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

Pauline Foley
Associate General Counsel
T: (610) 666-8248 | F: (610)666-8211
pauline.foley@pjm.com

October 10, 2019

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

Re: PJM Interconnection, L.L.C, Docket No. ER20-83-000
PJM Compliance Filing in Docket No. EL15-79-000

Dear Secretary Bose:

Pursuant to the August 26, 2019 Opinion No. 566, Order on Initial Decision[1] of the Federal Energy Regulatory Commission ("Commission") in the above referenced proceeding, PJM Interconnection, L.L.C. submits this compliance filing with revisions to the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., Schedule 1 ("Operating Agreement" or "Schedule 1") and PJM's Open Access Transmission Tariff ("Tariff"), Attachment K -- Appendix.

I. BACKGROUND

Opinion No. 566 resolves the complaint of TranSource, LLC ("TranSource") against PJM regarding PJM's good-faith estimate of the cost of transmission upgrades that would be needed to grant TranSource's request for specified quantities of Incremental Auction Revenue Rights ("IARRs") between specified sources and sinks on the PJM transmission system. Following an evidentiary hearing before, and an Initial Decision by, Administrative Law Judge Philip C. Baten ("Presiding Judge"),[2] Opinion No. 566 found that PJM's estimates, as set forth in System Impact

[1] *TranSource, LLC v. PJM Interconnection, L.L.C.,* 168 FERC ¶ 61,119 (Aug. 26, 2019) ("Opinion No. 566").

[2] *TranSource, LLC v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 63,007 (Jan. 19, 2018) ("Initial Decision")

Studies, were reasonable, and prepared in accordance with the Tariff.[3] Opinion No. 566 also reversed the Presiding Judge's finding that "PJM's processing of the TranSource System Impact Studies was nontransparent and unduly discriminatory" but found that "PJM's Tariff omits material terms about how [PJM] processes System Impact Studies for Attachment EE upgrade requests."[4] The Commission therefore directed PJM to submit a compliance filing within 45 days to include a more detailed description of the practices it uses when conducting System Impact Studies for Attachment EE requests. Specifically, the Commission required that the Tariff contain "high level summaries" of:

> (1) a definition of the models used to evaluate IARR requests, including descriptions of the IARR market model and planning model; (2) a description of how the market limits or operative constraints in the market model are determined; and (3) a detailed explanation of how "simultaneous feasibility" is determined for IARR requests, including a description of how PJM conducts the "simultaneous feasibility test" and determines the "incremental capability required" for IARR requests to be granted, taking into account financial rights and physical constraints of the system.[5]

The Commission emphasized that it was "requiring only high level summaries be added to the Tariff, while specific details of the processes that do not significantly affect rates, terms and conditions of service need not be included, or may be included by reference."[6]

In compliance with Opinion No. 566, PJM hereby submits for filing proposed revisions to the Operating Agreement, Schedule 1,[7] sections 7.5 and 7.8 to add more detail in the form of "high

[3] Opinion No. 566 at P 108.

[4] *Id.*, at P. 2.

[5] *Id.*, at P 83.

[6] *Id.*, at P 84.

[7] For all compliance changes described herein, PJM is making identical changes to Operating Agreement, Schedule 1 and the corresponding sections of Tariff, Attachment K -- Appendix.

level summaries," as directed.[8] PJM requests an effective date of December 10, 2019, which is more than 60 days from the date of this filing.

II. PROPOSED REVISIONS

In compliance with Opinion No. 566, PJM proposes revisions to the Operating Agreement, Schedule 1,[9] as follows.

A. PJM's Simultaneous Feasibility Test (Schedule 1, section 7.5)

Consistent with the Commission's directives, PJM proposes to specify and more fully describe in the Operating Agreement the models used to evaluate IARR requests,[10] *i.e.*, the "market model" used for annual Auction Revenue Rights ("ARR") allocations, the IARR model, which is based on that ARR model, and the planning model used to determine the facilities needed to resolve the constraints identified in the IARR model. Specifically, PJM proposes to revise section 7.5(a) to more fully describe the market model used for ARR allocations as follows:

> (a)The Office of the Interconnection shall make the simultaneous feasibility determinations specified herein using appropriate powerflow models of contingency-constrained dispatch. Simultaneous feasibility ~~such~~ determinations shall take into account outages of both individual generation units and transmission facilities and shall be based on reasonable assumptions about the configuration and availability of transmission capability during the period covered by the auction that are not inconsistent with the determination of the deliverability of Generation Capacity Resources under the Reliability Assurance Agreement. The goal of the simultaneous feasibility determination shall be to ensure that there are sufficient revenues from Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights Obligations for the auction period under expected conditions and to ensure that there are sufficient revenues from the annual Financial Transmission Right Auction to satisfy all Auction Revenue Rights Obligations. To ensure revenue sufficiency, the powerflow model used for

[8] *Id.*, at PP 83, 84.

[9] Although the Commission directs PJM to revise its Tariff, the provisions relevant to the Opinion No. 566 are also contained in PJM's Operating Agreement, Schedule 1. Accordingly, as previously noted, the revisions submitted in compliance with the Opinion No. 566 are made to both the Operating Agreement, Schedule 1, sections 7.5 and 7.8 and the Tariff, Attachment K -- Appendix, sections 7.5 and 7.8.

[10] Opinion No. 566 at P 83.

> simultaneous feasibility determinations is a markets model that uses flows caused by sources and sinks of requested Auction Revenue Rights (including Incremental Auction Revenue Rights) or Financial Transmission Rights, as well as market limits (as described in section (b) below) to determine the capability available to accommodate financial rights that are simultaneously feasible. The markets model differs from both an operations model, which uses physical generators or load, and a planning model, which uses expected physical generators or load.

PJM also proposes a new section 7.5(b) to summarize how PJM determines a key element of the market model, *i.e.*, the market limits that, when exceeded by flows associated with existing and proposed ARRs, IARRs, and Financial Transmission Rights ("FTRs"), signal the need for system upgrades. New section 7.5(b) describes the purpose of market limits "to align expected Financial Transmission Rights total target allocations with expected congestion, and to ensure sufficient revenues are collected from the Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights' obligations." To account for historically observed sources of congestion, section 7.5(b) summarizes that:

> [M]arket limits may reflect (without limitation) such factors as requested and awarded Auction Revenue Rights, Incremental Auction Revenue Rights and Financial Transmission Rights, uncompensated powerflow, external flowgate entitlements or limits, transfer limits of the type appropriate for reactive interfaces, operational considerations, voltage limitations and/or closed loop interfaces.

Proposed section 7.5(b) adds that market limits also "are based on reasonable assumptions about the configuration and available transmission capability during the study period, including scheduled or expected transmission outages." In addition to appropriately describing the markets model, the added language also meets the Commission's directive that PJM describe how market limits "are determined."[11]

[11] *Id.*, at P 83.

Proposed section 7.5(b) also satisfies the directive to define or describe "operative constraints,"[12] explaining that "an operative constraint results when a market limit binds in the powerflow model and constrains the grant of Auction Revenue Rights, Incremental Auction Revenue Rights or Financial Transmission Rights."

PJM also proposes to add new sections 7.5(e) and (f) to specifically describe how a simultaneous feasibility test is performed for IARR requests. These sections further describe how PJM conducts the simultaneous feasibility test and determines the incremental capability required for an IARR request to be granted, including financial rights and physical constraints of the system. In addition, PJM describes both the IARR model and the 10 year stage 1A Auction Revenue Rights model used to evaluate IARR requests.

> (e) Simultaneous feasibility tests for Incremental Auction Revenue Rights requested pursuant to Operating Agreement, Schedule 1, section 7.8 and Tariff, Part VI, Subpart C, section 231 shall ensure that the request for the Incremental Auction Revenue Rights does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting conditions in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility using the following models derived from the markets model:
>
> (i) An Incremental Auction Revenue Rights model that is based on the existing allocation year with transmission outages removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). All existing stage 1 and stage 2 Auction Revenue Rights are modeled as fixed injection withdrawal pairs.
>
> (ii) A 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

[12] *Id.*, at P 84.

> (f) Simultaneous feasibility tests pursuant to this section (e) above utilize a transfer analysis to determine the flow impacts. The transfer analysis is performed by injecting at the source and withdrawing at the sink and measuring the impacts on the facilities. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

B. Elective Upgrade Auction Revenue Rights (Schedule 1, Section 7.8)

PJM also proposes revisions specific to an upgrade request evaluated by PJM for the feasibility and estimated costs of Customer-Funded Upgrades that would be needed to provide IARRs pursuant to the Operating Agreement, Schedule 1, section 7.8. Specifically, PJM proposes revisions to section 7.8(b) to reference the simultaneous feasibility test detailed in section 7.5 and describe in both 7.8(b) and (c) the preliminary assessment used to assess the simultaneous feasibility of the requested IARRs and outstanding ARRs. Consistent with Opinion No. 566,[13] the revised sections provide cross-references to the PJM Manuals and additional guidance materials posted on the website, such as the PJM June 2017 Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis,"[14] (*i.e.*, the "Whitepaper" noted frequently in Opinion No. 566) for additional detail regarding PJM's process.

PJM also proposes new subsection (c)(i) to describe the salient differences between the markets model used for annual ARR allocations, and the markets model used for IARR determinations. In particular, the revised subsection explains that the IARR markets model "uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed"

[13] *Id.*, ("requiring only high level summaries be added to the Tariff, while specific details of the processes that do not significantly affect rates, terms and conditions of service need not be included, or may be included by reference.").

[14] See PJM website at https://pjm.com/~/media/markets-ops/ftr/pjm-iarr-model-development-and-analysis.ashx

and "Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model." Revised section 7.8(c) provides that if the IARR model finds that flows from the requested IARRs "cause facilities to be limited or increase the market flow on already limited facilities . . . increased system capability will be required in order for [PJM] to grant the Incremental Auction Revenue Rights request." That section adds that PJM "uses a planning model" to determine the "upgrades required for the Incremental Auction Revenue Rights request [which] must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades."

In full, revised sections 7.8(b) and 7.8(c) provide further detail on the IARR model (including simultaneous feasibility analysis, as directed by Opinion No. 566) and the planning model used for IARR requests pursuant to this section as follows:

> (b) The Office of the Interconnection shall assess the simultaneous feasibility of the requested Incremental Auction Revenue Rights and the outstanding Auction Revenue Rights against the existing base system Auction Revenue Rights capability and stage 1A Auction Revenue Right capability for the future 10 year period pursuant to Operating Agreement, Schedule 1, section 7.5. ~~and based on t~~This preliminary assessment will determine the incremental flow impact necessary on facilities.
>
> (c) The incremental flow impact represents the incremental capability required on a facility to ensure the requested Incremental Auction Revenue Rights can be made feasible. This required capability is used ~~it shall conduct studies~~to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."
>
> > (i) For Incremental Auction Revenue Rights requests, the Office of the Interconnection shall use an Incremental Auction Revenue Rights model to perform the simultaneous feasibility test detailed in Operating Agreement, Schedule 1, section 7.5. The Incremental

Auction Revenue Rights model shall consist of an Incremental Auction Revenue Rights model and the 10 year stage 1A Auction Revenue Rights model. An Incremental Auction Revenue Rights model uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model because the transmission is assumed to be in service for purposes of this model.

(ii) If the incremental market flows created by the Incremental Auction Revenue Rights request cause facilities to be limited or increase the market flow on already limited facilities in either the Incremental Auction Revenue Rights model or the 10 year stage 1A Auction Revenue Rights model, increased system capability will be required in order for the Office of the Interconnection to grant the Incremental Auction Revenue Rights request. This required incremental capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights (including any pro-rated but restored Auction Revenue Rights requests) are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(iii) In addition to the Incremental Auction Revenue Rights model, the Office of the Interconnection uses a planning model that consists of the Regional Transmission Expansion Plan model used by the Office of the Interconnection to study system needs and proposed projects five years forward combined with modeled in-service and planned generation and forecasted load. The planning model includes transmission system upgrades that are ahead of the proposed Incremental Auction Revenue Rights request in the New Services Queue. The upgrades required for the Incremental Auction Revenue Rights request must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades, including upgrades related to a Supplemental Project with a projected in-service date later than the applicable planning case year.

C. Ministerial Clean Up

Given the addition of new provisions to Schedule 1, sections 7.5 and 7.8 as a result of this compliance filing, PJM is required to revise the numbering of the following subsections. In section 7.5, PJM proposes to replace the reference to subsections 7.5(b) with 7.5(c), 7.5(c) with 7.5(d), and delete section 7.5(d). In section 7.8, PJM proposes to add a new subsection 7.8(c) and replace the reference to subsections 7.8(c) with 7.8(d), 7.8(d) with 7.8(e) and 7.8(e) with 7.8(f). PJM also proposes similar revisions to Tariff, Attachment K -- Appendix.

III. CORRESPONDENCE AND COMMUNICATIONS

Correspondence and communications with respect to this filing should be sent to, and the parties request the Secretary to include on the official service list, the following:

Craig Glazer
Vice President – Federal Government Policy
PJM Interconnection, L.L.C.
1200 G Street, N.W., Suite 600
Washington, D.C. 20005
Ph: (202) 423-4743
craig.glazer@pjm.com

Pauline Foley
Associate General Counsel
PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403
Ph: (610) 666-8248
pauline.foley@pjm.com

Paul M. Flynn
Wright & Talisman, P.C.
1200 G Street, N.W., Suite 600
Washington, D.C. 20005
Ph: (202) 393-1200
Fax: (202) 393-1240
flynn@wrightlaw.com

IV. CONTENTS OF THIS FILING

The following is a list of documents submitted with this filing:

1. This transmittal letter;

2. Attachment A – Revisions to Operating Agreement, Schedule 1, sections 7.5 and 7.8 and PJM Tariff, Attachment K, sections 7.5 and 7.8(redlined form);

3. Attachment B – Revisions to Operating Agreement, Schedule 1, sections 7.5 and 7.8 and PJM Tariff, Attachment K, sections 7.5 and 7.8 (clean form);

V. EFFECTIVE DATE

PJM respectfully requests that the proposed Operating Agreement and Tariff revisions submitted herewith in compliance with Opinion No. 566 become effective on December 10, 2019, which is more than 60 days from the date of this is filing.

VI. REQUEST FOR WAIVER

PJM is making this filing in compliance with the directives in Opinion No. 566. By making this filing in compliance with Opinion No. 566, PJM understands that it has hereby satisfied any of the Commission filing requirements that might apply. Should any of the Commission regulations (including filing regulations) or requirements not addressed by PJM be found to apply, PJM respectfully requests waiver of any such regulation or requirement.

VII. SERVICE

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the Commission's regulations,[15] 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[16] alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will

[15] *See* 18C.F.R §§ 35.2(e) and 385.2010(f)(3) (2019).

[16] PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.

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. PJM also includes a Certificate of Service certifying service on the official service list compiled by the Commission's Secretary in this proceeding

VIII. CONCLUSION

For all of the foregoing reasons, PJM respectfully requests that the Commission accept the proposed revisions to the Operating Agreement, Schedule 1, sections 7.5 and 7.8 and PJM Tariff, Attachment K - Appendix, sections 7.5 and 7.8.

Respectfully submitted,

By: _____

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

Pauline Foley
Associate General Counsel
PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403
Ph: (610) 666-8248
Fax: (610) 666-8211
pauline.foley@pjm.com

Paul M. Flynn
Wright & Talisman, P.C.
1200 G Street, N.W., Suite 600
Washington, D.C. 20005
Ph: (202) 393-1200
Fax: (202) 393-1240
flynn@wrightlaw.com

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

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document on those parties on the official Service List compiled by the Secretary in these proceedings.

Dated at Audubon, Pennsylvania this 10th day of October, 2019.

Pauline Foley
Associate General Counsel
PJM Interconnection, L.L.C.
2750 Monroe Blvd.
Audubon, PA 19403
Ph: (610) 666-8248
pauline.foley@pjm.com

Attachment A

Revisions to the PJM Operating Agreement
(Marked / Redline Format)

7.5 Simultaneous Feasibility.

(a) The Office of the Interconnection shall make the simultaneous feasibility determinations specified herein using appropriate powerflow models of contingency-constrained dispatch. ~~Such~~ Simultaneous feasibility determinations shall take into account outages of both individual generation units and transmission facilities and shall be based on reasonable assumptions about the configuration and availability of transmission capability during the period covered by the auction that are not inconsistent with the determination of the deliverability of Generation Capacity Resources under the Reliability Assurance Agreement. The goal of the simultaneous feasibility determination shall be to ensure that there are sufficient revenues from Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights Obligations for the auction period under expected conditions and to ensure that there are sufficient revenues from the annual Financial Transmission Right Auction to satisfy all Auction Revenue Rights Obligations. To ensure revenue sufficiency, the powerflow model used for simultaneous feasibility determinations is a markets model that uses flows caused by sources and sinks of requested Auction Revenue Rights (including Incremental Auction Revenue Rights) or Financial Transmission Rights, as well as market limits (as described in section (b) below) to determine the capability available to accommodate financial rights that are simultaneously feasible. The markets model differs from both an operations model, which uses physical generators or load, and a planning model, which uses expected physical generators or load.

(b) Simultaneous feasibility determinations pursuant to this section utilize applicable market limits. Market limits may differ from physical facility ratings to reflect expected market capability and to align expected Financial Transmission Rights total target allocations with expected congestion, and to ensure sufficient revenues are collected from the Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights obligations. To account for historical market impacts, market limits may reflect (without limitation) such factors as requested and awarded Auction Revenue Rights, Incremental Auction Revenue Rights and Financial Transmission Rights, uncompensated powerflow, external flowgate entitlements or limits, transfer limits of the type appropriate for reactive interfaces, operational considerations, voltage limitations and/or closed loop interfaces. Market limits also are based on reasonable assumptions about the configuration and availability of transmission capability during the study period, including (without limitation) scheduled or expected transmission outages. The market limits are applied to facilities modeled in an Auction Revenue Rights allocation, Financial Transmission Rights auction or Incremental Auction Revenue Rights study and may result in operative constraints that establish different limits than physical (e.g., thermal or voltage) ratings. As used here, an operative constraint results when a market limit binds in the powerflow model and constrains the grant of Auction Revenue Rights, Incremental Auction Revenue Rights or Financial Transmission Rights.

(c~~b~~) On an annual basis the Office of the Interconnection shall conduct a simultaneous feasibility test for stage 1A Auction Revenue Rights, which shall assess the simultaneous feasibility for each year remaining in the term of the right(s). This test shall be based on the Auction Revenue Rights required to meet Zonal Base Load requirements. The Office of the Interconnection shall apply a zonal load growth rate to the simultaneous feasibility test for the

ten year term of the stage 1A Auction Revenue Rights to reflect load growth as estimated by the Office of the Interconnection.

(dc) Simultaneous feasibility tests for new stage 1 resource requests made pursuant to Section 7.6 of Schedule 1 of this Agreement shall ensure that the request for a new base resource does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting condition in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility under the following conditions:

(i) Based on next allocation year with all existing stage 1 and stage 2 Auction Revenue Rights modeled as fixed injection-withdrawal pairs.

(ii) Based on 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(ed) Simultaneous feasibility tests ~~conducted pursuant to this section shall be subject to Incremental Auction Revenue Rights granted pursuant to Section 7.8 of Schedule 1 of this Agreement and Section 231 of the PJM Tariff.~~for Incremental Auction Revenue Rights requested pursuant to Operating Agreement, Schedule 1, section 7.8 and Tariff, Part VI, Subpart C, section 231 shall ensure that the request for the Incremental Auction Revenue Rights does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting conditions in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility using the following models derived from the markets model:

(i) An Incremental Auction Revenue Rights model that is based on the existing allocation year with transmission outages removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). All existing stage 1 and stage 2 Auction Revenue Rights are modeled as fixed injection withdrawal pairs.

(ii) A 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(f) Simultaneous feasibility tests pursuant to section (e) above utilize a transfer analysis to determine the flow impacts. The transfer analysis is performed by injecting at the source and withdrawing at the sink and measuring the impacts on the facilities. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

7.8 Elective Upgrade Auction Revenue Rights.

(a) In addition to any Incremental Auction Revenue Rights established under the PJM Tariff, any party may elect to fully fund Network Upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, provided that Incremental Auction Revenue Rights granted pursuant to this section shall be simultaneously feasible with outstanding Auction Revenue Rights, which shall include stage 1 and stage 2 Auction Revenue Rights, and against stage 1A Auction Revenue Right capability for the future 10 year period as determined by the Office of the Interconnection pursuant to Section 7.8(b) of Schedule 1 of this Agreement. A request made pursuant to this section shall specify a source, sink and megawatt amount.

(b) The Office of the Interconnection shall assess the simultaneous feasibility of the requested Incremental Auction Revenue Rights and the outstanding Auction Revenue Rights against the existing base system Auction Revenue Right capability and stage 1A Auction Revenue Right capability for the future 10 year period ~~and based on~~ pursuant to Operating Agreement, Schedule 1, section 7.5. ~~t~~This preliminary assessment ~~it shall conduct studies to~~ will determine the incremental flow impact necessary on facilities.

(c) The incremental flow impact represents the incremental capability required on a facility to ensure the requested Incremental Auction Revenue Rights can be made feasible. This required capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(i) For Incremental Auction Revenue Rights requests, the Office of the Interconnection shall use an Incremental Auction Revenue Rights model to perform the simultaneous feasibility test detailed in Operating Agreement, Schedule 1, section 7.5. The Incremental Auction Revenue Rights model shall consist of an Incremental Auction Revenue Rights model and the 10 year stage 1A Auction Revenue Rights model. An Incremental Auction Revenue Rights model uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model because the transmission is assumed to be in service for purposes of this model.

(ii) If the incremental market flows created by the Incremental Auction Revenue Rights request cause facilities to be limited or increase the market flow on already limited facilities in either the Incremental Auction

Revenue Rights model or the 10 year stage 1A Auction Revenue Rights model, increased system capability will be required in order for the Office of the Interconnection to grant the Incremental Auction Revenue Rights request. This required incremental capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights (including any pro-rated but restored Auction Revenue Rights requests) are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(iii) In addition to the Incremental Auction Revenue Rights model, the Office of the Interconnection uses a planning model that consists of the Regional Transmission Expansion Plan model used by the Office of the Interconnection to study system needs and proposed projects five years forward combined with modeled in-service and planned generation and forecasted load. The planning model includes transmission system upgrades that are ahead of the proposed Incremental Auction Revenue Rights request in the New Services Queue. The upgrades required for the Incremental Auction Revenue Rights request must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades, including upgrades related to a Supplemental Project with a projected in-service date later than the applicable planning case year.

(dc) If a party elects to fund upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, no less than forty-five (45) days prior to the in-service date of the relevant upgrades, as determined by the Office of the Interconnection, the Office of the Interconnection shall notify the party of the actual amount of Incremental Auction Revenue Rights that will be granted to the party based on the allocation process established pursuant to Section 231.1 of Part VI of the Tariff.

(ed) Incremental Auction Revenue Rights established pursuant to this section shall be effective for the lesser of thirty (30) years, or the life of the project, from the in-service date of the Network Upgrade(s). At any time during this thirty-year period (or the life of the Network Upgrade, whichever is less), in lieu of continuing this thirty-year Auction Revenue Right, the owner of the right shall have a one-time choice to switch to an optional mechanism, whereby, on an annual basis, it will have the choice to request an Auction Revenue Right during the annual Auction Revenue Rights allocation process between the same source and sink, provided the Auction Revenue Right is simultaneously feasible. A party that is granted Incremental Auction Revenue Rights pursuant to this section may return such rights at any time, provided that the Office of the Interconnection determines that it can simultaneously accommodate all remaining outstanding Auction Revenue Rights following the return of such Auction Revenue Rights. In the event a party returns Incremental Auction Revenue Rights, it shall retain no further rights regarding such Incremental Auction Revenue Rights.

(fe) No Incremental Auction Revenue Rights shall be granted pursuant to this section if the costs associated with funding the associated Network Upgrades are included in the rate base of a public utility and on which a regulated return is earned.

7.5 Simultaneous Feasibility.

(a) The Office of the Interconnection shall make the simultaneous feasibility determinations specified herein using appropriate powerflow models of contingency-constrained dispatch. ~~Such~~ Simultaneous feasibility determinations shall take into account outages of both individual generation units and transmission facilities and shall be based on reasonable assumptions about the configuration and availability of transmission capability during the period covered by the auction that are not inconsistent with the determination of the deliverability of Generation Capacity Resources under the Reliability Assurance Agreement. The goal of the simultaneous feasibility determination shall be to ensure that there are sufficient revenues from Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights Obligations for the auction period under expected conditions and to ensure that there are sufficient revenues from the annual Financial Transmission Right Auction to satisfy all Auction Revenue Rights Obligations. To ensure revenue sufficiency, the powerflow model used for simultaneous feasibility determinations is a markets model that uses flows caused by sources and sinks of requested Auction Revenue Rights (including Incremental Auction Revenue Rights) or Financial Transmission Rights, as well as market limits (as described in section (b) below) to determine the capability available to accommodate financial rights that are simultaneously feasible. The markets model differs from both an operations model, which uses physical generators or load, and a planning model, which uses expected physical generators or load.

(b) Simultaneous feasibility determinations pursuant to this section utilize applicable market limits. Market limits may differ from physical facility ratings to reflect expected market capability and to align expected Financial Transmission Rights total target allocations with expected congestion, and to ensure sufficient revenues are collected from the Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights obligations. To account for historical market impacts, market limits may reflect (without limitation) such factors as requested and awarded Auction Revenue Rights, Incremental Auction Revenue Rights and Financial Transmission Rights, uncompensated powerflow, external flowgate entitlements or limits, transfer limits of the type appropriate for reactive interfaces, operational considerations, voltage limitations and/or closed loop interfaces. Market limits also are based on reasonable assumptions about the configuration and availability of transmission capability during the study period, including (without limitation) scheduled or expected transmission outages. The market limits are applied to facilities modeled in an Auction Revenue Rights allocation, Financial Transmission Rights auction or Incremental Auction Revenue Rights study and may result in operative constraints that establish different limits than physical (e.g., thermal or voltage) ratings. As used here, an operative constraint results when a market limit binds in the powerflow model and constrains the grant of Auction Revenue Rights, Incremental Auction Revenue Rights or Financial Transmission Rights.

(c~~b~~) On an annual basis the Office of the Interconnection shall conduct a simultaneous feasibility test for stage 1A Auction Revenue Rights, which shall assess the simultaneous feasibility for each year remaining in the term of the right(s). This test shall be based on the Auction Revenue Rights required to meet Zonal Base Load requirements. The Office of the Interconnection shall apply a zonal load growth rate to the simultaneous feasibility test for the ten year term of the stage 1A Auction Revenue Rights to reflect load growth as estimated by the

Office of the Interconnection.

(d~~c~~) Simultaneous feasibility tests for new stage 1 resource requests made pursuant to Section 7.6 of Schedule 1 of this Agreement shall ensure that the request for a new base resource does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting condition in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility under the following conditions:

(i) Based on next allocation year with all existing stage 1 and stage 2 Auction Revenue Rights modeled as fixed injection-withdrawal pairs.

(ii) Based on 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(e~~d~~) Simultaneous feasibility tests ~~conducted pursuant to this section shall be subject to Incremental Auction Revenue Rights granted pursuant to Section 7.8 of Schedule 1 of this Agreement and Section 231 of the PJM Tariff.~~for Incremental Auction Revenue Rights requested pursuant to Operating Agreement, Schedule 1, section 7.8 and Tariff, Part VI, Subpart C, section 231 shall ensure that the request for the Incremental Auction Revenue Rights does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting conditions in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility using the following models derived from the markets model:

(i) An Incremental Auction Revenue Rights model that is based on the existing allocation year with transmission outages removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). All existing stage 1 and stage 2 Auction Revenue Rights are modeled as fixed injection withdrawal pairs.

(ii) A 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(f) Simultaneous feasibility tests pursuant to section (e) above utilize a transfer analysis to determine the flow impacts. The transfer analysis is performed by injecting at the source and withdrawing at the sink and measuring the impacts on the facilities. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

7.8 Elective Upgrade Auction Revenue Rights.

(a) In addition to any Incremental Auction Revenue Rights established under the PJM Tariff, any party may elect to fully fund Network Upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, provided that Incremental Auction Revenue Rights granted pursuant to this section shall be simultaneously feasible with outstanding Auction Revenue Rights, which shall include stage 1 and stage 2 Auction Revenue Rights, and against stage 1A Auction Revenue Right capability for the future 10 year period, as determined by the Office of the Interconnection pursuant to Section 7.8(b) of Schedule 1 of this Agreement. A request made pursuant to this section shall specify a source, sink and megawatt amount.

(b) The Office of the Interconnection shall assess the simultaneous feasibility of the requested Incremental Auction Revenue Rights and the outstanding Auction Revenue Rights against the existing base system Auction Revenue Right capability and stage 1A Auction Revenue Right capability for the future 10 year period ~~and based on~~ pursuant to Operating Agreement, Schedule 1, section 7.5. T~~t~~his preliminary assessment ~~it shall conduct studies to~~ will determine the incremental flow impact necessary on facilities.

(c) The incremental flow impact represents the incremental capability required on a facility to ensure the requested Incremental Auction Revenue Rights can be made feasible. This required capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(i) For Incremental Auction Revenue Rights requests, the Office of the Interconnection shall use an Incremental Auction Revenue Rights model to perform the simultaneous feasibility test detailed in Operating Agreement, Schedule 1, section 7.5. The Incremental Auction Revenue Rights model shall consist of an Incremental Auction Revenue Rights model and the 10 year stage 1A Auction Revenue Rights model. An Incremental Auction Revenue Rights model uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model because the transmission is assumed to be in service for purposes of this model.

(ii) If the incremental market flows created by the Incremental Auction Revenue Rights request cause facilities to be limited or increase the market flow on already limited facilities in either the Incremental Auction Revenue Rights model or the 10 year stage 1A Auction Revenue Rights model, increased system capability will be required in order for the Office of the Interconnection to grant the Incremental

Auction Revenue Rights request. This required incremental capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights (including any pro-rated but restored Auction Revenue Rights requests) are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(iii) In addition to the Incremental Auction Revenue Rights model, the Office of the Interconnection uses a planning model that consists of the Regional Transmission Expansion Plan model used by the Office of the Interconnection to study system needs and proposed projects five years forward combined with modeled in-service and planned generation and forecasted load. The planning model includes transmission system upgrades that are ahead of the proposed Incremental Auction Revenue Rights request in the New Services Queue. The upgrades required for the Incremental Auction Revenue Rights request must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades, including upgrades related to a Supplemental Project with a projected in-service date later than the applicable planning case year.

(dc) If a party elects to fund upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, no less than forty-five (45) days prior to the in-service date of the relevant upgrades, as determined by the Office of the Interconnection, the Office of the Interconnection shall notify the party of the actual amount of Incremental Auction Revenue Rights that will be granted to the party based on the allocation process established pursuant to Section 231 of Part VI of the Tariff.

(ed) Incremental Auction Revenue Rights established pursuant to this section shall be effective for the lesser of thirty (30) years, or the life of the project, from the in-service date of the Network Upgrade(s). At any time during this thirty-year period (or the life of the Network Upgrade whichever is less), in lieu of continuing this thirty-year Auction Revenue Right, the owner of the right shall have a one-time choice to switch to an optional mechanism, whereby, on an annual basis, it will have the choice to request an Auction Revenue Right during the annual Auction Revenue Rights allocation process between the same source and sink, provided the Auction Revenue Right is simultaneously feasible. A party that is granted Incremental Auction Revenue Rights pursuant to this section may return such rights at any time, provided that the Office of the Interconnection determines that it can simultaneously accommodate all remaining outstanding Auction Revenue Rights following the return of such Auction Revenue Rights. In the event a party returns Incremental Auction Revenue Rights, it shall retain no further rights regarding such Incremental Auction Revenue Rights.

(fe) No Incremental Auction Revenue Rights shall be granted pursuant to this section if the costs associated with funding the associated Network Upgrades are included in the rate base of a public utility and on which a regulated return is earned.

Attachment B

Revisions to the PJM Operating Agreement
(Clean Format)

7.5 Simultaneous Feasibility.

(a) The Office of the Interconnection shall make the simultaneous feasibility determinations specified herein using appropriate powerflow models of contingency-constrained dispatch. Simultaneous feasibility determinations shall take into account outages of both individual generation units and transmission facilities and shall be based on reasonable assumptions about the configuration and availability of transmission capability during the period covered by the auction that are not inconsistent with the determination of the deliverability of Generation Capacity Resources under the Reliability Assurance Agreement. The goal of the simultaneous feasibility determination shall be to ensure that there are sufficient revenues from Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights Obligations for the auction period under expected conditions and to ensure that there are sufficient revenues from the annual Financial Transmission Right Auction to satisfy all Auction Revenue Rights Obligations. To ensure revenue sufficiency, the powerflow model used for simultaneous feasibility determinations is a markets model that uses flows caused by sources and sinks of requested Auction Revenue Rights (including Incremental Auction Revenue Rights) or Financial Transmission Rights, as well as market limits (as described in section (b) below) to determine the capability available to accommodate financial rights that are simultaneously feasible. The markets model differs from both an operations model, which uses physical generators or load, and a planning model, which uses expected physical generators or load.

(b) Simultaneous feasibility determinations pursuant to this section utilize applicable market limits. Market limits may differ from physical facility ratings to reflect expected market capability and to align expected Financial Transmission Rights total target allocations with expected congestion, and to ensure sufficient revenues are collected from the Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights obligations. To account for historical market impacts, market limits may reflect (without limitation) such factors as requested and awarded Auction Revenue Rights, Incremental Auction Revenue Rights and Financial Transmission Rights, uncompensated powerflow, external flowgate entitlements or limits, transfer limits of the type appropriate for reactive interfaces, operational considerations, voltage limitations and/or closed loop interfaces. Market limits also are based on reasonable assumptions about the configuration and availability of transmission capability during the study period, including (without limitation) scheduled or expected transmission outages. The market limits are applied to facilities modeled in an Auction Revenue Rights allocation, Financial Transmission Rights auction or Incremental Auction Revenue Rights study and may result in operative constraints that establish different limits than physical (e.g., thermal or voltage) ratings. As used here, an operative constraint results when a market limit binds in the powerflow model and constrains the grant of Auction Revenue Rights, Incremental Auction Revenue Rights or Financial Transmission Rights.

(c) On an annual basis the Office of the Interconnection shall conduct a simultaneous feasibility test for stage 1A Auction Revenue Rights, which shall assess the simultaneous feasibility for each year remaining in the term of the right(s). This test shall be based on the Auction Revenue Rights required to meet Zonal Base Load requirements. The Office of the Interconnection shall apply a zonal load growth rate to the simultaneous feasibility test for the

ten year term of the stage 1A Auction Revenue Rights to reflect load growth as estimated by the Office of the Interconnection.

(d) Simultaneous feasibility tests for new stage 1 resource requests made pursuant to Section 7.6 of Schedule 1 of this Agreement shall ensure that the request for a new base resource does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting condition in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility under the following conditions:

(i) Based on next allocation year with all existing stage 1 and stage 2 Auction Revenue Rights modeled as fixed injection-withdrawal pairs.

(ii) Based on 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(e) Simultaneous feasibility tests for Incremental Auction Revenue Rights requested pursuant to Operating Agreement, Schedule 1, section 7.8 and Tariff, Part VI, Subpart C, section 231 shall ensure that the request for the Incremental Auction Revenue Rights does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting conditions in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility using the following models derived from the markets model:

(i) An Incremental Auction Revenue Rights model that is based on the existing allocation year with transmission outages removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). All existing stage 1 and stage 2 Auction Revenue Rights are modeled as fixed injection withdrawal pairs.

(ii) A 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(f) Simultaneous feasibility tests pursuant to section (e) above utilize a transfer analysis to determine the flow impacts. The transfer analysis is performed by injecting at the source and withdrawing at the sink and measuring the impacts on the facilities. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

7.8 Elective Upgrade Auction Revenue Rights.

(a) In addition to any Incremental Auction Revenue Rights established under the PJM Tariff, any party may elect to fully fund Network Upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, provided that Incremental Auction Revenue Rights granted pursuant to this section shall be simultaneously feasible with outstanding Auction Revenue Rights, which shall include stage 1 and stage 2 Auction Revenue Rights, and against stage 1A Auction Revenue Right capability for the future 10 year period as determined by the Office of the Interconnection pursuant to Section 7.8(b) of Schedule 1 of this Agreement. A request made pursuant to this section shall specify a source, sink and megawatt amount.

(b) The Office of the Interconnection shall assess the simultaneous feasibility of the requested Incremental Auction Revenue Rights and the outstanding Auction Revenue Rights against the existing base system Auction Revenue Right capability and stage 1A Auction Revenue Right capability for the future 10 year period pursuant to Operating Agreement, Schedule 1, section 7.5. This preliminary assessment will determine the incremental flow impact necessary on facilities.

(c) The incremental flow impact represents the incremental capability required on a facility to ensure the requested Incremental Auction Revenue Rights can be made feasible. This required capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(i) For Incremental Auction Revenue Rights requests, the Office of the Interconnection shall use an Incremental Auction Revenue Rights model to perform the simultaneous feasibility test detailed in Operating Agreement, Schedule 1, section 7.5. The Incremental Auction Revenue Rights model shall consist of an Incremental Auction Revenue Rights model and the 10 year stage 1A Auction Revenue Rights model. An Incremental Auction Revenue Rights model uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model because the transmission is assumed to be in service for purposes of this model.

(ii) If the incremental market flows created by the Incremental Auction Revenue Rights request cause facilities to be limited or increase the market flow on already limited facilities in either the Incremental Auction

Revenue Rights model or the 10 year stage 1A Auction Revenue Rights model, increased system capability will be required in order for the Office of the Interconnection to grant the Incremental Auction Revenue Rights request. This required incremental capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights (including any pro-rated but restored Auction Revenue Rights requests) are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(iii) In addition to the Incremental Auction Revenue Rights model, the Office of the Interconnection uses a planning model that consists of the Regional Transmission Expansion Plan model used by the Office of the Interconnection to study system needs and proposed projects five years forward combined with modeled in-service and planned generation and forecasted load. The planning model includes transmission system upgrades that are ahead of the proposed Incremental Auction Revenue Rights request in the New Services Queue. The upgrades required for the Incremental Auction Revenue Rights request must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades, including upgrades related to a Supplemental Project with a projected in-service date later than the applicable planning case year.

(d) If a party elects to fund upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, no less than forty-five (45) days prior to the in-service date of the relevant upgrades, as determined by the Office of the Interconnection, the Office of the Interconnection shall notify the party of the actual amount of Incremental Auction Revenue Rights that will be granted to the party based on the allocation process established pursuant to Section 231.1 of Part VI of the Tariff.

(e) Incremental Auction Revenue Rights established pursuant to this section shall be effective for the lesser of thirty (30) years, or the life of the project, from the in-service date of the Network Upgrade(s). At any time during this thirty-year period (or the life of the Network Upgrade, whichever is less), in lieu of continuing this thirty-year Auction Revenue Right, the owner of the right shall have a one-time choice to switch to an optional mechanism, whereby, on an annual basis, it will have the choice to request an Auction Revenue Right during the annual Auction Revenue Rights allocation process between the same source and sink, provided the Auction Revenue Right is simultaneously feasible. A party that is granted Incremental Auction Revenue Rights pursuant to this section may return such rights at any time, provided that the Office of the Interconnection determines that it can simultaneously accommodate all remaining outstanding Auction Revenue Rights following the return of such Auction Revenue Rights. In the event a party returns Incremental Auction Revenue Rights, it shall retain no further rights regarding such Incremental Auction Revenue Rights.

(f) No Incremental Auction Revenue Rights shall be granted pursuant to this section if the costs associated with funding the associated Network Upgrades are included in the rate base of a public utility and on which a regulated return is earned.

7.5 Simultaneous Feasibility.

(a) The Office of the Interconnection shall make the simultaneous feasibility determinations specified herein using appropriate powerflow models of contingency-constrained dispatch. Simultaneous feasibility determinations shall take into account outages of both individual generation units and transmission facilities and shall be based on reasonable assumptions about the configuration and availability of transmission capability during the period covered by the auction that are not inconsistent with the determination of the deliverability of Generation Capacity Resources under the Reliability Assurance Agreement. The goal of the simultaneous feasibility determination shall be to ensure that there are sufficient revenues from Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights Obligations for the auction period under expected conditions and to ensure that there are sufficient revenues from the annual Financial Transmission Right Auction to satisfy all Auction Revenue Rights Obligations. To ensure revenue sufficiency, the powerflow model used for simultaneous feasibility determinations is a markets model that uses flows caused by sources and sinks of requested Auction Revenue Rights (including Incremental Auction Revenue Rights) or Financial Transmission Rights, as well as market limits (as described in section (b) below) to determine the capability available to accommodate financial rights that are simultaneously feasible. The markets model differs from both an operations model, which uses physical generators or load, and a planning model, which uses expected physical generators or load.

(b) Simultaneous feasibility determinations pursuant to this section utilize applicable market limits. Market limits may differ from physical facility ratings to reflect expected market capability and to align expected Financial Transmission Rights total target allocations with expected congestion, and to ensure sufficient revenues are collected from the Day-ahead Energy Market Transmission Congestion Charges to satisfy all Financial Transmission Rights obligations. To account for historical market impacts, market limits may reflect (without limitation) such factors as requested and awarded Auction Revenue Rights, Incremental Auction Revenue Rights and Financial Transmission Rights, uncompensated powerflow, external flowgate entitlements or limits, transfer limits of the type appropriate for reactive interfaces, operational considerations, voltage limitations and/or closed loop interfaces. Market limits also are based on reasonable assumptions about the configuration and availability of transmission capability during the study period, including (without limitation) scheduled or expected transmission outages. The market limits are applied to facilities modeled in an Auction Revenue Rights allocation, Financial Transmission Rights auction or Incremental Auction Revenue Rights study and may result in operative constraints that establish different limits than physical (e.g., thermal or voltage) ratings. As used here, an operative constraint results when a market limit binds in the powerflow model and constrains the grant of Auction Revenue Rights, Incremental Auction Revenue Rights or Financial Transmission Rights.

(c) On an annual basis the Office of the Interconnection shall conduct a simultaneous feasibility test for stage 1A Auction Revenue Rights, which shall assess the simultaneous feasibility for each year remaining in the term of the right(s). This test shall be based on the Auction Revenue Rights required to meet Zonal Base Load requirements. The Office of the Interconnection shall apply a zonal load growth rate to the simultaneous feasibility test for the ten year term of the stage 1A Auction Revenue Rights to reflect load growth as estimated by the

Office of the Interconnection.

(d) Simultaneous feasibility tests for new stage 1 resource requests made pursuant to Section 7.6 of Schedule 1 of this Agreement shall ensure that the request for a new base resource does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting condition in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility under the following conditions:

(i) Based on next allocation year with all existing stage 1 and stage 2 Auction Revenue Rights modeled as fixed injection-withdrawal pairs.

(ii) Based on 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(e) Simultaneous feasibility tests for Incremental Auction Revenue Rights requested pursuant to Operating Agreement, Schedule 1, section 7.8 and Tariff, Part VI, Subpart C, section 231 shall ensure that the request for the Incremental Auction Revenue Rights does not increase the megawatt flow on facilities binding in the current Auction Revenue Rights allocation or in future stage 1A allocations and does not cause megawatt flow to exceed applicable ratings on any other facilities in either set of conditions. The most limiting set of conditions will be used as the limiting conditions in these evaluations. A simultaneous feasibility test conducted pursuant to this section by the Office of the Interconnection shall assess the simultaneous feasibility using the following models derived from the markets model:

(i) An Incremental Auction Revenue Rights model that is based on the existing allocation year with transmission outages removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). All existing stage 1 and stage 2 Auction Revenue Rights are modeled as fixed injection withdrawal pairs.

(ii) A 10 year allocation model with all eligible stage 1A Auction Revenue Rights for each year including base load growth for each year.

(f) Simultaneous feasibility tests pursuant to section (e) above utilize a transfer analysis to determine the flow impacts. The transfer analysis is performed by injecting at the source and withdrawing at the sink and measuring the impacts on the facilities. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled “PJM Incremental Auction Revenue Rights Model Development and Analysis.”

7.8 Elective Upgrade Auction Revenue Rights.

(a) In addition to any Incremental Auction Revenue Rights established under the PJM Tariff, any party may elect to fully fund Network Upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, provided that Incremental Auction Revenue Rights granted pursuant to this section shall be simultaneously feasible with outstanding Auction Revenue Rights, which shall include stage 1 and stage 2 Auction Revenue Rights, and against stage 1A Auction Revenue Right capability for the future 10 year period, as determined by the Office of the Interconnection pursuant to Section 7.8(b) of Schedule 1 of this Agreement. A request made pursuant to this section shall specify a source, sink and megawatt amount.

(b) The Office of the Interconnection shall assess the simultaneous feasibility of the requested Incremental Auction Revenue Rights and the outstanding Auction Revenue Rights against the existing base system Auction Revenue Right capability and stage 1A Auction Revenue Right capability for the future 10 year period pursuant to Operating Agreement, Schedule 1, section 7.5. This preliminary assessment will determine the incremental flow impact necessary on facilities.

(c) The incremental flow impact represents the incremental capability required on a facility to ensure the requested Incremental Auction Revenue Rights can be made feasible. This required capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(i) For Incremental Auction Revenue Rights requests, the Office of the Interconnection shall use an Incremental Auction Revenue Rights model to perform the simultaneous feasibility test detailed in Operating Agreement, Schedule 1, section 7.5. The Incremental Auction Revenue Rights model shall consist of an Incremental Auction Revenue Rights model and the 10 year stage 1A Auction Revenue Rights model. An Incremental Auction Revenue Rights model uses the same transmission system model used in the annual Auction Revenue Rights process, except any modeled transmission outages included in the Auction Revenue Rights process are removed (i.e., the transmission assumed out of service in the base markets model is assumed to be in service). Auction Revenue Rights requests that were denied or pro-rated in the annual Auction Revenue Rights allocation as a result of assumed transmission outages also are restored in the Incremental Auction Revenue Rights model because the transmission is assumed to be in service for purposes of this model.

(ii) If the incremental market flows created by the Incremental Auction Revenue Rights request cause facilities to be limited or increase the market flow on already limited facilities in either the Incremental Auction Revenue Rights model or the 10 year stage 1A Auction Revenue Rights model, increased system capability will be required in order for the Office of the Interconnection to grant the Incremental

Auction Revenue Rights request. This required incremental capability is used to determine the upgrades required to accommodate the requested Incremental Auction Revenue Rights and ensure all outstanding Auction Revenue Rights (including any pro-rated but restored Auction Revenue Rights requests) are simultaneously feasible. Additional details are provided in the PJM Manuals and related explanatory materials posted on the PJM website such as the PJM Whitepaper entitled "PJM Incremental Auction Revenue Rights Model Development and Analysis."

(iii) In addition to the Incremental Auction Revenue Rights model, the Office of the Interconnection uses a planning model that consists of the Regional Transmission Expansion Plan model used by the Office of the Interconnection to study system needs and proposed projects five years forward combined with modeled in-service and planned generation and forecasted load. The planning model includes transmission system upgrades that are ahead of the proposed Incremental Auction Revenue Rights request in the New Services Queue. The upgrades required for the Incremental Auction Revenue Rights request must achieve additional incremental capability over and above any planned baseline or Supplemental Project upgrades, including upgrades related to a Supplemental Project with a projected in-service date later than the applicable planning case year.

(d) If a party elects to fund upgrades to obtain Incremental Auction Revenue Rights pursuant to this section, no less than forty-five (45) days prior to the in-service date of the relevant upgrades, as determined by the Office of the Interconnection, the Office of the Interconnection shall notify the party of the actual amount of Incremental Auction Revenue Rights that will be granted to the party based on the allocation process established pursuant to Section 231 of Part VI of the Tariff.

(e) Incremental Auction Revenue Rights established pursuant to this section shall be effective for the lesser of thirty (30) years, or the life of the project, from the in-service date of the Network Upgrade(s). At any time during this thirty-year period (or the life of the Network Upgrade whichever is less), in lieu of continuing this thirty-year Auction Revenue Right, the owner of the right shall have a one-time choice to switch to an optional mechanism, whereby, on an annual basis, it will have the choice to request an Auction Revenue Right during the annual Auction Revenue Rights allocation process between the same source and sink, provided the Auction Revenue Right is simultaneously feasible. A party that is granted Incremental Auction Revenue Rights pursuant to this section may return such rights at any time, provided that the Office of the Interconnection determines that it can simultaneously accommodate all remaining outstanding Auction Revenue Rights following the return of such Auction Revenue Rights. In the event a party returns Incremental Auction Revenue Rights, it shall retain no further rights regarding such Incremental Auction Revenue Rights.

(f) No Incremental Auction Revenue Rights shall be granted pursuant to this section if the costs associated with funding the associated Network Upgrades are included in the rate base of a public utility and on which a regulated return is earned.