJM should assume for this comparison. While there needs to be some recognition that Market Participants would have acted to avoid application of the forfeiture rule if they had known its terms, whatever assumptions PJM makes about Market Participant behavior would, by their counter-factual nature, involve a considerable exercise of discretionary judgment on the part of PJM. Moreover, those assumptions would likely have a substantial impact on the calculation of credits and surcharges, so they would need to be well-supported. For these reasons, PJM is not presently able to define a reasonable, well-supported method for determining the FTR forfeiture charges that would have been assessed had the Pre-2017 Rule remained in effect from January 2017 to May 2021.
12. If the Commission were to nonetheless order retroactive refunds and/or surcharges via application of the Pre-2017 Rule, the challenges of PJM effectuating these refunds and/or surcharges would be considerable. At the end of each planning period, PJM calculates final

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<sup>6</sup> See *PJM Interconnection, L.L.C.*, Compliance Filing Concerning the FTR Forfeiture Rule, Docket No. ER17-1433-000, at 6 (Apr. 18, 2017) (“Consistent with the January 19 Order, the effective date for the changes herein is January 19, 2017. PJM will apply the rule, as modified herein, retroactive to January 19, 2017 when it has implemented system updates to accommodate the changes accepted and/or required by the Commission in this docket. PJM anticipates its system updates will be completed by August 19, 2017 and has notified market participants of the same.”); *PJM Interconnection, L.L.C.*, Amended Compliance Filing Concerning the FTR Forfeiture Rule, Docket No. ER17-1433-001, at 4 (June 2, 2017) (“Consistent with the January 19 Order, the effective date for the changes herein is January 19, 2017. PJM will apply the rule, as modified herein, retroactive to January 19, 2017 when it has implemented system updates to accommodate the changes accepted and/or required by the Commission in this docket. PJM anticipates its system updates will be completed by August 19, 2017 and has notified market participants of the same.”).

available congestion dollars and the associated FTR pay-out ratios. Reopening prior planning periods to reapply different forfeiture rules would, by definition, require a corresponding resettlement of every Market Participant's positive FTR positions pro rata. By our internal estimates, the time it would take to construct the requisite systems to conduct the necessary market re-runs, and to actually execute the market re-runs for the four and a half year period, would exceed one year.

13. There is also one further complication. Even if PJM were able to identify with meaningful accuracy the applicable Market Participants subject to each forfeiture over the last four and a half years, some of those entities may not exist, or may have been acquired or divested by other entities. Untangling the corporate relationship of these entities over the last four and a half years would be a significant investment of time and resources on behalf of PJM, and would likely take months.
14. This concludes my affidavit.<sup>7</sup>

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<sup>7</sup> Pursuant to the Federal Energy Regulatory Commission's January 22, 2021 Supplemental Notice Waiving Regulations in Docket No. AD20-11-000 ("January 22, 2021 Notice"), PJM has omitted a notarized verification with this Affidavit. *See* January 22, 2021 Notice at 1 ("Given the ongoing emergency conditions caused by COVID-19, there is good cause to extend through and including July 30, 2021 waiver of the Commission's regulations that require that filings with the Commission be notarized or supported by sworn declarations.").

**UNITED STATES OF AMERICA  
BEFORE THE  
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<b>PJM Interconnection, L.L.C.</b>	)	
	)	<b>Docket No. ER17-1433-__</b>
	)	

**VERIFICATION**

Brian Chmielewski, being first duly sworn, deposes and states that he is the Brian Chmielewski referred to in the foregoing document entitled "Affidavit of Brian Chmielewski on Behalf of PJM Interconnection, L.L.C." 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.

/s/ Brian Chmielewski  
Brian Chmielewski  
Manager, Market Simulation  
PJM Interconnection, L.L.C.

# Attachment B

Revisions to the  
PJM Open Access Transmission Tariff  
and PJM Operating Agreement

(Identified by Additional Cover Pages)

(Marked/Redline Format)

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

## 5.2 Transmission Congestion Credit Calculation.

### 5.2.1 Eligibility.

(a) Except as provided in sSection 5.2.1(b), each FTR Holder shall receive as a Transmission Congestion Credit a proportional share of the Day-ahead Energy Market Transmission Congestion Charges collected for each constrained hour.

(b) If an Effective FTR Holder between specified delivery and receipt buses acquired the Financial Transmission Right in a Financial Transmission Rights auction (the procedures for which are set forth in Part section 7 of this Schedule 4 Attachment K – Appendix) and ~~(i) had an Virtual Transaction portfolio which includes~~ Increment Offer(s), ~~and/or~~ Decrement Bid(s), ~~and/or Up-to Congestion Transaction(s)~~ that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market, whereby the Effective FTR Holder's Virtual Transaction portfolio resulted in (i) a difference in Location Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses which is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, and (ii) an increasing the value between such delivery and receipt buses, then the Market Participant shall not receive any Transmission Congestion Credit for delivery or receipt at or near delivery or receipt buses of the Financial Transmission Right or had an Up-to Congestion Transaction that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market for a path at or near the path of the Financial Transmission Right; and (ii) the result of the acceptance of such Increment Offer, Decrement Bid or Up-to Congestion Transaction is that the difference in Locational Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, then the Market Participant shall not receive any Transmission Congestion Credit, associated with such Financial Transmission Right in such hour, that is attributable to the absolute value (i.e., the product of the constraint's shadow price times the distribution factor (dfax) of the difference between the Financial Transmission Right delivery and receipt buses) of the relevant Day-ahead Energy Market binding constraint (as further discussed in section 5.2.1(c) below), but no more than the ~~in~~ excess of one divided by the number of hours in the applicable ~~month period~~ multiplied by the amount that the Market Participant paid for the Financial Transmission Right in the Financial Transmission Rights auction (i.e., FTR profit). For the purposes of this calculation, every individual Financial Transmission Right of an Effective FTR Holder shall be considered.

(c) For purposes of sSection 5.2.1(b), an Effective FTR Holder's Virtual Transaction portfolio shall be considered if the absolute value of the attributable net flow across a Day-ahead Energy Market binding constraint relative to the Day-ahead Energy Market load weighted reference bus between the Financial Transmission Right delivery and receipt buses exceeds the physical limit of such binding constraint by the greater of 0.1 MW or ten percent a bus shall be considered at or near the Financial Transmission Right delivery or receipt bus if seventy-five percent or more of the energy injected or withdrawn at that bus and which is withdrawn or injected at any other bus is reflected in the constrained path between the subject Financial

~~Transmission Right delivery and receipt buses that were acquired in the Financial Transmission Rights auction.~~

(d) The Market Monitoring Unit shall calculate Transmission Congestion Credits pursuant to this section and Tariff, Attachment M-Appendix, section VI. Nothing in this section shall preclude the Market Monitoring Unit from action to recover inappropriate benefits from the subject activity if the amount forfeited is less than the benefit derived by the Effective FTR Holder. If the Office of the Interconnection agrees with such calculation, then it shall impose the forfeiture of the Transmission Congestion Credit accordingly. If the Office of the Interconnection does not agree with the calculation, then it shall impose a forfeiture of Transmission Congestion Credit consistent with its determination. If the Market Monitoring Unit disagrees with the Office of the Interconnection's determination, it may exercise its powers to inform the Commission staff of its concerns and may request an adjustment. This provision is duplicated in Tariff, Attachment M-Appendix, section VI. An Effective FTR Holder objecting to the application of this rule shall have recourse to the Commission for review of the application of the FTR forfeiture rule to its trading activity.

### **5.2.2 Financial Transmission Rights.**

(a) Transmission Congestion Credits will be calculated based upon the Financial Transmission Rights held at the time of the constrained hour. Except as provided in subsection (e) below, Financial Transmission Rights shall be auctioned as set forth in Operating Agreement, Schedule 1, section 7.

(b) The hourly economic value of a Financial Transmission Right Obligation is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right. The hourly economic value of a Financial Transmission Right Obligation is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Obligation is negative (a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(c) The hourly economic value of a Financial Transmission Right Option is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right when that difference is positive. The hourly economic value of a Financial Transmission Right Option is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Option is zero (neither a benefit nor a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(d) In addition to transactions with PJMSettlement in the Financial Transmission Rights auctions administered by the Office of the Interconnection, a Financial Transmission

Right, for its entire tenure or for a specified period, may be sold or otherwise transferred to a third party by bilateral agreement, subject to compliance with such procedures as may be established by the Office of the Interconnection for verification of the rights of the purchaser or transferee.

(i) Market Participants may enter into bilateral agreements to transfer to a third party a Financial Transmission Right, for its entire tenure or for a specified period. Such bilateral transactions shall be reported to the Office of the Interconnection in accordance with this Schedule and pursuant to the LLC's rules related to its FTR reporting tools.

(ii) For purposes of clarity, with respect to all bilateral transactions for the transfer of Financial Transmission Rights, the rights and obligations pertaining to the Financial Transmission Rights that are the subject of such a bilateral transaction shall pass to the buyer under the bilateral contract subject to the provisions of this Schedule. Such bilateral transactions shall not modify the location or reconfigure the Financial Transmission Rights. In no event shall the purchase and sale of a Financial Transmission Right pursuant to a bilateral transaction constitute a transaction with PJMSettlement or a transaction in any auction under this Schedule.

(iii) Consent of the Office of the Interconnection shall be required for a seller to transfer to a buyer any Financial Transmission Right Obligation. Such consent shall be based upon the Office of the Interconnection's assessment of the buyer's ability to perform the obligations, including meeting applicable creditworthiness requirements, transferred in the bilateral contract. If consent for a transfer is not provided by the Office of the Interconnection, the title to the Financial Transmission Rights shall not transfer to the third party and the FTR Holder shall continue to receive all Transmission Congestion Credits attributable to the Financial Transmission Rights and remain subject to all credit requirements and obligations associated with the Financial Transmission Rights.

(iv) A seller under such a bilateral contract shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer's obligation to pay any charges associated with the transferred Financial Transmission Right and for which payment is not made to PJMSettlement by the buyer under such a bilateral transaction.

(v) All payments and related charges associated with such a bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by PJMSettlement or the Office of the Interconnection. 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 such a bilateral contract reported to the Office of the Interconnection under this Schedule.

(vi) All claims regarding a default of a buyer to a seller under such a bilateral contract shall be resolved solely between the buyer and the seller.

(e) Network Service Users and Firm Transmission Customers that take service that sinks, sources in, or is transmitted through new PJM zones, at their election, may receive a direct allocation of Financial Transmission Rights instead of an allocation of Auction Revenue Rights.

Network Service Users and Firm Transmission Customers may make this election for the succeeding two annual FTR auctions after the integration of the new zone into the PJM Interchange Energy Market. Such election shall be made prior to the commencement of each annual FTR auction. For purposes of this election, the Allegheny Power Zone shall be considered a new zone with respect to the annual Financial Transmission Right auction in 2003 and 2004. Network Service Users and Firm Transmission Customers in new PJM zones that elect not to receive direct allocations of Financial Transmission Rights shall receive allocations of Auction Revenue Rights. During the annual allocation process, the Financial Transmission Right allocation for new PJM zones shall be performed simultaneously with the Auction Revenue Rights allocations in existing and new PJM zones. Prior to the effective date of the initial allocation of FTRs in a new PJM Zone, PJM shall file with FERC, under section 205 of the Federal Power Act, the FTRs and ARRs allocated in accordance with sections 5 and 7 of this Schedule 1.

(f) For Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through new PJM zones, that elect to receive direct allocations of Financial Transmission Rights, Financial Transmission Rights shall be allocated using the same allocation methodology as is specified for the allocation of Auction Revenue Rights in Operating Agreement, Schedule 1, section 7.4.2 and in accordance with the following:

(i) Subject to subsection (ii) of this section, all Financial Transmission Rights must be simultaneously feasible. If all Financial Transmission Right requests made when Financial Transmission Rights are allocated for the new zone are not feasible then Financial Transmission Rights are prorated and allocated in proportion to the MW level requested and in inverse proportion to the effect on the binding constraints.

(ii) If any Financial Transmission Right requests that are equal to or less than a Network Service User's Zonal Base Load for the Zone or fifty percent of its transmission responsibility for Non-Zone Network Load, or fifty percent of megawatts of firm service between the receipt and delivery points of Firm Transmission Customers, are not feasible in the annual allocation and auction processes due to system conditions, then PJM shall increase the capability limits of the binding constraints that would have rendered the Financial Transmission Rights infeasible to the extent necessary in order to allocate such Financial Transmission Rights without their being infeasible for all rounds of the annual allocation and auction processes, provided that this subsection (ii) shall not apply if the infeasibility is caused by extraordinary circumstances. Additionally, such increased limits shall be included in subsequent modeling during the Planning Year to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions; unless and to the extent those system conditions that contributed to infeasibility in the annual process are not extant for the time period subject to the subsequent modeling, such as would be the case, for example, if transmission facilities are returned to service during the Planning Year. In these cases, any increase in the capability limits taken under this subsection (ii) during the annual process will be removed from subsequent modeling to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions. In addition, PJM may remove or lower the increased capability limits, if

feasible, during subsequent FTR Auctions if the removal or lowering of the increased capability limits does not impact Auction Revenue Rights funding and net auction revenues are positive.

For the purposes of this subsection (ii), extraordinary circumstances shall mean an event of force majeure that reduces the capability of existing or planned transmission facilities and such reduction in capability is the cause of the infeasibility of such Financial Transmission Rights. Extraordinary circumstances do not include those system conditions and assumptions modeled in simultaneous feasibility analyses conducted pursuant to Operating Agreement, Schedule 1, section 7.5 of Schedule 1 of this Agreement. If PJM allocates Financial Transmission Rights as a result of this subsection (ii) that would not otherwise have been feasible, then PJM shall notify Members and post on its web site (a) the aggregate megawatt quantities, by sources and sinks, of such Financial Transmission Rights and (b) any increases in capability limits used to allocate such Financial Transmission Rights.

(iii) In the event that Network Load changes from one Network Service User to another after an initial or annual allocation of Financial Transmission Rights in a new zone, Financial Transmission Rights will be reassigned on a proportional basis from the Network Service User losing the load to the Network Service User that is gaining the Network Load.

(g) At least one month prior to the integration of a new zone into the PJM Interchange Energy Market, Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through the new zone, shall receive an initial allocation of Financial Transmission Rights that will be in effect from the date of the integration of the new zone until the next annual allocation of Financial Transmission Rights and Auction Revenue Rights. Such allocation of Financial Transmission Rights shall be made in accordance with Operating Agreement, Schedule 1, section 5.2.2(f) of this Schedule.

(h) Reserved.

### **5.2.3 Target Allocation of Transmission Congestion Credits.**

A Target Allocation of Transmission Congestion Credits for each FTR Holder shall be determined for each Financial Transmission Right. Each Financial Transmission Right shall be multiplied by the Day-ahead Congestion Price differences for the receipt and delivery points associated with the Financial Transmission Right, calculated as the Day-ahead Congestion Price at the delivery point(s) minus the Day-ahead Congestion Price at the receipt point(s). For the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Zone is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Zone multiplied by the percent of annual peak load assigned to each node in the Zone. Commencing with the 2015/2016 Planning Period, for the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Residual Metered Load aggregate is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Residual Metered Load aggregate multiplied by the percent of the annual peak residual load assigned to each bus that comprises the Residual Metered Load aggregate. When the FTR Target Allocation is positive, the FTR Target Allocation is a credit to the FTR Holder. When the FTR Target Allocation is negative, the FTR Target Allocation is a debit to the FTR Holder if the FTR is a

Financial Transmission Right Obligation. When the FTR Target Allocation is negative, the FTR Target Allocation is set to zero if the FTR is a Financial Transmission Right Option. The total Target Allocation for Network Service Users and Transmission Customers for each hour shall be the sum of the Target Allocations associated with all of the Network Service Users' or Transmission Customers' Financial Transmission Rights.

#### **5.2.4 [Reserved.]**

#### **5.2.5 Calculation of Transmission Congestion Credits.**

(a) The total of all the positive Target Allocations determined as specified above shall be compared to the Day-ahead Energy Market Transmission Congestion Charges in each hour. If the total of the Target Allocations is less than or equal to the total of the Day-ahead Energy Market Transmission Congestion Charges, the Transmission Congestion Credit for each entity holding an FTR shall be equal to its Target Allocation. All remaining Day-ahead Energy Market Transmission Congestion Charges shall be distributed as described below in Operating Agreement, Schedule 1, section 5.2.6 "Distribution of Excess Congestion Charges."

(b) If the total of the Target Allocations is greater than the Day-ahead Energy Market Transmission Congestion Charges for the hour, each FTR Holder shall be assigned a share of the Day-ahead Energy Market Transmission Congestion Charges in proportion to its Target Allocations for Financial Transmission Rights which have a positive Target Allocation value. Financial Transmission Rights which have a negative Target Allocation value are assigned the full Target Allocation value as a negative Transmission Congestion Credit.

(c) At the end of a Planning Period if all FTR Holders did not receive Transmission Congestion Credits equal to their Target Allocations, the Office of the Interconnection shall assess a charge equal to the difference between the Transmission Congestion Credit Target Allocations for all revenue deficient FTRs and the actual Transmission Congestion Credits allocated to those FTR Holders. A charge assessed pursuant to this section shall also include any aggregate charge assessed pursuant to Operating Agreement, Schedule 1, section 7.4.4(c) and shall be allocated to all FTR Holders on a pro-rata basis according to the total Target Allocations for all FTRs held at any time during the relevant Planning Period. The charge shall be calculated and allocated in accordance with the following methodology:

1. The Office of the Interconnection shall calculate the total amount of uplift required as {[sum of the total monthly deficiencies in FTR Target Allocations for the Planning Period + the sum of the ARR Target Allocation deficiencies determined pursuant to Operating Agreement, Schedule 1, section 7.4.4(c)] – [sum of the total monthly excess ARR revenues and excess Day-ahead Energy Market Transmission Congestion Charges for the Planning Period]}.

2. For each Market Participant that held an FTR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all FTRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of Interconnection shall set the value to zero.

3. The Office of the Interconnection shall then allocate an uplift charge to each Market Participant that held an FTR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total uplift}] * [\text{total Target Allocation for all FTRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all FTRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

#### **5.2.6 Distribution of Excess Congestion Charges.**

(a) Excess Day-ahead Energy Market Transmission Congestion Charges accumulated in a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during that month as compared to its total Target Allocations for the month.

(b) After the excess Day-ahead Energy Market Transmission Congestion Charge distribution described in Operating Agreement, Schedule 1, section 5.2.6(a) is performed, any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during the current Planning Period, including previously distributed excess Day-ahead Energy Market Transmission Congestion Charges, as compared to its total Target Allocation for the Planning Period.

(c) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a Planning Period shall be distributed to each holder of Auction Revenue Rights in proportion to, but not more than, any Auction Revenue Right deficiencies for that Planning Period.

(d) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining after a distribution pursuant to subsection (c) of this section shall be distributed to all ARR holders on a pro-rata basis according to the total Target Allocations for all ARRs held at any time during the relevant Planning Period. Any allocation pursuant to this subsection (d) shall be conducted in accordance with the following methodology:

1. For each Market Participant that held an ARR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all ARRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of the Interconnection shall set the value to zero.

2. The Office of the Interconnection shall then allocate an excess Day-ahead Energy Market Transmission Congestion Charge credit to each Market Participant that held an ARR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total excess Day-ahead Energy Market Transmission Congestion Charges remaining after distributions pursuant to subsection (a)-(c) of this section}] * [\text{total Target Allocation for all ARRs}] / [\text{total Target Allocation for all ARRs held by all Market Participants at any time during the Planning Period}]\}$ .

held by the Market Participant at any time during the Planning Period] / [total Target Allocations for all ARR holders held by all PJM Market Participants at any time during the Planning Period]}.

#### **5.2.7 Allocation of Balancing Congestion Charges**

At the end of each hour during an Operating Day, the Office of the Interconnection shall allocate the Balancing Congestion Charges to real-time load and exports on a pro-rata basis. Such allocation shall not include purchases of Direct Charging Energy.

Sections of the  
PJM Operating Agreement  
(Marked/Redline Format)

## 5.2 Transmission Congestion Credit Calculation.

### 5.2.1 Eligibility.

(a) Except as provided in sSection 5.2.1(b), each FTR Holder shall receive as a Transmission Congestion Credit a proportional share of the Day-ahead Energy Market Transmission Congestion Charges collected for each constrained hour.

(b) If an Effective FTR Holder between specified delivery and receipt buses acquired the Financial Transmission Right in a Financial Transmission Rights auction (the procedures for which are set forth in Part-section 7 of this Schedule 1) and ~~(i)-had an~~ Virtual Transaction portfolio which includes Increment Offer(s), ~~and/or~~ Decrement Bid(s), and/or Up-to Congestion Transaction(s) that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market, whereby the Effective FTR Holder's Virtual Transaction portfolio resulted in (i) a difference in Location Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses which is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, and (ii) an increasing the value between such delivery and receipt buses, then the Market Participant shall not receive any Transmission Congestion Credit for delivery or receipt at or near delivery or receipt buses of the Financial Transmission Right or had an Up-to Congestion Transaction that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market for a path at or near the path of the Financial Transmission Right; and (ii) the result of the acceptance of such Increment Offer, Decrement Bid or Up-to Congestion Transaction is that the difference in Locational Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, then the Market Participant shall not receive any Transmission Congestion Credit, associated with such Financial Transmission Right in such hour, that is attributable to the absolute value (i.e., the product of the constraint's shadow price times the distribution factor (dfax) of the difference between the Financial Transmission Right delivery and receipt buses) of the relevant Day-ahead Energy Market binding constraint (as further discussed in section 5.2.1(c) below), but no more than their excess of one divided by the number of hours in the applicable ~~month-period~~ multiplied by the amount that the Market Participant paid for the Financial Transmission Right in the Financial Transmission Rights auction (i.e., FTR profit). For the purposes of this calculation, every individual Financial Transmission Right of an Effective FTR Holder shall be considered.

(c) For purposes of sSection 5.2.1(b), an Effective FTR Holder's Virtual Transaction portfolio shall be considered if the absolute value of the attributable net flow across a Day-ahead Energy Market binding constraint relative to the Day-ahead Energy Market load weighted reference bus between the Financial Transmission Right delivery and receipt buses exceeds the physical limit of such binding constraint by the greater of 0.1 MW or ten percent-a bus shall be considered at or near the Financial Transmission Right delivery or receipt bus if seventy five percent or more of the energy injected or withdrawn at that bus and which is withdrawn or injected at any other bus is reflected in the constrained path between the subject Financial Transmission Right delivery and receipt buses that were acquired in the Financial Transmission Rights auction.

(d) The Market Monitoring Unit shall calculate Transmission Congestion Credits pursuant to this section and Tariff, Attachment M-Appendix, section VI. Nothing in this section shall preclude the Market Monitoring Unit from action to recover inappropriate benefits from the subject activity if the amount forfeited is less than the benefit derived by the Effective FTR Holder. If the Office of the Interconnection agrees with such calculation, then it shall impose the forfeiture of the Transmission Congestion Credit accordingly. If the Office of the Interconnection does not agree with the calculation, then it shall impose a forfeiture of Transmission Congestion Credit consistent with its determination. If the Market Monitoring Unit disagrees with the Office of the Interconnection's determination, it may exercise its powers to inform the Commission staff of its concerns and may request an adjustment. This provision is duplicated in Tariff, Attachment M-Appendix, section VI. An Effective FTR Holder objecting to the application of this rule shall have recourse to the Commission for review of the application of the FTR forfeiture rule to its trading activity.

### **5.2.2 Financial Transmission Rights.**

(a) Transmission Congestion Credits will be calculated based upon the Financial Transmission Rights held at the time of the constrained hour. Except as provided in subsection (e) below, Financial Transmission Rights shall be auctioned as set forth in Operating Agreement, Schedule 1, section 7.

(b) The hourly economic value of a Financial Transmission Right Obligation is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right. The hourly economic value of a Financial Transmission Right Obligation is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Obligation is negative (a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(c) The hourly economic value of a Financial Transmission Right Option is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right when that difference is positive. The hourly economic value of a Financial Transmission Right Option is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Option is zero (neither a benefit nor a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(d) In addition to transactions with PJMSettlement in the Financial Transmission Rights auctions administered by the Office of the Interconnection, a Financial Transmission Right, for its entire tenure or for a specified period, may be sold or otherwise transferred to a third party by

bilateral agreement, subject to compliance with such procedures as may be established by the Office of the Interconnection for verification of the rights of the purchaser or transferee.

- (i) Market Participants may enter into bilateral agreements to transfer to a third party a Financial Transmission Right, for its entire tenure or for a specified period. Such bilateral transactions shall be reported to the Office of the Interconnection in accordance with this Schedule and pursuant to the LLC's rules related to its FTR reporting tools.
- (ii) For purposes of clarity, with respect to all bilateral transactions for the transfer of Financial Transmission Rights, the rights and obligations pertaining to the Financial Transmission Rights that are the subject of such a bilateral transaction shall pass to the buyer under the bilateral contract subject to the provisions of this Schedule. Such bilateral transactions shall not modify the location or reconfigure the Financial Transmission Rights. In no event shall the purchase and sale of a Financial Transmission Right pursuant to a bilateral transaction constitute a transaction with PJMSettlement or a transaction in any auction under this Schedule.
- (iii) Consent of the Office of the Interconnection shall be required for a seller to transfer to a buyer any Financial Transmission Right Obligation. Such consent shall be based upon the Office of the Interconnection's assessment of the buyer's ability to perform the obligations, including meeting applicable creditworthiness requirements, transferred in the bilateral contract. If consent for a transfer is not provided by the Office of the Interconnection, the title to the Financial Transmission Rights shall not transfer to the third party and the FTR Holder shall continue to receive all Transmission Congestion Credits attributable to the Financial Transmission Rights and remain subject to all credit requirements and obligations associated with the Financial Transmission Rights.
- (iv) A seller under such a bilateral contract shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer's obligation to pay any charges associated with the transferred Financial Transmission Right and for which payment is not made to PJMSettlement by the buyer under such a bilateral transaction.
- (v) All payments and related charges associated with such a bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by PJMSettlement or the Office of the Interconnection. 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 such a bilateral contract reported to the Office of the Interconnection under this Schedule.
- (vi) All claims regarding a default of a buyer to a seller under such a bilateral contract shall be resolved solely between the buyer and the seller.

(e) Network Service Users and Firm Transmission Customers that take service that sinks, sources in, or is transmitted through new PJM zones, at their election, may receive a direct allocation of Financial Transmission Rights instead of an allocation of Auction Revenue Rights. Network Service Users and Firm Transmission Customers may make this election for the succeeding two annual FTR auctions after the integration of the new zone into the PJM Interchange Energy Market. Such election shall be made prior to the commencement of each annual FTR auction. For purposes of this election, the Allegheny Power Zone shall be considered a new zone with respect to the annual Financial Transmission Right auction in 2003 and 2004. Network Service Users and Firm Transmission Customers in new PJM zones that elect not to receive direct allocations of Financial Transmission Rights shall receive allocations of Auction Revenue Rights. During the annual allocation process, the Financial Transmission Right allocation for new PJM zones shall be performed simultaneously with the Auction Revenue Rights allocations in existing and new PJM zones. Prior to the effective date of the initial allocation of FTRs in a new PJM Zone, PJM shall file with FERC, under section 205 of the Federal Power Act, the FTRs and ARRs allocated in accordance with sections 5 and 7 of this Schedule 1.

(f) For Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through new PJM zones, that elect to receive direct allocations of Financial Transmission Rights, Financial Transmission Rights shall be allocated using the same allocation methodology as is specified for the allocation of Auction Revenue Rights in Operating Agreement, Schedule 1, section 7.4.2 and in accordance with the following:

- (i) Subject to subsection (ii) of this section, all Financial Transmission Rights must be simultaneously feasible. If all Financial Transmission Right requests made when Financial Transmission Rights are allocated for the new zone are not feasible then Financial Transmission Rights are prorated and allocated in proportion to the MW level requested and in inverse proportion to the effect on the binding constraints.
- (ii) If any Financial Transmission Right requests that are equal to or less than a Network Service User's Zonal Base Load for the Zone or fifty percent of its transmission responsibility for Non-Zone Network Load, or fifty percent of megawatts of firm service between the receipt and delivery points of Firm Transmission Customers, are not feasible in the annual allocation and auction processes due to system conditions, then PJM shall increase the capability limits of the binding constraints that would have rendered the Financial Transmission Rights infeasible to the extent necessary in order to allocate such Financial Transmission Rights without their being infeasible for all rounds of the annual allocation and auction processes, provided that this subsection (ii) shall not apply if the infeasibility is caused by extraordinary circumstances. Additionally, such increased limits shall be included in subsequent modeling during the Planning Year to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions; unless and to the extent those system conditions that contributed to

infeasibility in the annual process are not extant for the time period subject to the subsequent modeling, such as would be the case, for example, if transmission facilities are returned to service during the Planning Year. In these cases, any increase in the capability limits taken under this subsection (ii) during the annual process will be removed from subsequent modeling to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions. In addition, PJM may remove or lower the increased capability limits, if feasible, during subsequent FTR Auctions if the removal or lowering of the increased capability limits does not impact Auction Revenue Rights funding and net auction revenues are positive.

For the purposes of this subsection (ii), extraordinary circumstances shall mean an event of force majeure that reduces the capability of existing or planned transmission facilities and such reduction in capability is the cause of the infeasibility of such Financial Transmission Rights. Extraordinary circumstances do not include those system conditions and assumptions modeled in simultaneous feasibility analyses conducted pursuant to Operating Agreement, Schedule 1, section 7.5 of Schedule 1 of this Agreement. If PJM allocates Financial Transmission Rights as a result of this subsection (ii) that would not otherwise have been feasible, then PJM shall notify Members and post on its web site (a) the aggregate megawatt quantities, by sources and sinks, of such Financial Transmission Rights and (b) any increases in capability limits used to allocate such Financial Transmission Rights.

- (iii) In the event that Network Load changes from one Network Service User to another after an initial or annual allocation of Financial Transmission Rights in a new zone, Financial Transmission Rights will be reassigned on a proportional basis from the Network Service User losing the load to the Network Service User that is gaining the Network Load.

(g) At least one month prior to the integration of a new zone into the PJM Interchange Energy Market, Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through the new zone, shall receive an initial allocation of Financial Transmission Rights that will be in effect from the date of the integration of the new zone until the next annual allocation of Financial Transmission Rights and Auction Revenue Rights. Such allocation of Financial Transmission Rights shall be made in accordance with Operating Agreement, Schedule 1, section 5.2.2(f) of this Schedule.

(h) Reserved.

### **5.2.3 Target Allocation of Transmission Congestion Credits.**

A Target Allocation of Transmission Congestion Credits for each FTR Holder shall be determined for each Financial Transmission Right. Each Financial Transmission Right shall be multiplied by the Day-ahead Congestion Price differences for the receipt and delivery points associated with the Financial Transmission Right, calculated as the Day-ahead Congestion Price

at the delivery point(s) minus the Day-ahead Congestion Price at the receipt point(s). For the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Zone is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Zone multiplied by the percent of annual peak load assigned to each node in the Zone.

Commencing with the 2015/2016 Planning Period, for the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Residual Metered Load aggregate is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Residual Metered Load aggregate multiplied by the percent of the annual peak residual load assigned to each bus that comprises the Residual Metered Load aggregate. When the FTR Target Allocation is positive, the FTR Target Allocation is a credit to the FTR Holder. When the FTR Target Allocation is negative, the FTR Target Allocation is a debit to the FTR Holder if the FTR is a Financial Transmission Right Obligation. When the FTR Target Allocation is negative, the FTR Target Allocation is set to zero if the FTR is a Financial Transmission Right Option. The total Target Allocation for Network Service Users and Transmission Customers for each hour shall be the sum of the Target Allocations associated with all of the Network Service Users' or Transmission Customers' Financial Transmission Rights.

#### **5.2.4 [Reserved.]**

#### **5.2.5 Calculation of Transmission Congestion Credits.**

(a) The total of all the positive Target Allocations determined as specified above shall be compared to the Day-ahead Energy Market Transmission Congestion Charges in each hour. If the total of the Target Allocations is less than or equal to the total of the Day-ahead Energy Market Transmission Congestion Charges, the Transmission Congestion Credit for each entity holding an FTR shall be equal to its Target Allocation. All remaining Day-ahead Energy Market Transmission Congestion Charges shall be distributed as described below in Operating Agreement, Schedule 1, section 5.2.6 "Distribution of Excess Congestion Charges."

(b) If the total of the Target Allocations is greater than the Day-ahead Energy Market Transmission Congestion Charges for the hour, each FTR Holder shall be assigned a share of the Day-ahead Energy Market Transmission Congestion Charges in proportion to its Target Allocations for Financial Transmission Rights which have a positive Target Allocation value. Financial Transmission Rights which have a negative Target Allocation value are assigned the full Target Allocation value as a negative Transmission Congestion Credit.

(c) At the end of a Planning Period if all FTR Holders did not receive Transmission Congestion Credits equal to their Target Allocations, the Office of the Interconnection shall assess a charge equal to the difference between the Transmission Congestion Credit Target Allocations for all revenue deficient FTRs and the actual Transmission Congestion Credits allocated to those FTR Holders. A charge assessed pursuant to this section shall also include any aggregate charge assessed pursuant to Operating Agreement, Schedule 1, section 7.4.4(c) and shall be allocated to all FTR Holders on a pro-rata basis according to the total Target Allocations for all FTRs held at any time during the relevant Planning Period. The charge shall be calculated and allocated in accordance with the following methodology:

1. The Office of the Interconnection shall calculate the total amount of uplift required as  $\{[\text{sum of the total monthly deficiencies in FTR Target Allocations for the Planning Period} + \text{the sum of the ARR Target Allocation deficiencies determined pursuant to Operating Agreement, Schedule 1, section 7.4.4(c)}] - [\text{sum of the total monthly excess ARR revenues and excess Day-ahead Energy Market Transmission Congestion Charges for the Planning Period}]\}$ .
2. For each Market Participant that held an FTR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all FTRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of Interconnection shall set the value to zero.
3. The Office of the Interconnection shall then allocate an uplift charge to each Market Participant that held an FTR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total uplift}] * [\text{total Target Allocation for all FTRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all FTRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

#### **5.2.6 Distribution of Excess Congestion Charges.**

- (a) Excess Day-ahead Energy Market Transmission Congestion Charges accumulated in a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during that month as compared to its total Target Allocations for the month.
- (b) After the excess Day-ahead Energy Market Transmission Congestion Charge distribution described in Operating Agreement, Schedule 1, section 5.2.6(a) is performed, any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during the current Planning Period, including previously distributed excess Day-ahead Energy Market Transmission Congestion Charges, as compared to its total Target Allocation for the Planning Period.
- (c) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a Planning Period shall be distributed to each holder of Auction Revenue Rights in proportion to, but not more than, any Auction Revenue Right deficiencies for that Planning Period.
- (d) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining after a distribution pursuant to subsection (c) of this section shall be distributed to all ARR holders on a pro-rata basis according to the total Target Allocations for all ARRs held at any time during the

relevant Planning Period. Any allocation pursuant to this subsection (d) shall be conducted in accordance with the following methodology:

1. For each Market Participant that held an ARR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all ARRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of the Interconnection shall set the value to zero.
2. The Office of the Interconnection shall then allocate an excess Day-ahead Energy Market Transmission Congestion Charge credit to each Market Participant that held an ARR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total excess Day-ahead Energy Market Transmission Congestion Charges remaining after distributions pursuant to subsection (a)-(c) of this section}] * [\text{total Target Allocation for all ARRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all ARRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

#### **5.2.7 Allocation of Balancing Congestion Charges**

At the end of each hour during an Operating Day, the Office of the Interconnection shall allocate the Balancing Congestion Charges to real-time load and exports on a pro-rata basis. Such allocation shall not include purchases of Direct Charging Energy.

# Attachment C

Revisions to the  
PJM Open Access Transmission Tariff  
and PJM Operating Agreement

(Identified by Additional Cover Pages)

(Clean Format)

Sections of the  
PJM Open Access Transmission Tariff  
(Clean Format)

## **5.2 Transmission Congestion Credit Calculation.**

### **5.2.1 Eligibility.**

(a) Except as provided in section 5.2.1(b), each FTR Holder shall receive as a Transmission Congestion Credit a proportional share of the Day-ahead Energy Market Transmission Congestion Charges collected for each constrained hour.

(b) If an Effective FTR Holder between specified delivery and receipt buses acquired the Financial Transmission Right in a Financial Transmission Rights auction (the procedures for which are set forth in section 7 of this Attachment K – Appendix) and had a Virtual Transaction portfolio which includes Increment Offer(s), Decrement Bid(s), and/or Up-to Congestion Transaction(s) that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market, whereby the Effective FTR Holder's Virtual Transaction portfolio resulted in (i) a difference in Location Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses which is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, and (ii) an increasing the value between such delivery and receipt buses, then the Market Participant shall not receive any Transmission Congestion Credit associated with such Financial Transmission Right in such hour, that is attributable to the absolute value (i.e., the product of the constraint's shadow price times the distribution factor (dfax) of the difference between the Financial Transmission Right delivery and receipt buses) of the relevant Day-ahead Energy Market binding constraint (as further discussed in section 5.2.1(c) below), but no more than the excess of one divided by the number of hours in the applicable period multiplied by the amount that the Market Participant paid for the Financial Transmission Right in the Financial Transmission Rights auction (i.e., FTR profit). For the purposes of this calculation, every individual Financial Transmission Right of an Effective FTR Holder shall be considered.

(c) For purposes of section 5.2.1(b), an Effective FTR Holder's Virtual Transaction portfolio shall be considered if the absolute value of the attributable net flow across a Day-ahead Energy Market binding constraint relative to the Day-ahead Energy Market load weighted reference bus between the Financial Transmission Right delivery and receipt buses exceeds the physical limit of such binding constraint by the greater of 0.1 MW or ten percent.

(d) The Market Monitoring Unit shall calculate Transmission Congestion Credits pursuant to this section and Tariff, Attachment M-Appendix, section VI. Nothing in this section shall preclude the Market Monitoring Unit from action to recover inappropriate benefits from the subject activity if the amount forfeited is less than the benefit derived by the Effective FTR Holder. If the Office of the Interconnection agrees with such calculation, then it shall impose the forfeiture of the Transmission Congestion Credit accordingly. If the Office of the Interconnection does not agree with the calculation, then it shall impose a forfeiture of Transmission Congestion Credit consistent with its determination. If the Market Monitoring Unit disagrees with the Office of the Interconnection's determination, it may exercise its powers to inform the Commission staff of its concerns and may request an adjustment. This provision is duplicated in Tariff, Attachment M-Appendix, section VI. An Effective FTR Holder objecting to

the application of this rule shall have recourse to the Commission for review of the application of the FTR forfeiture rule to its trading activity.

### **5.2.2 Financial Transmission Rights.**

(a) Transmission Congestion Credits will be calculated based upon the Financial Transmission Rights held at the time of the constrained hour. Except as provided in subsection (e) below, Financial Transmission Rights shall be auctioned as set forth in Operating Agreement, Schedule 1, section 7.

(b) The hourly economic value of a Financial Transmission Right Obligation is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right. The hourly economic value of a Financial Transmission Right Obligation is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Obligation is negative (a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(c) The hourly economic value of a Financial Transmission Right Option is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right when that difference is positive. The hourly economic value of a Financial Transmission Right Option is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Option is zero (neither a benefit nor a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(d) In addition to transactions with PJMSettlement in the Financial Transmission Rights auctions administered by the Office of the Interconnection, a Financial Transmission Right, for its entire tenure or for a specified period, may be sold or otherwise transferred to a third party by bilateral agreement, subject to compliance with such procedures as may be established by the Office of the Interconnection for verification of the rights of the purchaser or transferee.

(i) Market Participants may enter into bilateral agreements to transfer to a third party a Financial Transmission Right, for its entire tenure or for a specified period. Such bilateral transactions shall be reported to the Office of the Interconnection in accordance with this Schedule and pursuant to the LLC's rules related to its FTR reporting tools.

(ii) For purposes of clarity, with respect to all bilateral transactions for the transfer of Financial Transmission Rights, the rights and obligations pertaining to the Financial Transmission Rights that are the subject of such a bilateral transaction shall pass to the buyer under the bilateral contract subject to the provisions of this Schedule. Such bilateral transactions

shall not modify the location or reconfigure the Financial Transmission Rights. In no event shall the purchase and sale of a Financial Transmission Right pursuant to a bilateral transaction constitute a transaction with PJMSettlement or a transaction in any auction under this Schedule.

(iii) Consent of the Office of the Interconnection shall be required for a seller to transfer to a buyer any Financial Transmission Right Obligation. Such consent shall be based upon the Office of the Interconnection's assessment of the buyer's ability to perform the obligations, including meeting applicable creditworthiness requirements, transferred in the bilateral contract. If consent for a transfer is not provided by the Office of the Interconnection, the title to the Financial Transmission Rights shall not transfer to the third party and the FTR Holder shall continue to receive all Transmission Congestion Credits attributable to the Financial Transmission Rights and remain subject to all credit requirements and obligations associated with the Financial Transmission Rights.

(iv) A seller under such a bilateral contract shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer's obligation to pay any charges associated with the transferred Financial Transmission Right and for which payment is not made to PJMSettlement by the buyer under such a bilateral transaction.

(v) All payments and related charges associated with such a bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by PJMSettlement or the Office of the Interconnection. 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 such a bilateral contract reported to the Office of the Interconnection under this Schedule.

(vi) All claims regarding a default of a buyer to a seller under such a bilateral contract shall be resolved solely between the buyer and the seller.

(e) Network Service Users and Firm Transmission Customers that take service that sinks, sources in, or is transmitted through new PJM zones, at their election, may receive a direct allocation of Financial Transmission Rights instead of an allocation of Auction Revenue Rights. Network Service Users and Firm Transmission Customers may make this election for the succeeding two annual FTR auctions after the integration of the new zone into the PJM Interchange Energy Market. Such election shall be made prior to the commencement of each annual FTR auction. For purposes of this election, the Allegheny Power Zone shall be considered a new zone with respect to the annual Financial Transmission Right auction in 2003 and 2004. Network Service Users and Firm Transmission Customers in new PJM zones that elect not to receive direct allocations of Financial Transmission Rights shall receive allocations of Auction Revenue Rights. During the annual allocation process, the Financial Transmission Right allocation for new PJM zones shall be performed simultaneously with the Auction Revenue Rights allocations in existing and new PJM zones. Prior to the effective date of the initial allocation of FTRs in a new PJM Zone, PJM shall file with FERC, under section 205 of the Federal Power Act, the FTRs and ARRs allocated in accordance with sections 5 and 7 of this Schedule 1.

(f) For Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through new PJM zones, that elect to receive direct allocations of Financial Transmission Rights, Financial Transmission Rights shall be allocated using the same allocation methodology as is specified for the allocation of Auction Revenue Rights in Operating Agreement, Schedule 1, section 7.4.2 and in accordance with the following:

(i) Subject to subsection (ii) of this section, all Financial Transmission Rights must be simultaneously feasible. If all Financial Transmission Right requests made when Financial Transmission Rights are allocated for the new zone are not feasible then Financial Transmission Rights are prorated and allocated in proportion to the MW level requested and in inverse proportion to the effect on the binding constraints.

(ii) If any Financial Transmission Right requests that are equal to or less than a Network Service User's Zonal Base Load for the Zone or fifty percent of its transmission responsibility for Non-Zone Network Load, or fifty percent of megawatts of firm service between the receipt and delivery points of Firm Transmission Customers, are not feasible in the annual allocation and auction processes due to system conditions, then PJM shall increase the capability limits of the binding constraints that would have rendered the Financial Transmission Rights infeasible to the extent necessary in order to allocate such Financial Transmission Rights without their being infeasible for all rounds of the annual allocation and auction processes, provided that this subsection (ii) shall not apply if the infeasibility is caused by extraordinary circumstances. Additionally, such increased limits shall be included in subsequent modeling during the Planning Year to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions; unless and to the extent those system conditions that contributed to infeasibility in the annual process are not extant for the time period subject to the subsequent modeling, such as would be the case, for example, if transmission facilities are returned to service during the Planning Year. In these cases, any increase in the capability limits taken under this subsection (ii) during the annual process will be removed from subsequent modeling to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions. In addition, PJM may remove or lower the increased capability limits, if feasible, during subsequent FTR Auctions if the removal or lowering of the increased capability limits does not impact Auction Revenue Rights funding and net auction revenues are positive.

For the purposes of this subsection (ii), extraordinary circumstances shall mean an event of force majeure that reduces the capability of existing or planned transmission facilities and such reduction in capability is the cause of the infeasibility of such Financial Transmission Rights. Extraordinary circumstances do not include those system conditions and assumptions modeled in simultaneous feasibility analyses conducted pursuant to Operating Agreement, Schedule 1, section 7.5 of Schedule 1 of this Agreement. If PJM allocates Financial Transmission Rights as a result of this subsection (ii) that would not otherwise have been feasible, then PJM shall notify Members and post on its web site (a) the aggregate megawatt quantities, by sources and sinks, of such Financial Transmission Rights and (b) any increases in capability limits used to allocate such Financial Transmission Rights.

(iii) In the event that Network Load changes from one Network Service User to another after an initial or annual allocation of Financial Transmission Rights in a new zone, Financial Transmission Rights will be reassigned on a proportional basis from the Network Service User losing the load to the Network Service User that is gaining the Network Load.

(g) At least one month prior to the integration of a new zone into the PJM Interchange Energy Market, Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through the new zone, shall receive an initial allocation of Financial Transmission Rights that will be in effect from the date of the integration of the new zone until the next annual allocation of Financial Transmission Rights and Auction Revenue Rights. Such allocation of Financial Transmission Rights shall be made in accordance with Operating Agreement, Schedule 1, section 5.2.2(f) of this Schedule.

(h) Reserved.

### **5.2.3 Target Allocation of Transmission Congestion Credits.**

A Target Allocation of Transmission Congestion Credits for each FTR Holder shall be determined for each Financial Transmission Right. Each Financial Transmission Right shall be multiplied by the Day-ahead Congestion Price differences for the receipt and delivery points associated with the Financial Transmission Right, calculated as the Day-ahead Congestion Price at the delivery point(s) minus the Day-ahead Congestion Price at the receipt point(s). For the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Zone is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Zone multiplied by the percent of annual peak load assigned to each node in the Zone. Commencing with the 2015/2016 Planning Period, for the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Residual Metered Load aggregate is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Residual Metered Load aggregate multiplied by the percent of the annual peak residual load assigned to each bus that comprises the Residual Metered Load aggregate. When the FTR Target Allocation is positive, the FTR Target Allocation is a credit to the FTR Holder. When the FTR Target Allocation is negative, the FTR Target Allocation is a debit to the FTR Holder if the FTR is a Financial Transmission Right Obligation. When the FTR Target Allocation is negative, the FTR Target Allocation is set to zero if the FTR is a Financial Transmission Right Option. The total Target Allocation for Network Service Users and Transmission Customers for each hour shall be the sum of the Target Allocations associated with all of the Network Service Users' or Transmission Customers' Financial Transmission Rights.

### **5.2.4 [Reserved.]**

### **5.2.5 Calculation of Transmission Congestion Credits.**

(a) The total of all the positive Target Allocations determined as specified above shall be compared to the Day-ahead Energy Market Transmission Congestion Charges in each hour. If the total of the Target Allocations is less than or equal to the total of the Day-ahead Energy Market Transmission Congestion Charges, the Transmission Congestion Credit for each entity

holding an FTR shall be equal to its Target Allocation. All remaining Day-ahead Energy Market Transmission Congestion Charges shall be distributed as described below in Operating Agreement, Schedule 1, section 5.2.6 “Distribution of Excess Congestion Charges.”

(b) If the total of the Target Allocations is greater than the Day-ahead Energy Market Transmission Congestion Charges for the hour, each FTR Holder shall be assigned a share of the Day-ahead Energy Market Transmission Congestion Charges in proportion to its Target Allocations for Financial Transmission Rights which have a positive Target Allocation value. Financial Transmission Rights which have a negative Target Allocation value are assigned the full Target Allocation value as a negative Transmission Congestion Credit.

(c) At the end of a Planning Period if all FTR Holders did not receive Transmission Congestion Credits equal to their Target Allocations, the Office of the Interconnection shall assess a charge equal to the difference between the Transmission Congestion Credit Target Allocations for all revenue deficient FTRs and the actual Transmission Congestion Credits allocated to those FTR Holders. A charge assessed pursuant to this section shall also include any aggregate charge assessed pursuant to Operating Agreement, Schedule 1, section 7.4.4(c) and shall be allocated to all FTR Holders on a pro-rata basis according to the total Target Allocations for all FTRs held at any time during the relevant Planning Period. The charge shall be calculated and allocated in accordance with the following methodology:

1. The Office of the Interconnection shall calculate the total amount of uplift required as  $\{[\text{sum of the total monthly deficiencies in FTR Target Allocations for the Planning Period} + \text{the sum of the ARR Target Allocation deficiencies determined pursuant to Operating Agreement, Schedule 1, section 7.4.4(c)}] - [\text{sum of the total monthly excess ARR revenues and excess Day-ahead Energy Market Transmission Congestion Charges for the Planning Period}]\}$ .

2. For each Market Participant that held an FTR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all FTRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of Interconnection shall set the value to zero.

3. The Office of the Interconnection shall then allocate an uplift charge to each Market Participant that held an FTR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total uplift}] * [\text{total Target Allocation for all FTRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all FTRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

#### **5.2.6 Distribution of Excess Congestion Charges.**

(a) Excess Day-ahead Energy Market Transmission Congestion Charges accumulated in a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during that month as compared to its total Target Allocations for the month.

(b) After the excess Day-ahead Energy Market Transmission Congestion Charge distribution described in Operating Agreement, Schedule 1, section 5.2.6(a) is performed, any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during the current Planning Period, including previously distributed excess Day-ahead Energy Market Transmission Congestion Charges, as compared to its total Target Allocation for the Planning Period.

(c) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a Planning Period shall be distributed to each holder of Auction Revenue Rights in proportion to, but not more than, any Auction Revenue Right deficiencies for that Planning Period.

(d) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining after a distribution pursuant to subsection (c) of this section shall be distributed to all ARR holders on a pro-rata basis according to the total Target Allocations for all ARRs held at any time during the relevant Planning Period. Any allocation pursuant to this subsection (d) shall be conducted in accordance with the following methodology:

1. For each Market Participant that held an ARR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all ARRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of the Interconnection shall set the value to zero.

2. The Office of the Interconnection shall then allocate an excess Day-ahead Energy Market Transmission Congestion Charge credit to each Market Participant that held an ARR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total excess Day-ahead Energy Market Transmission Congestion Charges remaining after distributions pursuant to subsection (a)-(c) of this section}] * [\text{total Target Allocation for all ARRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all ARRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

### **5.2.7 Allocation of Balancing Congestion Charges**

At the end of each hour during an Operating Day, the Office of the Interconnection shall allocate the Balancing Congestion Charges to real-time load and exports on a pro-rata basis. Such allocation shall not include purchases of Direct Charging Energy.

Sections of the  
PJM Operating Agreement  
(Clean Format)

## **5.2 Transmission Congestion Credit Calculation.**

### **5.2.1 Eligibility.**

(a) Except as provided in section 5.2.1(b), each FTR Holder shall receive as a Transmission Congestion Credit a proportional share of the Day-ahead Energy Market Transmission Congestion Charges collected for each constrained hour.

(b) If an Effective FTR Holder between specified delivery and receipt buses acquired the Financial Transmission Right in a Financial Transmission Rights auction (the procedures for which are set forth in section 7 of this Schedule 1) and had a Virtual Transaction portfolio which includes Increment Offer(s), Decrement Bid(s), and/or Up-to Congestion Transaction(s) that was accepted by the Office of the Interconnection for an applicable hour in the Day-ahead Energy Market, whereby the Effective FTR Holder's Virtual Transaction portfolio resulted in (i) a difference in Location Marginal Prices in the Day-ahead Energy Market between such delivery and receipt buses which is greater than the difference in Locational Marginal Prices between such delivery and receipt buses in the Real-time Energy Market, and (ii) an increasing the value between such delivery and receipt buses, then the Market Participant shall not receive any Transmission Congestion Credit associated with such Financial Transmission Right in such hour, that is attributable to the absolute value (i.e., the product of the constraint's shadow price times the distribution factor (dfax) of the difference between the Financial Transmission Right delivery and receipt buses) of the relevant Day-ahead Energy Market binding constraint (as further discussed in section 5.2.1(c) below), but no more than the excess of one divided by the number of hours in the applicable period multiplied by the amount that the Market Participant paid for the Financial Transmission Right in the Financial Transmission Rights auction (i.e., FTR profit). For the purposes of this calculation, every individual Financial Transmission Right of an Effective FTR Holder shall be considered.

(c) For purposes of section 5.2.1(b), an Effective FTR Holder's Virtual Transaction portfolio shall be considered if the absolute value of the attributable net flow across a Day-ahead Energy Market binding constraint relative to the Day-ahead Energy Market load weighted reference bus between the Financial Transmission Right delivery and receipt buses exceeds the physical limit of such binding constraint by the greater of 0.1 MW or ten percent.

(d) The Market Monitoring Unit shall calculate Transmission Congestion Credits pursuant to this section and Tariff, Attachment M-Appendix, section VI. Nothing in this section shall preclude the Market Monitoring Unit from action to recover inappropriate benefits from the subject activity if the amount forfeited is less than the benefit derived by the Effective FTR Holder. If the Office of the Interconnection agrees with such calculation, then it shall impose the forfeiture of the Transmission Congestion Credit accordingly. If the Office of the Interconnection does not agree with the calculation, then it shall impose a forfeiture of Transmission Congestion Credit consistent with its determination. If the Market Monitoring Unit disagrees with the Office of the Interconnection's determination, it may exercise its powers to inform the Commission staff of its concerns and may request an adjustment. This provision is duplicated in Tariff, Attachment M-Appendix, section VI. An Effective FTR Holder objecting to

the application of this rule shall have recourse to the Commission for review of the application of the FTR forfeiture rule to its trading activity.

### **5.2.2 Financial Transmission Rights.**

(a) Transmission Congestion Credits will be calculated based upon the Financial Transmission Rights held at the time of the constrained hour. Except as provided in subsection (e) below, Financial Transmission Rights shall be auctioned as set forth in Operating Agreement, Schedule 1, section 7.

(b) The hourly economic value of a Financial Transmission Right Obligation is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right. The hourly economic value of a Financial Transmission Right Obligation is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Obligation is negative (a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(c) The hourly economic value of a Financial Transmission Right Option is based on the Financial Transmission Right MW reservation and the difference between the Day-ahead Congestion Price at the point of delivery and the point of receipt of the Financial Transmission Right when that difference is positive. The hourly economic value of a Financial Transmission Right Option is positive (a benefit to the FTR Holder) when the Day-ahead Congestion Price at the point of delivery is higher than the Day-ahead Congestion Price at the point of receipt. The hourly economic value of a Financial Transmission Right Option is zero (neither a benefit nor a liability to the FTR Holder) when the Day-ahead Congestion Price at the point of receipt is higher than the Day-ahead Congestion Price at the point of delivery.

(d) In addition to transactions with PJMSettlement in the Financial Transmission Rights auctions administered by the Office of the Interconnection, a Financial Transmission Right, for its entire tenure or for a specified period, may be sold or otherwise transferred to a third party by bilateral agreement, subject to compliance with such procedures as may be established by the Office of the Interconnection for verification of the rights of the purchaser or transferee.

- (i) Market Participants may enter into bilateral agreements to transfer to a third party a Financial Transmission Right, for its entire tenure or for a specified period. Such bilateral transactions shall be reported to the Office of the Interconnection in accordance with this Schedule and pursuant to the LLC's rules related to its FTR reporting tools.
- (ii) For purposes of clarity, with respect to all bilateral transactions for the transfer of Financial Transmission Rights, the rights and obligations pertaining to the Financial Transmission Rights that are the subject of such a bilateral transaction shall pass to the buyer under the bilateral contract subject to the provisions of this

Schedule. Such bilateral transactions shall not modify the location or reconfigure the Financial Transmission Rights. In no event shall the purchase and sale of a Financial Transmission Right pursuant to a bilateral transaction constitute a transaction with PJMSettlement or a transaction in any auction under this Schedule.

- (iii) Consent of the Office of the Interconnection shall be required for a seller to transfer to a buyer any Financial Transmission Right Obligation. Such consent shall be based upon the Office of the Interconnection's assessment of the buyer's ability to perform the obligations, including meeting applicable creditworthiness requirements, transferred in the bilateral contract. If consent for a transfer is not provided by the Office of the Interconnection, the title to the Financial Transmission Rights shall not transfer to the third party and the FTR Holder shall continue to receive all Transmission Congestion Credits attributable to the Financial Transmission Rights and remain subject to all credit requirements and obligations associated with the Financial Transmission Rights.
  - (iv) A seller under such a bilateral contract shall guarantee and indemnify the Office of the Interconnection, PJMSettlement, and the Members for the buyer's obligation to pay any charges associated with the transferred Financial Transmission Right and for which payment is not made to PJMSettlement by the buyer under such a bilateral transaction.
  - (v) All payments and related charges associated with such a bilateral contract shall be arranged between the parties to such bilateral contract and shall not be billed or settled by PJMSettlement or the Office of the Interconnection. 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 such a bilateral contract reported to the Office of the Interconnection under this Schedule.
  - (vi) All claims regarding a default of a buyer to a seller under such a bilateral contract shall be resolved solely between the buyer and the seller.
- (e) Network Service Users and Firm Transmission Customers that take service that sinks, sources in, or is transmitted through new PJM zones, at their election, may receive a direct allocation of Financial Transmission Rights instead of an allocation of Auction Revenue Rights. Network Service Users and Firm Transmission Customers may make this election for the succeeding two annual FTR auctions after the integration of the new zone into the PJM Interchange Energy Market. Such election shall be made prior to the commencement of each annual FTR auction. For purposes of this election, the Allegheny Power Zone shall be considered a new zone with respect to the annual Financial Transmission Right auction in 2003 and 2004. Network Service Users and Firm Transmission Customers in new PJM zones that elect not to receive direct allocations of Financial Transmission Rights shall receive allocations of Auction Revenue Rights. During the annual allocation process, the Financial Transmission Right allocation for new PJM zones shall be performed simultaneously with the Auction

Revenue Rights allocations in existing and new PJM zones. Prior to the effective date of the initial allocation of FTRs in a new PJM Zone, PJM shall file with FERC, under section 205 of the Federal Power Act, the FTRs and ARR allocations in accordance with sections 5 and 7 of this Schedule 1.

(f) For Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through new PJM zones, that elect to receive direct allocations of Financial Transmission Rights, Financial Transmission Rights shall be allocated using the same allocation methodology as is specified for the allocation of Auction Revenue Rights in Operating Agreement, Schedule 1, section 7.4.2 and in accordance with the following:

- (i) Subject to subsection (ii) of this section, all Financial Transmission Rights must be simultaneously feasible. If all Financial Transmission Right requests made when Financial Transmission Rights are allocated for the new zone are not feasible then Financial Transmission Rights are prorated and allocated in proportion to the MW level requested and in inverse proportion to the effect on the binding constraints.
- (ii) If any Financial Transmission Right requests that are equal to or less than a Network Service User's Zonal Base Load for the Zone or fifty percent of its transmission responsibility for Non-Zone Network Load, or fifty percent of megawatts of firm service between the receipt and delivery points of Firm Transmission Customers, are not feasible in the annual allocation and auction processes due to system conditions, then PJM shall increase the capability limits of the binding constraints that would have rendered the Financial Transmission Rights infeasible to the extent necessary in order to allocate such Financial Transmission Rights without their being infeasible for all rounds of the annual allocation and auction processes, provided that this subsection (ii) shall not apply if the infeasibility is caused by extraordinary circumstances. Additionally, such increased limits shall be included in subsequent modeling during the Planning Year to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions; unless and to the extent those system conditions that contributed to infeasibility in the annual process are not extant for the time period subject to the subsequent modeling, such as would be the case, for example, if transmission facilities are returned to service during the Planning Year. In these cases, any increase in the capability limits taken under this subsection (ii) during the annual process will be removed from subsequent modeling to support any incremental allocations of Auction Revenue Rights and monthly and balance of the Planning Period Financial Transmission Rights auctions. In addition, PJM may remove or lower the increased capability limits, if feasible, during subsequent FTR Auctions if the removal or lowering of the increased capability limits does not impact Auction Revenue Rights funding and net auction revenues are positive.

For the purposes of this subsection (ii), extraordinary circumstances shall mean an event of force majeure that reduces the capability of existing or planned

transmission facilities and such reduction in capability is the cause of the infeasibility of such Financial Transmission Rights. Extraordinary circumstances do not include those system conditions and assumptions modeled in simultaneous feasibility analyses conducted pursuant to Operating Agreement, Schedule 1, section 7.5 of Schedule 1 of this Agreement. If PJM allocates Financial Transmission Rights as a result of this subsection (ii) that would not otherwise have been feasible, then PJM shall notify Members and post on its web site (a) the aggregate megawatt quantities, by sources and sinks, of such Financial Transmission Rights and (b) any increases in capability limits used to allocate such Financial Transmission Rights.

- (iii) In the event that Network Load changes from one Network Service User to another after an initial or annual allocation of Financial Transmission Rights in a new zone, Financial Transmission Rights will be reassigned on a proportional basis from the Network Service User losing the load to the Network Service User that is gaining the Network Load.

(g) At least one month prior to the integration of a new zone into the PJM Interchange Energy Market, Network Service Users and Firm Transmission Customers that take service that sinks in, sources in, or is transmitted through the new zone, shall receive an initial allocation of Financial Transmission Rights that will be in effect from the date of the integration of the new zone until the next annual allocation of Financial Transmission Rights and Auction Revenue Rights. Such allocation of Financial Transmission Rights shall be made in accordance with Operating Agreement, Schedule 1, section 5.2.2(f) of this Schedule.

(h) Reserved.

### **5.2.3 Target Allocation of Transmission Congestion Credits.**

A Target Allocation of Transmission Congestion Credits for each FTR Holder shall be determined for each Financial Transmission Right. Each Financial Transmission Right shall be multiplied by the Day-ahead Congestion Price differences for the receipt and delivery points associated with the Financial Transmission Right, calculated as the Day-ahead Congestion Price at the delivery point(s) minus the Day-ahead Congestion Price at the receipt point(s). For the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Zone is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Zone multiplied by the percent of annual peak load assigned to each node in the Zone. Commencing with the 2015/2016 Planning Period, for the purposes of calculating Transmission Congestion Credits, the Day-ahead Congestion Price of a Residual Metered Load aggregate is calculated as the sum of the Day-ahead Congestion Price of each bus that comprises the Residual Metered Load aggregate multiplied by the percent of the annual peak residual load assigned to each bus that comprises the Residual Metered Load aggregate. When the FTR Target Allocation is positive, the FTR Target Allocation is a credit to the FTR Holder. When the FTR Target Allocation is negative, the FTR Target Allocation is a debit to the FTR Holder if the FTR is a Financial Transmission Right Obligation. When the FTR Target Allocation is negative, the FTR Target Allocation is set to zero if the FTR is a Financial Transmission Right Option. The total

Target Allocation for Network Service Users and Transmission Customers for each hour shall be the sum of the Target Allocations associated with all of the Network Service Users' or Transmission Customers' Financial Transmission Rights.

#### **5.2.4 [Reserved.]**

#### **5.2.5 Calculation of Transmission Congestion Credits.**

(a) The total of all the positive Target Allocations determined as specified above shall be compared to the Day-ahead Energy Market Transmission Congestion Charges in each hour. If the total of the Target Allocations is less than or equal to the total of the Day-ahead Energy Market Transmission Congestion Charges, the Transmission Congestion Credit for each entity holding an FTR shall be equal to its Target Allocation. All remaining Day-ahead Energy Market Transmission Congestion Charges shall be distributed as described below in Operating Agreement, Schedule 1, section 5.2.6 "Distribution of Excess Congestion Charges."

(b) If the total of the Target Allocations is greater than the Day-ahead Energy Market Transmission Congestion Charges for the hour, each FTR Holder shall be assigned a share of the Day-ahead Energy Market Transmission Congestion Charges in proportion to its Target Allocations for Financial Transmission Rights which have a positive Target Allocation value. Financial Transmission Rights which have a negative Target Allocation value are assigned the full Target Allocation value as a negative Transmission Congestion Credit.

(c) At the end of a Planning Period if all FTR Holders did not receive Transmission Congestion Credits equal to their Target Allocations, the Office of the Interconnection shall assess a charge equal to the difference between the Transmission Congestion Credit Target Allocations for all revenue deficient FTRs and the actual Transmission Congestion Credits allocated to those FTR Holders. A charge assessed pursuant to this section shall also include any aggregate charge assessed pursuant to Operating Agreement, Schedule 1, section 7.4.4(c) and shall be allocated to all FTR Holders on a pro-rata basis according to the total Target Allocations for all FTRs held at any time during the relevant Planning Period. The charge shall be calculated and allocated in accordance with the following methodology:

1. The Office of the Interconnection shall calculate the total amount of uplift required as  $\{[\text{sum of the total monthly deficiencies in FTR Target Allocations for the Planning Period} + \text{the sum of the ARR Target Allocation deficiencies determined pursuant to Operating Agreement, Schedule 1, section 7.4.4(c)}] - [\text{sum of the total monthly excess ARR revenues and excess Day-ahead Energy Market Transmission Congestion Charges for the Planning Period}]\}$ .
2. For each Market Participant that held an FTR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all FTRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of Interconnection shall set the value to zero.

3. The Office of the Interconnection shall then allocate an uplift charge to each Market Participant that held an FTR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total uplift}] * [\text{total Target Allocation for all FTRs held by the Market Participant at any time during the Planning Period}] / [\text{total Target Allocations for all FTRs held by all PJM Market Participants at any time during the Planning Period}]\}$ .

#### **5.2.6 Distribution of Excess Congestion Charges.**

- (a) Excess Day-ahead Energy Market Transmission Congestion Charges accumulated in a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during that month as compared to its total Target Allocations for the month.
- (b) After the excess Day-ahead Energy Market Transmission Congestion Charge distribution described in Operating Agreement, Schedule 1, section 5.2.6(a) is performed, any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a month shall be distributed to each FTR Holder in proportion to, but not more than, any deficiency in the share of Day-ahead Energy Market Transmission Congestion Charges received by the FTR Holder during the current Planning Period, including previously distributed excess Day-ahead Energy Market Transmission Congestion Charges, as compared to its total Target Allocation for the Planning Period.
- (c) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining at the end of a Planning Period shall be distributed to each holder of Auction Revenue Rights in proportion to, but not more than, any Auction Revenue Right deficiencies for that Planning Period.
- (d) Any excess Day-ahead Energy Market Transmission Congestion Charges remaining after a distribution pursuant to subsection (c) of this section shall be distributed to all ARR holders on a pro-rata basis according to the total Target Allocations for all ARRs held at any time during the relevant Planning Period. Any allocation pursuant to this subsection (d) shall be conducted in accordance with the following methodology:
  1. For each Market Participant that held an ARR during the Planning Period, the Office of the Interconnection shall calculate the total Target Allocation associated with all ARRs held by the Market Participant during the Planning Period, provided that, the foregoing notwithstanding, if the total Target Allocation for an individual Market Participant calculated pursuant to this section is negative the Office of the Interconnection shall set the value to zero.
  2. The Office of the Interconnection shall then allocate an excess Day-ahead Energy Market Transmission Congestion Charge credit to each Market Participant that held an ARR at any time during the Planning Period in accordance with the following formula:  $\{[\text{total excess Day-ahead Energy Market Transmission}$

Congestion Charges remaining after distributions pursuant to subsection (a)-(c) of this section] \* [total Target Allocation for all ARR holders held by the Market Participant at any time during the Planning Period] / [total Target Allocations for all ARR holders held by all PJM Market Participants at any time during the Planning Period]}.

#### **5.2.7 Allocation of Balancing Congestion Charges**

At the end of each hour during an Operating Day, the Office of the Interconnection shall allocate the Balancing Congestion Charges to real-time load and exports on a pro-rata basis. Such allocation shall not include purchases of Direct Charging Energy.