



PJM Interconnection, L.L.C.  
2750 Monroe Blvd.  
Audubon, PA 19403

Jennifer Tribulski  
Associate General Counsel  
610.666.4363 | fax 610.666.8211  
[jennifer.tribulski@pjm.com](mailto:jennifer.tribulski@pjm.com)

February 28, 2018

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., Proposed Modifications to the Operating Agreement and Tariff re: FTR Modeling Enhancements to Account for Future Transmission, Docket No. ER18-934-000*

Dear Ms. Bose:

PJM Interconnection, L.L.C. (“PJM”), under section 205 of the Federal Power Act (“FPA”), 16 U.S.C. § 824d, submits proposed revisions to the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C. (“Operating Agreement”), Schedule 1 and parallel provisions in PJM Open Access Transmission Tariff (“Tariff”), Attachment K-Appendix.<sup>1</sup> As described herein, this proposal serves the public interest as a just and reasonable modification to the modeling for long-term Financial Transmission Rights (“FTRs”).<sup>2</sup> Specifically, PJM proposes to (1) include future transmission enhancements in the long-term FTR model; (2) employ a method that selects those transmission enhancements significantly impacting future congestion values; and (3) account for any long-term residual Auction Revenue Rights that are “created” by the selected future Transmission System enhancements.

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<sup>1</sup> Where PJM refers herein to provisions in Operating Agreement, Schedule 1, those references also are intended to encompass the identical, parallel provisions in Tariff, Attachment K-Appendix.

<sup>2</sup> Capitalized terms not otherwise defined herein have the meaning specified in, as applicable, the Tariff, Operating Agreement, or Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (“RAA”).

PJM requests a May 1, 2018 effective date in order to properly prepare for the next long-term FTR auction which commences on June 1, 2018. Thus, PJM requests that the Commission issue an order on this filing by April 30, 2018, 60 days from the date of this filing, to permit the effective date of the enclosed revisions on May 1, 2018.

## **I. BACKGROUND AND BASIS FOR CHANGES**

PJM conducts a Long-term FTR auction of selling and buying FTRs through a multi-round process for FTRs for three consecutive Planning periods immediately subsequent to the Planning Period during which the Long-term FTR auction is conducted. The long-term FTR auction process consists of three rounds: (1) the first round is conducted approximately 11 months prior to the start of the first of the three Planning Periods; (2) the second round is conducted approximately 3 months after the first round; and (3) the third round is conducted approximately 3 months after the second round.<sup>3</sup> The capacity offered for sale in long-term FTR auctions is the residual system capability after the assumption that all Annual Auction Revenue Rights (“ARRs”) allocated in the immediately prior Annual Auction Revenue Rights allocation process are self scheduled into FTRs, which shall be modeled as fixed injections and withdrawals in the Long-term FTR auction.<sup>4</sup> In each round 1/3 of the feasible FTR available capability is awarded.<sup>5</sup>

Currently, PJM uses a network model in the long-term FTR auction that does not take into account any future Transmission System expansions, but rather utilizes the current system configuration. FTR auction prices are, in-part, a reflection of Transmission System capability

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<sup>3</sup> Operating Agreement, Schedule 1, section 7.1A.2.

<sup>4</sup> *Id.* at section 7.1A.1(ii).

<sup>5</sup> *Id.* at section 7.1A.2.

which is defined by the network model on which the FTR auction is cleared. Under today's construct, in its Long-term FTR auction, PJM uses a network model that does not include any future Transmission System expansions. Further, there is no criterion for including a specific future project in the FTR auction model beyond six months. Therefore, PJM is concerned that its auction clearing prices for long-term FTR auctions may not fully reflect of the true future Transmission System capability.

PJM brought this issue to the Market Implementation Committee in early 2017 to develop a solution which would take into account certain upcoming Transmission System upgrades that would more accurately reflect the system during the relevant Planning Period. Concurrently, PJM's Credit Subcommittee considered reforms to the credit requirements that would also take into account certain upcoming Transmission System upgrades in arriving at credit requirements for FTR Market Participants. The credit changes were accepted by the Commission in January, 2018.<sup>6</sup> PJM's proposal herein aligns with these credit changes as both utilize the same set of future Transmission System enhancements (see section II.B. below).

## **II. PROPOSED TARIFF CHANGES**

The reforms proposed herein reflect three design criteria developed by PJM and its stakeholders in addressing the issue:

- timing – take into account only those Transmission System upgrades that are most likely to be developed in the relevant planning horizon;
- type – take into account only those Transmission System upgrades that are likely to have the greatest impact on congestion patterns; and

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<sup>6</sup> *PJM Interconnection, L.L.C.*, Docket No. ER18-425-000, Letter Order (Jan. 19, 2018).

- ARR preservation – preserve the additional capability created by future upgrades for ARR allocation.

PJM's proposed reforms, which are based on these criteria, are just and reasonable as they will ensure the auction clearing prices in the long-term FTR auction will more accurately reflect the true system capability.

**A. PJM Proposes to Include in its Long-Term FTR Model Transmission System Upgrades That Are Expected to be In Service by June 30 of the First Year of the Relevant Planning Period.**

PJM's annual FTR auction model takes into account Transmission System upgrades that are expected to be in service by June 30 of the relevant Planning Period. Consistent with this approach, PJM proposes to model certain Transmission System upgrades, as described in section II.B below, that are expected to be in service within twelve months – by June 30 – of the first year of the relevant Planning Period.<sup>7</sup>

Because the long-term FTR auction clears FTRs for a period in the more distant future than the annual FTR auction, PJM and its stakeholders considered whether it would be appropriate to model Transmission System upgrades with an expected in service date out farther than one year. PJM's analysis showed that an in-service date beyond one year was harder to predict. PJM looked at baseline projects that went in-service between July 1, 2016 and June 30, 2017 and determined that approximately 33% of those projects actually went into service over a year later than their original projected in service date.<sup>8</sup> This delay is due to the many uncertainties in the planning process including project funding, scheduling, and equipment

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<sup>7</sup> See proposed Operating Agreement, Schedule 1, section 1.7A.1(ii).

<sup>8</sup> See Long-Term FTR Modeling presentation at 7, <http://www.pjm.com/-/media/committees-groups/committees/mic/20170908-special/20170908-item-02a-long-term-ftr-modeling.ashx>.

performance. If PJM were to have modeled these transmission upgrades in the long-term FTR auction for FTRs effective on June 1, 2016 then the model used for clearing the auction would have been considerably different than the actual model for the effective period of the FTRs. Modeling future Transmission System upgrades that do not come into service by the start of the relevant Planning Period can result in an over-allocation and potential underfunding of FTRs; an undesirable result. Similarly, PJM looked at baseline projects that were scheduled to come in-service between December 1, 2016 and June 30, 2017 and determined that approximately 81% of those projects actually went into service on time. If PJM were to have modeled only these transmission upgrades in the long-term FTR auction for FTRs effective on June 1, 2017 then the model used for clearing the auction would have been a closer representation of the actual model for the effective period of the FTRs. Therefore, PJM chose the more conservative approach to consider only upgrades due to be in service within one year of the Auction bidding window. Also, PJM will conduct this assessment before each round of the long-term FTR auction, in September and December. Doing so will allow PJM to account and adjust for topology changes or for any delays or accelerations of the relevant Transmission System upgrades.

**B. Only Those Transmission System Upgrades with Significant Impacts on Congestion will be Included in the Proposed Modeling Approach.**

PJM proposes to reflect the low frequency, high impact scenarios when a Transmission System upgrade will materially impact congested locations on the network and thus the value of FTR paths sinking in those congested locations. Specifically, this proposal seeks to address only Transmission System upgrades that, individually, or together, have a 10 percent or more impact

on an individual constraint or constraints with recent congestion of \$5 million or more affecting a common congestion path.<sup>9</sup>

To accomplish this, PJM will identify facilities with \$5 million or greater in historical congestion in the Day-Ahead Energy Market over the past calendar year. PJM will perform an impact analysis to determine if the transmission system upgrade has an impact of at least 10 percent on any one or more of these identified facilities. The impact analysis is conducted through the use of the Transmission Adequacy and Reliability Assessment (“TARA”) tool utilizing two separate cases.<sup>10</sup> The purpose of this study is to determine the ARR flow impact on a monitored facility due to a transmission upgrade coming in-service. This can be measured through Line Outage Distribution Factors (“LODFs”). The TARA software reports LODFs as the portion of the base ARR impact on facility X that is redistributed to facility Y as a result of the outage of facility X. The base case is derived from the most recent Annual ARR allocation in the same manner that is utilized for other current PJM ARR analyses. The flow in this case is reflected by the effective ARR rights. Each upgrade or set of upgrades will be energized in the base case and the flows across each monitored facility captured. The study case will then assume an outage of the upgrade or set of upgrades and the flow impact will be studied on the previously identified facilities. If any flow impact is +/-10 percent then the upgrade or set of upgrades will be modeled in the upcoming long-term FTR auction.

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<sup>9</sup> See proposed Operating Agreement, Schedule 1, section 1.7A.1(ii).

<sup>10</sup> TARA is transmission planning software tool used for modeling and analysis.

**C. Residual Auction Revenue Rights Created by an Increase in Transmission System Capability due to Future Transmission System Upgrades are Determined only For Modeling Purposes and will not be Allocated to Market Participants.**

As mentioned above, the long-term FTR auction available capacity is based on the assumption that all Annual ARRs allocated in the immediately prior Annual Auction Revenue Rights allocation process are self scheduled into FTRs, which shall be modeled as fixed injections and withdrawals in the Long-term FTR auction. This assumption ensures ARR holders maintain priority rights to congestion revenues as contemplated under section 217 of the Federal Power Act. In other words, the capability is carved out of the long-term FTR auction for ARR holders. PJM's proposal does not change this process. As an additional safeguard, any additional capability that is "created" by the to-be modeled Transmission System upgrades is also preserved for ARR holders. PJM proposes to effectuate this through an offline long-term residual ARR market.<sup>11</sup>

Prior to the opening of each round, PJM will conduct an additional offline residual ARR allocation to determine additional ARR capability created by transmission upgrades modeled in the corresponding long-term FTR auction, as outlined in Operating Agreement, Schedule 1, section 9.1. Specific to these allocations, ARR capability will not be awarded to Market Participants. The sole purpose of these allocations is to preserve additional ARR capability as fixed injections and withdrawals in the long-term FTR model. Additionally, in order to determine this additional capability for this offline residual ARR allocation only, each ARR holder's Network Service Peak Load will be increased by the corresponding PJM published load

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<sup>11</sup> See proposed Operating Agreement, Schedule 1, section 1.7A.1(ii).

growth rate. To the extent that the additional transmission capability allows for additional ARR, that capability will be unavailable in the long-term FTR model in order to preserve LSE priority rights to congestion revenues.

### **III. STAKEHOLDER REVIEW AND EFFECTIVE DATE**

The proposal filed herein received near unanimous endorsement. It was endorsed by acclamation by the Markets and Reliability Committee on December 22, 2017, with zero objections and two abstentions and was also endorsed by acclamation by the Members Committee on January 25, 2017 with one objection and zero abstentions. PJM is requesting a May 1, 2018 effective date in order to properly prepare for the long-term FTR auction commencing on June 1, 2018. Thus, PJM requests that the Commission issue an order on this filing by April 30, 2018, 60 days from the date of this filing, to permit the effective date of the enclosed revisions on May 1, 2018.

### **IV. CORRESPONDENCE**

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

Craig Glazer  
Vice President–Federal Government Policy  
PJM Interconnection, L.L.C.  
1200 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 423-4743 (phone)  
(202) 393-7741 (fax)  
*Craig.Glazer@pjm.com*

Jennifer Tribulski  
Associate General Counsel  
PJM Interconnection, L.L.C.  
2750 Monroe Blvd.  
Audubon, PA 19403  
(610) 666-4363 (phone)  
(610) 666-8211 (fax)  
*Jennifer.Tribulski@pjm.com*



## V. DOCUMENTS ENCLOSED

This filing comprises:

1. This transmittal letter;
2. Revisions to the Operating Agreement and Tariff, in redlined format, as Attachment A; and
3. Revisions to the Operating Agreement and Tariff, in clean format, as Attachment B.

## 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>12</sup> PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: <http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx> with a specific link to the newly-filed document, and will send an e-mail on the same date as this filing to all PJM members and all state utility regulatory commissions in the PJM Region<sup>13</sup> alerting them that this filing has been made by PJM and is available by following such link. PJM also serves the parties listed on the Commission's official service list for this docket. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC's eLibrary website located at the following link: <http://www.ferc.gov/docs-filing/elibrary.asp> in accordance with the Commission's regulations and Order No. 714.

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<sup>12</sup> See 18 C.F.R. §§ 35.2(e) and 385.2010(f)(3).

<sup>13</sup> PJM already maintains, updates and regularly uses e-mail lists for all PJM members and affected state commissions.

## VII. CONCLUSION

Accordingly, PJM requests that the Commission accept the proposed Operating Agreement and Tariff modifications described in this filing effective May 1, 2017.

Respectfully submitted,



Craig Glazer  
Vice President–Federal Government Policy  
PJM Interconnection, L.L.C.  
1200 G Street, N.W., Suite 600  
Washington, D.C. 20005  
(202) 423-4743 (phone)  
(202) 393-7741 (fax)  
*Craig.Glazer@pjm.com*

Jennifer Tribulski  
Associate General Counsel  
PJM Interconnection, L.L.C.  
2750 Monroe Blvd.  
Audubon, PA 19403  
(610) 666-4363 (phone)  
(610) 666-8211 (fax)  
*Jennifer.Tribulski@pjm.com*

February 28, 2018

# Attachment A

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

(Marked / Redline Format)

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

## 7.1A Long-Term Financial Transmission Rights Auctions.

### 7.1A.1 Auctions.

(i) Subsequent to each annual Financial Transmission Rights~~FTR~~ auction conducted pursuant to Operating Agreement, Schedule 1, s~~Section 7.1 of Schedule 1 of this Agreement~~, the Office of the Interconnection shall conduct a long-term Financial Transmission Rights ~~FTR~~ auction for the three consecutive Planning Periods immediately subsequent to the Planning Period during which the long-term Financial Transmission Rights~~FTR~~ auction is conducted. PJMSettlement shall be the Counterparty to the purchases and sales of Financial Transmission Rights arising from such long-term Financial Transmission Rights~~FTR~~ auctions, provided however, that PJMSettlement shall not be a contracting party to any subsequent bilateral transfers of Financial Transmission Rights between Market Participants. The conversion of an Auction Revenue Right to a Financial Transmission Right pursuant to this section 7 shall not constitute a purchase or sale transaction to which PJMSettlement is a contracting party.

(ii) The capacity offered for sale in long-term Financial Transmission Rights auctions shall be the residual system capability after the Annual Auction Revenue Rights allocations and the annual Financial Transmission Rights auction. In determining the residual capability the Office of the Interconnection shall assume that all Auction Revenue Rights allocated in the immediately prior annual Auction Revenue Rights allocation process are self-scheduled into Financial Transmission Rights, which shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. Additionally, residual Annual Auction Revenue Rights that become available through incremental capability created by future transmission upgrades as further described in the PJM Manuals shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. PJM shall calculate residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) for any increase in transmission capability created by future transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. Transmission upgrades modeled for this purpose also will be modeled in the subsequent long-term Financial Transmission Rights auction, as further detailed in the PJM Manuals. Residual Auction Revenue Rights created by an increase in transmission capability due to future transmission upgrades, as specified above, are determined only for modeling purposes and will not be allocated to market participants.

### 7.1A.2 Frequency and Timing.

The long-term Financial Transmission Rights auction process shall consist of three rounds. The first round shall be conducted by the Office of the Interconnection approximately 11 months prior to the start of the three Planning Period term covered by the relevant long-term Financial Transmission Rights auction. The second round shall be conducted approximately 3 months after the first round, and the third round shall be conducted approximately 3 months after the

second round. In each round 1/3 of total capacity available in the long-term Financial Transmission Rights auction shall be offered for sale. Eligible entities may submit bids to purchase and offers to sell Financial Transmission Rights at the start of the bidding period in each round. The bidding period shall be three Business Days ending at 5:00 p.m. on the last day. PJM performs the Financial Transmission Rights auction clearing analysis for each round and posts the auction results on the market user interface within five Business Days after the close of the bidding period for each round unless circumstances beyond PJM's control prevent PJM from meeting the applicable deadline. Under such circumstances, PJM will post the auction results at the earliest possible opportunity. If the Office of the Interconnection discovers an error in the results posted for a long-term Financial Transmission Rights auction, the Office of the Interconnection shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the Business Day immediately following the initial publication of the results for that auction. After this initial notification, if the Office of the Interconnection determines it is necessary to post modified auction results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the second Business Day following the initial publication of prices for that auction. Thereafter, the Office of the Interconnection must post the corrected prices by no later than 5:00 p.m. of the fourth calendar day following the initial publication of prices in the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

### **7.1A.3 Products.**

(i) The periods covered by long-term Financial Transmission Rights auctions shall be: (1) any single Planning Period within the three Planning Period term covered by the relevant auction; and (2) the three Planning Period term covered by the relevant auction.

(ii) On-pPeak, off-peak and 24-hour Financial Transmission Right Obligations, shall be offered in long-term Financial Transmission Rights auctions; Financial Transmission Rights options shall not be offered.

### **7.1A.4 Participation Eligibility.**

(i) To participate in long-term Financial Transmission Rights auctions an entity shall be a PJM Member or a PJM Transmission Customer. Eligible entities may submit bids or offers in long-term Financial Transmission Rights auctions, provided they own Financial Transmission Rights offered for sale.

### **7.1A.5 Specified Receipt and Delivery Points.**

The Office of the Interconnection will post a list of available receipt and delivery points for each long-term Financial Transmission Rights Auction. Eligible receipt and delivery points in long-term Financial Transmission Rights Auctions shall be limited to the posted available hubs, Zones, aggregates, generators, and Interface Pricing Points.

## 7.9 Residual Auction Revenue Rights

(a) As necessary in each Planning Period PJM shall calculate Residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to section 7.4.2(h) of Schedule 1 of this Agreement. Residual Auction Revenue Rights calculated pursuant to this section shall be determined prior to the increase in transmission capability, including the return to service of existing transmission capability, that creates the Residual Auction Revenue Rights.

(b) Network Service Users and Qualifying Transmission Customers allocated stage 1 Auction Revenue Rights pursuant to Operating Agreement, Schedule 1, sections 7.4.2(a)-(c) ~~of Schedule 1 of this Agreement~~ that were subject to proration pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) ~~of Schedule 1 of this Agreement~~ shall be eligible to receive Residual Auction Revenue Rights. Residual Auction Revenue Rights shall be allocated pursuant to the following schedule:

(i) The initial allocation of Residual Auction Revenue Rights shall be to holders of prorated stage 1A Auction Revenue Rights in an amount equal to the difference between the allocated stage 1A Auction Revenue Rights and the requested stage 1A Auction Revenue Rights.

(ii) Residual Auction Revenue Rights remaining after an allocation made pursuant to Operating Agreement, Schedule 1, section 7.9(b)(i) ~~of Schedule 1 of this Agreement~~ shall be allocated to holders of prorated stage 1B Auction Revenue Rights in an amount equal to the difference between the allocated stage 1B Auction Revenue Rights and the requested stage 1B Auction Revenue Rights.

(iii) Residual Auction Revenue Rights remaining after allocations made pursuant to Operating Agreement, Schedule 1, sections 7.9(b)(i) and (ii) ~~of Schedule 1 of this Agreement~~ shall not be allocated to any entity and shall not be considered by the Office of the Interconnection in its administration of Operating Agreement, Schedule 1, Section 7 ~~of Schedule 1 of this Agreement~~.

(c) The sum of a Network Service User's and Qualifying Transmission Customer's Residual Auction Revenue Rights awarded pursuant to this section and its stage 1 and 2 Auction Revenue Rights awarded in an annual allocation shall not exceed the entity's peak load.

(d) Residual Auction Revenue Rights awarded pursuant to this section shall be effective on the first day of the month in a Planning Period the increase in transmission capability creating the Residual Auction Revenue Rights is included in the administration of Operating Agreement, Schedule 1, section 7.1.1(a) ~~of Schedule 1 of this Agreement~~.

(e) Residual Auction Revenue Rights awarded pursuant to this section shall be subject to Operating Agreement, Schedule 1, section 7.4.2(e) ~~of Schedule 1 of this Agreement~~.

(f) The value of Residual Auction Revenue Rights awarded pursuant to this section, determined as specified in Operating Agreement, Schedule 1, ~~Tariff, Attachment K-Appendix,~~ section 7.4.3(b), shall be positive. Negatively valued Residual Auction Revenue Rights will not be awarded.



Section(s) of the  
PJM Operating Agreement  
(Marked / Redline Format)

## 7.1A Long-Term Financial Transmission Rights Auctions.

### 7.1A.1 Auctions.

(i) Subsequent to each annual Financial Transmission Rights auction conducted pursuant to Operating Agreement, Schedule 1, sSection 7.1-of Schedule 1-of this Agreement, the Office of the Interconnection shall conduct a long-term Financial Transmission Rights auction for the three consecutive Planning Periods immediately subsequent to the Planning Period during which the long-term Financial Transmission Rights auction is conducted. PJMSettlement shall be the Counterparty to the purchases and sales of Financial Transmission Rights arising from such long-term Financial Transmission RightsFTR auctions, provided however, that PJMSettlement shall not be a contracting party to any subsequent bilateral transfers of Financial Transmission Rights between Market Participants. The conversion of an Auction Revenue Right to a Financial Transmission Right pursuant to this section 7 shall not constitute a purchase or sale transaction to which PJMSettlement is a contracting party.

(ii) The capacity offered for sale in long-term Financial Transmission Rights auctions shall be the residual system capability after the Annual Auction Revenue Rights allocations and the annual Financial Transmission Rights auction. In determining the residual capability the Office of the Interconnection shall assume that all Auction Revenue Rights allocated in the immediately prior annual Auction Revenue Rights allocation process are self-scheduled into Financial Transmission Rights, which shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. Additionally, residual Annual Auction Revenue Rights that become available through incremental capability created by future transmission upgrades as further described in the PJM Manuals shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. PJM shall calculate residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) for any increase in transmission capability created by future transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. Transmission upgrades modeled for this purpose also will be modeled in the subsequent long-term Financial Transmission Rights auction, as further detailed in the PJM Manuals. Residual Auction Revenue Rights created by an increase in transmission capability due to future transmission upgrades, as specified above, are determined only for modeling purposes and will not be allocated to market participants.

### 7.1A.2 Frequency and Timing.

The long-term Financial Transmission Rights auction process shall consist of three rounds. The first round shall be conducted by the Office of the Interconnection approximately 11 months prior to the start of the three Planning Period term covered by the relevant long-term Financial Transmission Rights auction. The second round shall be conducted approximately 3 months after the first round, and the third round shall be conducted approximately 3 months after the

second round. In each round 1/3 of total capacity available in the long-term Financial Transmission Rights auction shall be offered for sale. Eligible entities may submit bids to purchase and offers to sell Financial Transmission Rights at the start of the bidding period in each round. The bidding period shall be three Business Days ending at 5:00 p.m. on the last day. PJM performs the Financial Transmission Rights auction clearing analysis for each round and posts the auction results on the market user interface within five Business Days after the close of the bidding period for each round unless circumstances beyond PJM's control prevent PJM from meeting the applicable deadline. Under such circumstances, PJM will post the auction results at the earliest possible opportunity. If the Office of the Interconnection discovers an error in the results posted for a long-term Financial Transmission Rights auction, the Office of the Interconnection shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the Business Day immediately following the initial publication of the results for that auction. After this initial notification, if the Office of the Interconnection determines it is necessary to post modified auction results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the second Business Day following the initial publication of prices for that auction. Thereafter, the Office of the Interconnection must post the corrected prices by no later than 5:00 p.m. of the fourth calendar day following the initial publication of prices in the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

#### **7.1A.3 Products.**

- (i) The periods covered by long-term Financial Transmission Rights auctions shall be: (1) any single Planning Period within the three Planning Period term covered by the relevant auction; and (2) the three Planning Period term covered by the relevant auction.
- (ii) On-pPeak, off-peak and 24-hour Financial Transmission Right Obligations, shall be offered in long-term Financial Transmission Rights auctions; Financial Transmission Rights options shall not be offered.

#### **7.1A.4 Participation Eligibility.**

- (i) To participate in long-term Financial Transmission Rights auctions an entity shall be a PJM Member or a PJM Transmission Customer. Eligible entities may submit bids or offers in long-term Financial Transmission Rights auctions, provided they own Financial Transmission Rights offered for sale.

#### **7.1A.5 Specified Receipt and Delivery Points.**

The Office of the Interconnection will post a list of available receipt and delivery points for each long-term Financial Transmission Rights [aAuction](#). Eligible receipt and delivery points in long-term Financial Transmission Rights [aAuctions](#) shall be limited to the posted available hubs, Zones, aggregates, generators, and Interface Pricing Points.

## 7.9 Residual Auction Revenue Rights.

(a) As necessary in each Planning Period PJM shall calculate Residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to section 7.4.2(h) of Schedule 1 of this Agreement. Residual Auction Revenue Rights calculated pursuant to this section shall be determined prior to the increase in transmission capability, including the return to service of existing transmission capability, that creates the Residual Auction Revenue Rights.

(b) Network Service Users and Qualifying Transmission Customers allocated stage 1 Auction Revenue Rights pursuant to Operating Agreement, Schedule 1, sections 7.4.2(a)-(c) ~~of Schedule 1 of this Agreement~~ that were subject to proration pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) ~~of Schedule 1 of this Agreement~~ shall be eligible to receive Residual Auction Revenue Rights. Residual Auction Revenue Rights shall be allocated pursuant to the following schedule:

- (i) The initial allocation of Residual Auction Revenue Rights shall be to holders of prorated stage 1A Auction Revenue Rights in an amount equal to the difference between the allocated stage 1A Auction Revenue Rights and the requested stage 1A Auction Revenue Rights.
- (ii) Residual Auction Revenue Rights remaining after an allocation made pursuant to Operating Agreement, Schedule 1, section 7.9(b)(i) ~~of Schedule 1 of this Agreement~~ shall be allocated to holders of prorated stage 1B Auction Revenue Rights in an amount equal to the difference between the allocated stage 1B Auction Revenue Rights and the requested stage 1B Auction Revenue Rights.
- (iii) Residual Auction Revenue Rights remaining after allocations made pursuant to Operating Agreement, Schedule 1, sections 7.9(b)(i) and (ii) ~~of Schedule 1 of this Agreement~~ shall not be allocated to any entity and shall not be considered by the Office of the Interconnection in its administration of Operating Agreement, Schedule 1, ~~Section 7 of Schedule 1 of this Agreement~~.

(c) The sum of a Network Service User's and Qualifying Transmission Customer's Residual Auction Revenue Rights awarded pursuant to this section and its stage 1 and 2 Auction Revenue Rights awarded in an annual allocation shall not exceed the entity's peak load.

(d) Residual Auction Revenue Rights awarded pursuant to this section shall be effective on the first day of the month in a Planning Period the increase in transmission capability creating the Residual Auction Revenue Rights is included in the administration of Operating Agreement, Schedule 1, section 7.1.1(a) ~~of Schedule 1 of this Agreement~~.

(e) Residual Auction Revenue Rights awarded pursuant to this section shall be subject to Operating Agreement, Schedule 1, section 7.4.2(e) ~~of Schedule 1 of this Agreement~~.

(f) The value of Residual Auction Revenue Rights awarded pursuant to this section, determined as specified in Operating Agreement, Schedule 1, section 7.4.3(b) ~~of Schedule 1 of this Agreement~~, shall be positive. Negatively valued Residual Auction Revenue Rights will not be awarded.

# Attachment B

## PJM Open Access Transmission Tariff and PJM Operating Agreement

(Clean Format)

Section(s) of the  
PJM Open Access Transmission Tariff  
(Clean Format)

## **7.1A Long-Term Financial Transmission Rights Auctions.**

### **7.1A.1 Auctions.**

(i) Subsequent to each annual Financial Transmission Rights auction conducted pursuant to Operating Agreement, Schedule 1, section 7.1, the Office of the Interconnection shall conduct a long-term Financial Transmission Rights auction for the three consecutive Planning Periods immediately subsequent to the Planning Period during which the long-term Financial Transmission Rights auction is conducted. PJMSettlement shall be the Counterparty to the purchases and sales of Financial Transmission Rights arising from such long-term Financial Transmission Rights auctions, provided however, that PJMSettlement shall not be a contracting party to any subsequent bilateral transfers of Financial Transmission Rights between Market Participants. The conversion of an Auction Revenue Right to a Financial Transmission Right pursuant to this section 7 shall not constitute a purchase or sale transaction to which PJMSettlement is a contracting party.

(ii) The capacity offered for sale in long-term Financial Transmission Rights auctions shall be the residual system capability after the Annual Auction Revenue Rights allocations and the annual Financial Transmission Rights auction. In determining the residual capability the Office of the Interconnection shall assume that all Auction Revenue Rights allocated in the immediately prior annual Auction Revenue Rights allocation process are self-scheduled into Financial Transmission Rights, which shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. Additionally, residual Annual Auction Revenue Rights that become available through incremental capability created by future transmission upgrades as further described in the PJM Manuals shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. PJM shall calculate residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) for any increase in transmission capability created by future transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. Transmission upgrades modeled for this purpose also will be modeled in the subsequent long-term Financial Transmission Rights auction, as further detailed in the PJM Manuals. Residual Auction Revenue Rights created by an increase in transmission capability due to future transmission upgrades, as specified above, are determined only for modeling purposes and will not be allocated to market participants.

### **7.1A.2 Frequency and Timing.**

The long-term Financial Transmission Rights auction process shall consist of three rounds. The first round shall be conducted by the Office of the Interconnection approximately 11 months prior to the start of the three Planning Period term covered by the relevant long-term Financial Transmission Rights auction. The second round shall be conducted approximately 3 months after the first round, and the third round shall be conducted approximately 3 months after the



second round. In each round 1/3 of total capacity available in the long-term Financial Transmission Rights auction shall be offered for sale. Eligible entities may submit bids to purchase and offers to sell Financial Transmission Rights at the start of the bidding period in each round. The bidding period shall be three Business Days ending at 5:00 p.m. on the last day. PJM performs the Financial Transmission Rights auction clearing analysis for each round and posts the auction results on the market user interface within five Business Days after the close of the bidding period for each round unless circumstances beyond PJM's control prevent PJM from meeting the applicable deadline. Under such circumstances, PJM will post the auction results at the earliest possible opportunity. If the Office of the Interconnection discovers an error in the results posted for a long-term Financial Transmission Rights auction, the Office of the Interconnection shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the Business Day immediately following the initial publication of the results for that auction. After this initial notification, if the Office of the Interconnection determines it is necessary to post modified auction results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the second Business Day following the initial publication of prices for that auction. Thereafter, the Office of the Interconnection must post the corrected prices by no later than 5:00 p.m. of the fourth calendar day following the initial publication of prices in the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

#### **7.1A.3 Products.**

(i) The periods covered by long-term Financial Transmission Rights auctions shall be: (1) any single Planning Period within the three Planning Period term covered by the relevant auction; and (2) the three Planning Period term covered by the relevant auction.

(ii) On-peak, off-peak and 24-hour Financial Transmission Right Obligations, shall be offered in long-term Financial Transmission Rights auctions; Financial Transmission Rights options shall not be offered.

#### **7.1A.4 Participation Eligibility.**

(i) To participate in long-term Financial Transmission Rights auctions an entity shall be a PJM Member or a PJM Transmission Customer. Eligible entities may submit bids or offers in long-term Financial Transmission Rights auctions, provided they own Financial Transmission Rights offered for sale.

#### **7.1A.5 Specified Receipt and Delivery Points.**

The Office of the Interconnection will post a list of available receipt and delivery points for each long-term Financial Transmission Rights auction. Eligible receipt and delivery points in long-term Financial Transmission Rights auctions shall be limited to the posted available hubs, Zones, aggregates, generators, and Interface Pricing Points.

## **7.9 Residual Auction Revenue Rights**

(a) As necessary in each Planning Period PJM shall calculate Residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to section 7.4.2(h) of Schedule 1 of this Agreement. Residual Auction Revenue Rights calculated pursuant to this section shall be determined prior to the increase in transmission capability, including the return to service of existing transmission capability, that creates the Residual Auction Revenue Rights.

(b) Network Service Users and Qualifying Transmission Customers allocated stage 1 Auction Revenue Rights pursuant to Operating Agreement, Schedule 1, sections 7.4.2(a)-(c) that were subject to proration pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) shall be eligible to receive Residual Auction Revenue Rights. Residual Auction Revenue Rights shall be allocated pursuant to the following schedule:

(i) The initial allocation of Residual Auction Revenue Rights shall be to holders of prorated stage 1A Auction Revenue Rights in an amount equal to the difference between the allocated stage 1A Auction Revenue Rights and the requested stage 1A Auction Revenue Rights.

(ii) Residual Auction Revenue Rights remaining after an allocation made pursuant to Operating Agreement, Schedule 1, section 7.9(b)(i) shall be allocated to holders of prorated stage 1B Auction Revenue Rights in an amount equal to the difference between the allocated stage 1B Auction Revenue Rights and the requested stage 1B Auction Revenue Rights.

(iii) Residual Auction Revenue Rights remaining after allocations made pursuant to Operating Agreement, Schedule 1, sections 7.9(b)(i) and (ii) shall not be allocated to any entity and shall not be considered by the Office of the Interconnection in its administration of Operating Agreement, Schedule 1, section 7.

(c) The sum of a Network Service User's and Qualifying Transmission Customer's Residual Auction Revenue Rights awarded pursuant to this section and its stage 1 and 2 Auction Revenue Rights awarded in an annual allocation shall not exceed the entity's peak load.

(d) Residual Auction Revenue Rights awarded pursuant to this section shall be effective on the first day of the month in a Planning Period the increase in transmission capability creating the Residual Auction Revenue Rights is included in the administration of Operating Agreement, Schedule 1, section 7.1.1(a).

(e) Residual Auction Revenue Rights awarded pursuant to this section shall be subject to Operating Agreement, Schedule 1, section 7.4.2(e).

(f) The value of Residual Auction Revenue Rights awarded pursuant to this section, determined as specified in Operating Agreement, Schedule 1, section 7.4.3(b), shall be positive. Negatively valued Residual Auction Revenue Rights will not be awarded.

Section(s) of the  
PJM Operating Agreement  
(Clean Format)

## **7.1A Long-Term Financial Transmission Rights Auctions.**

### **7.1A.1 Auctions.**

(i) Subsequent to each annual Financial Transmission Rights auction conducted pursuant to Operating Agreement, Schedule 1, section 7.1, the Office of the Interconnection shall conduct a long-term Financial Transmission Rights auction for the three consecutive Planning Periods immediately subsequent to the Planning Period during which the long-term Financial Transmission Rights auction is conducted. PJMSettlement shall be the Counterparty to the purchases and sales of Financial Transmission Rights arising from such long-term Financial Transmission Rights auctions, provided however, that PJMSettlement shall not be a contracting party to any subsequent bilateral transfers of Financial Transmission Rights between Market Participants. The conversion of an Auction Revenue Right to a Financial Transmission Right pursuant to this section 7 shall not constitute a purchase or sale transaction to which PJMSettlement is a contracting party.

(ii) The capacity offered for sale in long-term Financial Transmission Rights auctions shall be the residual system capability after the Annual Auction Revenue Rights allocations and the annual Financial Transmission Rights auction. In determining the residual capability the Office of the Interconnection shall assume that all Auction Revenue Rights allocated in the immediately prior annual Auction Revenue Rights allocation process are self-scheduled into Financial Transmission Rights, which shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. Additionally, residual Annual Auction Revenue Rights that become available through incremental capability created by future transmission upgrades as further described in the PJM Manuals shall be modeled as fixed injections and withdrawals in the long-term Financial Transmission Rights auction. PJM shall calculate residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) for any increase in transmission capability created by future transmission upgrades that are in effect or planned to go into effect for the following Planning Period. The transmission upgrades to be modeled for this purpose shall only include those upgrades that, individually, or together, have 10% or more impact on the transmission congestion on an individual constraint or constraints with congestion of \$5 million or more affecting a common congestion path. Transmission upgrades modeled for this purpose also will be modeled in the subsequent long-term Financial Transmission Rights auction, as further detailed in the PJM Manuals. Residual Auction Revenue Rights created by an increase in transmission capability due to future transmission upgrades, as specified above, are determined only for modeling purposes and will not be allocated to market participants.

### **7.1A.2 Frequency and Timing.**

The long-term Financial Transmission Rights auction process shall consist of three rounds. The first round shall be conducted by the Office of the Interconnection approximately 11 months prior to the start of the three Planning Period term covered by the relevant long-term Financial Transmission Rights auction. The second round shall be conducted approximately 3 months after the first round, and the third round shall be conducted approximately 3 months after the

second round. In each round 1/3 of total capacity available in the long-term Financial Transmission Rights auction shall be offered for sale. Eligible entities may submit bids to purchase and offers to sell Financial Transmission Rights at the start of the bidding period in each round. The bidding period shall be three Business Days ending at 5:00 p.m. on the last day. PJM performs the Financial Transmission Rights auction clearing analysis for each round and posts the auction results on the market user interface within five Business Days after the close of the bidding period for each round unless circumstances beyond PJM's control prevent PJM from meeting the applicable deadline. Under such circumstances, PJM will post the auction results at the earliest possible opportunity. If the Office of the Interconnection discovers an error in the results posted for a long-term Financial Transmission Rights auction, the Office of the Interconnection shall notify Market Participants of the error as soon as possible after it is found, but in no event later than 5:00 p.m. of the Business Day immediately following the initial publication of the results for that auction. After this initial notification, if the Office of the Interconnection determines it is necessary to post modified auction results, it shall provide notification of its intent to do so, together with all available supporting documentation, by no later than 5:00 p.m. of the second Business Day following the initial publication of prices for that auction. Thereafter, the Office of the Interconnection must post the corrected prices by no later than 5:00 p.m. of the fourth calendar day following the initial publication of prices in the auction. Should any of the above deadlines pass without the associated action on the part of the Office of the Interconnection, the originally posted results will be considered final. Notwithstanding the foregoing, the deadlines set forth above shall not apply if the referenced auction results are under publicly noticed review by the FERC.

#### **7.1A.3 Products.**

- (i) The periods covered by long-term Financial Transmission Rights auctions shall be: (1) any single Planning Period within the three Planning Period term covered by the relevant auction; and (2) the three Planning Period term covered by the relevant auction.
- (ii) On-peak, off-peak and 24-hour Financial Transmission Right Obligations, shall be offered in long-term Financial Transmission Rights auctions; Financial Transmission Rights options shall not be offered.

#### **7.1A.4 Participation Eligibility.**

- (i) To participate in long-term Financial Transmission Rights auctions an entity shall be a PJM Member or a PJM Transmission Customer. Eligible entities may submit bids or offers in long-term Financial Transmission Rights auctions, provided they own Financial Transmission Rights offered for sale.

#### **7.1A.5 Specified Receipt and Delivery Points.**

The Office of the Interconnection will post a list of available receipt and delivery points for each long-term Financial Transmission Rights auction. Eligible receipt and delivery points in long-term Financial Transmission Rights auctions shall be limited to the posted available hubs, Zones, aggregates, generators, and Interface Pricing Points.

## **7.9 Residual Auction Revenue Rights.**

(a) As necessary in each Planning Period PJM shall calculate Residual Auction Revenue Rights for Auction Revenue Rights pathways that were prorated pursuant to section 7.4.2(h) of Schedule 1 of this Agreement. Residual Auction Revenue Rights calculated pursuant to this section shall be determined prior to the increase in transmission capability, including the return to service of existing transmission capability, that creates the Residual Auction Revenue Rights.

(b) Network Service Users and Qualifying Transmission Customers allocated stage 1 Auction Revenue Rights pursuant to Operating Agreement, Schedule 1, sections 7.4.2(a)-(c) that were subject to proration pursuant to Operating Agreement, Schedule 1, section 7.4.2(h) shall be eligible to receive Residual Auction Revenue Rights. Residual Auction Revenue Rights shall be allocated pursuant to the following schedule:

- (i) The initial allocation of Residual Auction Revenue Rights shall be to holders of prorated stage 1A Auction Revenue Rights in an amount equal to the difference between the allocated stage 1A Auction Revenue Rights and the requested stage 1A Auction Revenue Rights.
- (ii) Residual Auction Revenue Rights remaining after an allocation made pursuant to Operating Agreement, Schedule 1, section 7.9(b)(i) shall be allocated to holders of prorated stage 1B Auction Revenue Rights in an amount equal to the difference between the allocated stage 1B Auction Revenue Rights and the requested stage 1B Auction Revenue Rights.
- (iii) Residual Auction Revenue Rights remaining after allocations made pursuant to Operating Agreement, Schedule 1, sections 7.9(b)(i) and (ii) shall not be allocated to any entity and shall not be considered by the Office of the Interconnection in its administration of Operating Agreement, Schedule 1, section 7.

(c) The sum of a Network Service User's and Qualifying Transmission Customer's Residual Auction Revenue Rights awarded pursuant to this section and its stage 1 and 2 Auction Revenue Rights awarded in an annual allocation shall not exceed the entity's peak load.

(d) Residual Auction Revenue Rights awarded pursuant to this section shall be effective on the first day of the month in a Planning Period the increase in transmission capability creating the Residual Auction Revenue Rights is included in the administration of Operating Agreement, Schedule 1, section 7.1.1(a).

(e) Residual Auction Revenue Rights awarded pursuant to this section shall be subject to Operating Agreement, Schedule 1, section 7.4.2(e).

(f) The value of Residual Auction Revenue Rights awarded pursuant to this section, determined as specified in Operating Agreement, Schedule 1, section 7.4.3(b), shall be positive. Negatively valued Residual Auction Revenue Rights will not be awarded.