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November 2, 2026

**VIA ELECTRONIC FILING**

The Honorable Debbie-Anne Reese
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

***Re:*** **PJM Interconnection, L.L.C.'s Section 205 Filing of Proposed Revisions to Joint Operating Agreement between PJM and MISO to Remove Coordinated Transaction Scheduling; Docket No. ER27-401-000**

Dear Secretary Reese:

PJM Interconnection, L.L.C. ("PJM"), through this filing,[1] submits proposed revisions to the Joint Operating Agreement ("JOA") between The Midcontinent Independent System Operator ("MISO") and PJM to eliminate the Coordinated Transaction Schedule ("CTS") product. PJM requests that the JOA changes be made effective on January 13, 2027, which is not less than 60 days, or more than 120 days, after the filing date. MISO is making a simultaneous filing to incorporate identical changes in its own version of the JOA.[2] PJM will, in a subsequent filing, propose

[1] This filing is made pursuant to section 205 of the Federal Power Act (FPA), 16 U.S.C. § 824d, and Part 35 of the Federal Energy Regulatory Commission's (the "Commission") regulations, 18 C.F.R. § 35, *et seq*. (2026).

[2] PJM and MISO are making parallel, contemporaneous filings today at the Commission. Although MISO and PJM have agreed to these revisions to the JOA, each maintains its own version of the JOA in its respective eTariff database at the Commission. Accordingly, MISO and PJM must each separately file the proposed revisions. Other than modifications to reflect each respective party's tariff, MISO and PJM intend for their transmittal letters to be substantially identical. The PJM's version of the JOA is available at: https://www.pjm.com/pjmfiles/directory/merged-tariffs/miso-joa.pdf. MISO's version of the JOA is

conforming edits to its Open Access Transmission Tariff and Operating Agreement [3] that are necessary to eliminate the CTS product.

## I. DISCUSSION

### A. Background

In 2015, MISO and PJM (collectively, the "RTOs" and singly, the "RTO") filed revisions to the JOA, and corresponding changes to their tariffs, to implement the CTS.[4] The Commission approved these revisions in an order issued on April 18, 2016, and a letter order issued on July 21, 2016.[5] Specifically, the CTS process was incorporated into Attachment 3 to the JOA (Interregional Coordination Process).

A CTS offer consists of an offer to schedule coordinated buy-sell transactions across the MISO/PJM interface when projected price differences between the MISO and PJM Balancing Authority Areas are greater than the amount specified in the bid. Market Participants submit a single CTS bid that is used by both RTOs in a coordinated clearing process. Coordinated Transaction Schedules must be submitted 75 minutes prior to the start of the applicable scheduling interval. Intra-hour schedules are established every 15 minutes based on price forecasts from 30 minutes prior.

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available as MISO Rate Schedule No. 5 at: https://www.misoenergy.org/legal/rules-manuals-and-agreements/tariff/.

[3] All capitalized terms in this filing not otherwise defined have the same meaning as they have under the JOA or the current PJM Tariff.

[4] *Midcontinent Indep. Sys. Operator, Inc.*, Transmittal Letter, Docket No. ER16-533-000 (Dec. 15, 2015) (filing containing changes to MISO Tariff); *Midcontinent Indep. Sys. Operator, Inc.*, Transmittal Letter, Docket No. ER16-534-000 (Dec. 15, 2015) (filing containing changes to JOA).

[5] *Midcontinent Indep. Sys. Operator, Inc. & PJM Interconnection, Inc.*, Letter Order, Docket Nos. ER16-533-00, ER16-534-000, ER16-535-000, & ER16-536-000 (July 21, 2016); *Midcontinent Indep. Sys. Operator, Inc.*, 155 FERC ¶ 61,038 (2016).

The intent of the CTS product was to utilize the MISO-PJM interface more effectively and increase price convergence at the market boundaries. The RTOs anticipated that CTS would provide benefits because the product would allow for lower-cost resources in one RTO to displace higher-cost resources in the other RTO. CTS was also intended to limit counterintuitive flow by reducing the number of interchange schedules from the high-priced RTO into the low-priced RTO.

### B. The Proposed JOA Revisions Are Just and Reasonable

Since CTS was implemented on October 3, 2017,[6] the expected benefits have not come to fruition. Originally, at a June 10, 2014 workshop, MISO and PJM anticipated that CTS would produce benefits between $26 million and $72 million annually. In practice, PJM estimates CTS to have only produced $456,000 in production cost savings in 2024 and $1.9 million in 2025, which is orders of magnitude smaller than the RTOs projected. PJM attributes the difference between expected and observed benefits to the fact that CTS bids are cleared based on forecasted Locational Marginal Prices ("LMPs"). This approach introduces a level of risk for potential CTS users. If a bid clears and Real-time LMPs are below the bid, the market participant is not made whole and can lose money in the process. In practice, market participants appear to prefer making interchange decisions based on actual interface pricing.

Additionally, the usage of CTS by Market Participants has been very low. In 2024, only approximately seven unique Market Participants used the CTS product, and in 2025, only five unique Market Participants used CTS. The volume of offers was quite

[6] In their initial filings, the RTOs proposed an effective date of March 1, 2017, for implementation of CTS. The RTOs subsequently requested, and the Commission approved, a delay of the effective date until October 3, 2017. *See, e.g.*, *Midcontinent Indep. Sys. Operator, Inc.*, Letter Order, Docket No. ER17-1034-000 (Mar. 31, 2017).

small. For example, in 2024, an hourly average of 34 MWs were offered and 9.2 MWs were cleared. These numbers were only marginally higher in 2025 with an hourly average of 134 MWs offered and 24 MWs cleared. Compared with the average load in the PJM energy markets in 2025—94,537 MW—CTS has had a negligible impact.

Market Participants can also use other interchange products in lieu of CTS[7] in the form of a variety of firm and non-firm transmission service as detailed in the PJM Regional Transmission and Energy Scheduling Practices Guide.[8] As the minimal usage of CTS suggests, Market Participants have access to alternative products to accomplish similar objectives with different features. Coordinated Transaction Schedules must be submitted at least 75 minutes before the applicable scheduling interval and CTS offers are cleared on a 15-minute basis based on price forecasts from 30 minutes prior. In contrast, firm and non-firm interchange schedules can be adjusted up to 20 minutes before a given interval. Because these other products can be adjusted significantly closer to real-time, it provides Market Participants with a different level of insight into what real-time prices will be than if they used Coordinated Transaction Schedules. Additionally, these other interchange products are comparable to CTS in that they also clear on a 15-minute basis. While these products were available, PJM and MISO had expected LMPs would be stable enough to ensure broader use of CTS. That expectation proved inaccurate.

[7] Other interchange products offered by MISO include: Fixed Interchange Schedules, Cleared Day-Ahead Interchange Schedules, and Dynamic Interchange Schedules. PJM offers: firm and non-firm transactions in accordance with its business rules.

[8] PJM, Regional Transmission and Energy Scheduling Practices (rev. 13, Jan. 22, 2026), https://www.pjm.com/-/media/DotCom/etools/oasis/regional-practices-clean-pdf.ashx.

Maintaining CTS also requires continued expenditure of significant costs. MISO and PJM are currently developing new market clearing engines ("MCE") and would expend considerable costs to migrate the CTS tool into the new MCEs. For example, PJM, like MISO, would incur an estimated cost of $1.4 million to migrate the CTS tool into its new MCE. Once CTS is incorporated into the new MCE, it would cost PJM approximately $0.8 million over five years to maintain the CTS product, bringing the total resulting cost to $2.2 million over five years for a product which is barely used by market participants.

Due to the lack of usage, minimal benefits, and costs to maintain CTS, and available alternatives, removing CTS from the JOA is just and reasonable. MISO and PJM recognize the benefits that interchange optimization offers and plan to investigate alternative designs in the future that would provide additional meaningful improvements to near real-time interchange between the RTOs.

## II. DESCRIPTION OF JOA REVISIONS

MISO and PJM have agreed to the JOA revisions discussed below to reflect the retirement of the CTS product.

### A. Sections 2.1.8(a) and 2.1.8(b) – Abbreviations and Acronyms

The RTOs propose to remove the abbreviations of Coordinated Transaction Scheduling and Coordinated Transaction Scheduling Dispatch from Sections 2.1.8(a) and 2.1.8(b).

### B. Sections 2.2.14.1(a) and 2.2.14.1(b) - Definitions

The RTOs propose to remove the definitions of Coordinated Transaction Scheduling and Coordinated Transaction Scheduling Dispatch from Sections 2.2.14.1(a) and 2.2.14.1(b).

### C. Attachment 3, Interregional Coordination Process, Table of Contents

Attachment 3 to the JOA contains the Interregional Coordination Process (ICP) utilized by the RTOs. Specifically, Section 9 of the ICP contains the "Overview of Coordinated Transaction Scheduling." As such, the RTOs propose to remove Section 9 from the Table of Contents in Attachment 3.

### D. Attachment 3, ICP, Section 9 – Overview of Coordinated Transaction Scheduling

Because the RTOs are seeking to retire the CTS product, they propose to eliminate Section 9 of the ICP in its entirety.

## III. STAKEHOLDER INVOLVEMENT

### A. PJM Stakeholder Process

PJM announced at the April 22, 2026 Markets and Reliability Committee meeting that it and MISO were retiring the CTS product by the end of 2026. In the same announcement, PJM provided notice that the retirement of CTS would be discussed in depth at an upcoming June 23, 2026 Joint and Common Market ("JCM") stakeholder meeting. PJM included additional notice of the plan to retire CTS in the Information Section of the October 7, 2026 Market Implementation Committee meeting agenda.[9]

[9] When modifying JOAs, PJM provides stakeholders with informational updates and historically does not use a full stakeholder endorsement process.

### B. Joint Stakeholder Process

On June 23, 2026, MISO and PJM presented on the CTS retirement at the RTOs' JCM stakeholder meeting. The presentation highlighted the lack of benefits from the CTS product, the costs to maintain it, and the alternative interchange products that are available to Market Participants.[10]

## IV. DOCUMENTS SUBMITTED WITH THIS FILING

In addition to this transmittal letter, the documents being submitted in this filing are as follows:

1. Attachment A: revisions to the JOA in marked format; and

2. Attachment B: revisions to the JOA in clean format.

## V. EFFECTIVE DATE

PJM requests that the proposed Tariff revisions be made effective on January 13, 2027, which is not less than sixty (60) days nor more than one hundred and twenty (120) days after this filing. To the extent that the Commission determines that any other rules may otherwise be applicable, PJM also requests waiver of the requirements of any such provisions.

[10] PJM, JCM Meeting Presentation (June 23, 2026), https://cdn.misoenergy.org/20260623%20MISO-PJM%20JCM%20Item%2002%20Retirement%20of%20CTS%20Product764951.pdf.

## VI. NOTICE AND SERVICE

### A. Notice

PJM requests that the following persons be placed on the official service list in this proceeding:


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### B. 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,[11] PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: https://www.pjm.com/library/filing-order 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[12] 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 be

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

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

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/docsfiling/elibrary.asp in accordance with the Commission's regulations and Order No. 714.

## VII. CONCLUSION

For all of the foregoing reasons, PJM respectfully requests that the Commission accept this filing, grant the proposed effective date, and grant waiver of any Commission regulations not addressed herein that the Commission may deem applicable to this filing.

Respectfully submitted,

*/s/ Arleigh P. Helfer*

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

# Attachment A

Revisions to the Joint Operating Agreement
Between the
Midcontinent Independent System Operator, Inc.
And
PJM Interconnection, L.L.C.

(Marked Format)

## 2.1 Abbreviations and Acronyms.

**2.1.1 "AC"**
AC shall mean alternating current.

**2.1.2 "AFC"**
AFC shall mean Available Flowgate Capability.

**2.1.2.a "APC"**
APC shall mean Adjusted Production Cost.

**2.1.3 "ARR"**
ARR shall mean Auction Revenue Rights.

**2.1.4 "BA"**
BA shall mean Balancing Authority.

**2.1.5 "BAA"**
BAA shall mean Balancing Authority Area.

**2.1.5.a "CBBRP"**
CBBRP shall mean Cross-Border Baseline Reliability Project.

**2.1.5.b "CBMEP"**
CBMEP shall mean Cross-Border Market Efficiency Project.

**2.1.6 "CBM"**
CBM shall mean Capacity Benefit Margin.

**2.1.7 "CFR"**
CFR shall mean Code of Federal Regulations.

**2.1.8 "CIM"**
CIM shall mean Common Information Model.

~~**2.1.8.a "CTS"**~~
~~CTS shall mean Coordinated Transaction Scheduling.~~

~~**2.1.8.b "CTSD"**~~
~~CTSD shall mean Coordinated Transaction Scheduling Dispatch.~~

**2.1.9 "DC"**
DC shall mean direct current.

**2.1.10 "DFAX"**
DFAX shall mean transfer distribution factors.

**2.1.11 "EHV"**
EHV shall mean Extra High Voltage.

**2.1.12 "EMS"**
EMS shall mean the respective Energy Management Systems utilized by the Parties to manage the flow of energy within their RC Areas.

**2.1.13 "ERAG"**
ERAG shall mean the Eastern Interconnection Reliability Assessment Group that is charged with multi-regional modeling.

**2.1.14 "FERC" (or "Commission")**
FERC shall mean the Federal Energy Regulatory Commission or any successor agency thereto.

**2.1.15 "FTR"**
FTR shall mean financial transmission rights.

**2.1.16 "GLDF"**
GLDF shall mean Generation-to-Load Distribution Factor.

**2.1.17 "ICCP", "ISN" and "ICCP/ISN"**
ICCP, ISN and ICCP/ISN shall mean those common communication protocols adopted to standardize information exchange.

**2.1.18 "IDC"**
IDC shall mean the NERC Interchange Distribution Calculator used for identifying and requesting congestion management relief.

**2.1.19 "IPSAC"**
IPSAC shall mean Inter-regional Planning Stakeholder Advisory Committee.

**2.1.20 "IROL"**
IROL shall mean Interconnection Reliability Operating Limit.

**2.1.21 "ISC"**
ISC shall mean the Inter-RTO Steering Committee.

**2.1.21.a "ITSCED"**
ITSCED shall mean Intermediate Term Security Constrained Economic Dispatch.

**2.1.22 "JRPC"**
JRPC shall mean the Joint RTO Planning Committee.

**2.1.23 "kV"**
kV shall mean kilovolt of electric potential.

**2.1.24 "LBA"**
LBA shall mean Local Balancing Authority.

**2.1.25 "LBAA"**
LBAA shall mean Local Balancing Authority Area.

**2.1.25a "LEC"**
LEC shall mean Lake Erie circulation.

**2.1.26 "LMP"**
LMP shall mean Locational Marginal Price.

**2.1.26a "M2M"**
M2M shall mean market-to-market.

**2.1.26b "MI"**
MI shall mean Michigan.

**2.1.27 "MMWG"**
MMWG shall mean the Multi-regional Modeling Working Group.

**2.1.27a "MOPI"**
MOPI shall mean the Michigan-Ontario PAR Interface.

**2.1.28 "MTEP"**
MTEP shall mean MISO Transmission Expansion Plan.

**2.1.29 "MVAR"**
MVAR shall mean megavolt amp of reactive power.

**2.1.30 "MW"**
MW shall mean megawatt of real power.

**2.1.31 "MWh"**
MWh shall mean megawatt hour of energy.

**2.1.32 "NAESB"**
NAESB shall mean North American Energy Standards Board or its successor organization.

**2.1.33 "NERC"**
NERC shall mean the North American Electricity Reliability Corporation or its successor organization.

**2.1.33a "NLP"**
NLP shall mean Net Load Payment.

**2.1.34 "NSI"**
NSI shall mean net scheduled interchange.

**2.1.35 "OASIS"**
OASIS shall mean the Open Access Same-Time Information System required by FERC for the posting of market and transmission data on the Internet.

**2.1.36 "OATT"**
OATT shall mean the applicable open access transmission tariff.

**2.1.36a "ONT"**
ONT shall mean Ontario.

**2.1.37 "OTDF"**
OTDF shall mean Outage Transfer Distribution Factor.

**2.1.37a "PAR"**
PAR shall mean phase angle regulator.

**2.1.38 "PMAX"**
PMAX shall mean the maximum generator real power output reported in MWs on a seasonal basis.

**2.1.39 "PMIN"**
PMIN shall mean the minimum generator real power output reported in MWs on a seasonal basis.

**2.1.40 "PSS/E"**
PSS/E shall mean Power System Simulator for Engineering.

**2.1.41 "PTDF"**
PTDF shall mean Power Transfer Distribution Factor.

**2.1.42 "QMAX"**
QMAX shall mean the maximum generator reactive power output reported in MVARs at full real power output of the unit.

**2.1.43 "QMIN"**
QMIN shall mean the minimum generator reactive power output reported in MVARs at full real power output of the unit.

**2.1.44 "RC"**
RC shall mean Reliability Coordinator.

**2.1.45 "RCF"**
RCF shall mean Reciprocal Coordinated Flowgate.

**2.1.46 "RCIS"**
RCIS shall mean the Reliability Coordinator Information System.

**2.1.47 "RTEP"**
RTEP shall mean PJM Regional Transmission Expansion Plan.

**2.1.48 "RTO"**
RTO shall mean regional transmission organization.

**2.1.49 "SCADA"**
SCADA shall mean Supervisory Control and Data Acquisition.

**2.1.50 "SDX System"**
SDX System shall mean the system used by NERC to exchange system data.

**2.1.51 "SOL"**
SOL shall mean System Operating Limit.

**2.1.52 "TCUL"**
TCUL shall mean tap-changing-under-load.

**2.1.53 "TFC"**
TFC shall mean Total Flowgate Capability.

**2.1.54 "TLR"**
TLR shall mean Transmission Loading Relief.

**2.1.55 "TOP"**
TOP shall mean Transmission Operator.

**2.1.56 "TRM"**
TRM shall mean Transmission Reliability Margin.

**2.1.57 "UDS"**
UDS shall mean Unit Dispatch Systems.

**2.1.58 "VAR"**
VAR shall mean volt ampere reactive.

## 2.2 Definitions.

Any undefined, capitalized terms used in this Agreement shall have the meaning given under industry custom and, where applicable, in accordance with good utility practices.

### 2.2.1 "a & b multipliers"

"a & b Multipliers" shall mean the multipliers that are applied to TRM in the planning horizon and in the operating horizon to determine non-firm AFC. The "a" multiplier is applied to TRM in the planning horizon to determine non-firm AFC. The "b" multiplier is applied to TRM in the operating horizon to determine non-firm AFC. The "a & b" multipliers can vary between 0 and 1, inclusive. They are determined by individual transmission providers based on network reliability considerations.

### 2.2.2 "Affected System"

Affected System shall mean the electric system of the Party other than the Party to which a request for interconnection or long-term firm delivery service is made and that may be affected by the proposed service.

### 2.2.3 "Agreement"

Agreement shall mean this document, as amended from time to time, including all attachments, appendices, and schedules.

### 2.2.4 "American Electric Power"

American Electric Power shall mean the American Electric Power Company.

### 2.2.4.a "Attaining Balancing Authority" or "Attaining BA"

Attaining Balancing Authority shall have the same meaning set forth in the then current version of the NERC Glossary of Terms used in NERC Reliability Standards.

### 2.2.4.b "Attaining Balancing Authority Area" or "Attaining BAA"

The Attaining Balancing Authority Area shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards

### 2.2.4.c "Attaining Reliability Coordinator" or "Attaining RC"

The Attaining Reliability Coordinator is the entity that is responsible for Reliable Operation of the Bulk Electric System, as those terms are defined in the NERC Glossary of Terms, for the Attaining Balancing Authority.

### 2.2.4.d "Attaining Transmission Operator" or "Attaining TOP"

The Attaining Transmission Operator is the entity that operates or directs operations for the reliability of the Attaining BAA Transmission System.

### 2.2.5 "Available Flowgate Capability"

Available Flowgate Capability shall mean the rating of the applicable Flowgate less the projected loading across the applicable Flowgate less TRM and CBM. The firm AFC is calculated with only the appropriate Firm Transmission Service reservations (or

interchange schedules) in the model, including recognition of all roll-over Transmission Service rights. Non-firm AFC is determined with appropriate firm and non-firm reservations (or interchange schedules) modeled.

**2.2.6 "Balancing Authority"**
Balancing Authority shall mean the responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports interconnection frequency in real-time. For MISO references to a BA may be applicable to a BA and/or an LBA.

**2.2.7 "Balancing Authority Area"**
Balancing Authority Area shall mean the collection of generation, transmission, and loads within the metered boundaries of the BA. The BA maintains load-resource balance within this area. For MISO references to a BAA may be applicable to a BAA and/or an LBAA.

**2.2.8 "Bulk Electric System"**
Bulk Electric System shall mean the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving load with only one transmission source are generally not included in this definition.

**2.2.9 "Commonwealth Edison"**
Commonwealth Edison shall mean the Commonwealth Edison Company.

**2.2.10 "Confidential Information"**
Confidential Information shall have the meaning stated in Section 18.1.1.

**2.2.11 "Congestion Management Process"**
Congestion Management Process means that document incorporated herein as Attachment 2 to this Agreement hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.11.1 "Constraint Relaxation Logic"**
Constraint Relaxation Logic shall mean the logic applied in the market clearing software where the transmission limit is increased to prevent the Transmission Constraint Penalty Factor from setting the shadow price of a M2M Flowgate that is constrained.

**2.2.12 "Coordinated Flowgate"**
Coordinated Flowgate shall mean a Flowgate impacted by an Operating Entity as determined by one of the five studies detailed in Section 3 of the attached document entitled "Congestion Management Process." For a Market-Based Operating Entity, these Flowgates will be subject to the requirements under the Congestion Management portion of the Congestion Management Process (Sections 4 and 5). A Coordinated Flowgate may be under the operational control of a Third Party.

**2.2.13 "Coordinated Operations"**

Coordinated Operations means all activities that will be undertaken by the Parties pursuant to this Agreement.

**2.2.14 "Coordinated System Plan"**
Coordinated System Plan shall have the meaning stated in Section 9.3.7.

~~**2.2.14.1.a "Coordinated Transaction Scheduling" or "CTS"**~~
~~Coordinated Transaction Scheduling or CTS shall mean the market rules that allow real-time transactions to be scheduled based on a market participant's willingness to purchase energy from a source in either the MISO or PJM Balancing Authority Area and sell it at a sink in the other Balancing Authority Area if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.~~

~~**2.2.14.1.b "Coordinated Transaction Scheduling Dispatch" or "CTSD"**~~
~~Coordinated Transaction Scheduling Dispatch or CTSD shall mean MISO's algorithm that performs various functions, including but not limited to forecasting dispatch and market clearing prices based on current and projected system conditions for up to several hours in the future.~~

**2.2.14.a "Cross-Border Baseline Reliability Project"**
Cross-Border baseline Reliability Project shall have the meaning stated in Section 9.4.4.1.1.

**2.2.14.b "Cross-Border Market Efficiency Project"**
Cross-Border Market Efficiency Project shall have the meaning stated in Section 9.4.4.1.2.

**2.2.15 "Cross-Border Grandfathered Projects"**
Cross Border Grandfathered Projects shall mean the Cross-Border Grandfathered Projects document incorporated herein as Attachment 4 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.16 "Economic Dispatch"**
Economic Dispatch shall mean the sending of dispatch instructions to generation units to minimize the cost of reliably meeting load demands.

**2.2.17 "Effective Date"**
Effective Date shall have the meaning stated in Section 12.1.

**2.2.18 "Emergency Energy Transactions"**
Emergency Energy Transactions shall mean the Emergency Energy Transactions document incorporated herein as Attachment 5 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.19 "Extra High Voltage"**

Extra High Voltage shall mean 230 kV facilities and above stations with voltage regulating capabilities.

**2.2.20 "Facilities Study"**
Facilities Study shall mean a study conducted by the Transmission Service Provider, or its agent, for the interconnection customer to determine a list of facilities, the cost of those facilities, and the time required to interconnect a generating facility with the transmission system or enable the sale of firm transmission service.

**2.2.21 "Feasibility Study"**
Feasibility Study shall mean a preliminary evaluation of the system impact of interconnecting a generating facility to the transmission system or the initial review of a transmission service request.

**2.2.22 "Firm Flow"**
Firm Flow shall mean the estimated impacts of Firm Transmission Service on a particular Coordinated Flowgate.

**2.2.23 "Firm Flow Limit"**
Firm Flow Limit shall mean the maximum value of Firm Flows an entity can have on a Coordinated Flowgate, based on procedures defined in Sections 4 and 5 of the Congestion Management Process.

**2.2.24 "Flowgate"**
Flowgate shall mean a representative modeling of facilities or groups of facilities that may act as significant constraint points on the regional system.

**2.2.25 "Generation Resource"**
Generation Resource shall mean a PJM Generation Capacity Resource, as that term is defined in the PJM Reliability Assurance Agreement, or a MISO Generation Resource or Capacity Resource, as those terms are defined in Module A of MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff.

**2.2.25.a "Generator Pseudo-Tie Market Flow Adjustment"**
Generator Pseudo-Tie Market Flow Adjustment shall mean the amount of calculated energy flows removed from the Attaining Balancing Authority Market Flow for a specified Flowgate representative of the portion of the path from the location of the pseudo-tied generator to the MISO-PJM border.

**2.2.26 "Governing Documents"**
Governing Documents shall mean the PJM Open Access Transmission Tariff, the PJM Operating Agreement, the PJM Consolidated Transmission Owners Agreement, the PJM Reliability Assurance Agreement, the MISO Open Access Transmission and Energy and Operating Reserve Markets Tariff, the Agreement of Transmission Facilities Owners To Organize The Midcontinent Independent System Operator, Inc., A Delaware Non-Stock Corporation," or any other applicable agreement approved by the FERC and intended to

govern the relationship by and among PJM and MISO and any of their respective members or market participants.

**2.2.26.a "Hold Harmless Issues"**
Hold Harmless Issues shall have the meaning given in Section 4.3.

**2.2.27 "Intellectual Property"**
Intellectual Property shall mean (i) ideas, designs, concepts, techniques, inventions, discoveries, or improvements, regardless of patentability, but including without limitation patents, patent applications, mask works, trade secrets, and know-how; (ii) works of authorship, regardless of copyright ability, including copyrights and any moral rights recognized by law; and (iii) any other similar rights, in each case on a worldwide basis.

**2.2.28 "Interconnection Service"**
Interconnection Service shall mean the service provided by the Transmission Service Provider associated with interconnecting the generating facility to the transmission system and enabling it to receive electric energy and capacity from the generating facility at the point of interconnection, pursuant to the terms of the generator interconnection agreement and, if applicable, the tariff.

**2.2.29 "Interconnection Study"**
Interconnection Study shall mean any of the following studies: the interconnection Feasibility Study, the interconnection System Impact Study, and the interconnection Facilities Study, or the restudy of any of the above, described in the generator interconnection procedures.

**2.2.30 "Interconnection Reliability Operating Limit"**
Interconnection Reliability Operating Limit shall mean a System Operating Limit that, if violated could lead to instability, uncontrolled separation(s) or cascading outages that adversely impact the reliability of the Bulk Electric System.

**2.2.30.a "Intermediate Term Security Constrained Economic Dispatch"**
Intermediate Term Security Constrained Economic Dispatch shall mean PJM's algorithm that performs various functions, including but not limited to forecasting dispatch and LMP solutions based on current and projected system conditions for up to several hours into the future.

**2.2.31 "Interregional Coordination Process"**
Interregional Coordination Process shall mean the market-to-market coordination document incorporated herein as Attachment 3 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.32 "Inter-regional Planning Stakeholder Advisory Committee"**
Inter-regional Planning Stakeholder Advisory Committee shall have the meaning given under Section 9.1.2.

**2.2.33 "Inter-RTO Steering Committee"**

Inter-RTO Steering Committee shall have the meaning given in the Joint and Common Market Agreement.

**2.2.34 "Joint and Common Market"**
Joint and Common Market shall mean, a group of initiatives that are intended to result in achievement of the following objectives: (i) Provide the highest level of inter-regional reliability; (ii) Deliver the lowest cost energy and ancillary services to load across the combined MISO and PJM Markets; and (iii) Plan, build and operate the combined MISO and PJM transmission facilities for maximum joint benefit across the markets.

**2.2.35 "Joint and Common Market Agreement"**
Joint and Common Market Agreement shall mean the Agreement Concerning Inter-regional Coordination, Including Development of Joint and Common Market, executed by the Parties on or about February 12, 2003.

**2.2.36 "Joint Coordinated System Plan"**
Joint Coordinated System Plan shall have the meaning given under Section 9.3.2.

**2.2.37 "Local Balancing Authority"**
Local Balancing Authority shall mean an operational entity which is: (i) responsible for compliance to NERC for the subset of NERC Balancing Authority Reliability Standards defined for its local area within the MISO Balancing Authority Area, and (ii) a party (other than MISO) to the Balancing Authority Amended Agreement which, among other things, establishes the subset of NERC Balancing Authority Reliability Standards for which the LBA is responsible.

**2.2.38 "Local Balancing Authority Area"**
Local Balancing Authority Area shall mean the collection of generation, transmission, and loads that are within the metered boundaries of an LBA.

**2.2.39 "Locational Marginal Price" or "LMP"**
Locational Marginal Price or LMP shall mean the market clearing price for energy at a given location in a Party's RC Area, and "Locational Marginal Pricing" shall mean the processes related to the determination of the LMP.

**2.2.40 "LMP Contingency Processor"**
LMP Contingency Processor shall mean that Locational Marginal Price pricing computer program referred to in Section 11.2.1.

**2.2.41 "Market-Based Operating Entity"**
Market-Based Operating Entity shall mean an Operating Entity that operates a security constrained, bid-based economic dispatch bounded by a clearly defined market area.

**2.2.42 "Market Flows"**
Market Flows shall mean the calculated energy flows on a specified Flowgate as a result of dispatch of generating resources serving market load within a Market-Based Operating Entity's market (excluding tagged transactions).

**2.2.43 "Market Monitor"**
Market Monitor shall monitor market power and other competitive conditions in the Markets and make reports and recommendations as appropriate.

**2.2.44 "MISO"**
MISO has the meaning stated in the preamble of this Agreement.

**2.2.44.a "MOPI M2M Flowgate"**
MOPI M2M Flowgate shall mean a Flowgate subject to the requirements in Section 10 of the Interregional Coordination Process.

**2.2.44.b "Native Balancing Authority" or "Native BA"**
The Native Balancing Authority shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards.

**2.2.44.c "Native Balancing Authority Area" or "Native BAA"**
The Native Balancing Authority Area shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards.

**2.2.44.d "Native Reliability Coordinator" or "Native RC"**
The Native Reliability Coordinator is the entity that is responsible for Reliable Operation of the Bulk Electric System, as those terms are defined in the NERC Glossary of Terms, where the pseudo-tied unit is physically located.

**2.2.44.e "Native Transmission Operator" or "Native TOP"**
The Native Transmission Operator is the entity that operates or directs operations for the reliability of the local transmission system where the pseudo-tied unit is physically located.

**2.3.45 "NERC Compliance Registry"**
NERC Compliance Registry shall mean a listing of all organizations subject to compliance with the approved reliability standards.

**2.2.46 "Network Upgrades"**
Network Upgrades shall have the meaning as defined in MISO and PJM tariffs.

**2.2.47 "Notice"**
Notice shall have the meaning stated in Section 18.10.

**2.2.48 "Operating Entity"**
Operating Entity shall mean an entity that operates and controls a portion of the bulk transmission system with the goal of ensuring reliable energy interchange between generators, loads, and other operating entities.

**2.2.49 "Outages"**

Outages shall mean the planned unavailability of transmission and/or generation facilities dispatched by PJM or MISO, as described in Article VII of this Agreement.

**2.2.50 "Party" or "Parties"**
Party or Parties refers to each party to this Agreement or both, as applicable.

**2.2.51 "PJM"**
PJM has the meaning stated in the preamble of this Agreement.

**2.2.51.a "Project Cost"**
Project Cost shall mean all costs for Network Upgrades, as determined by the RTOs to be a single transmission expansion project, including those costs associated with seeking and obtaining all necessary approvals for the design, engineering, construction, and testing the Network Upgrades. Project Cost will include costs classified by the Transmission Owners and ITCs as transmission plant using the Uniform System of Accounts or equivalent set of accounts for any Coordinating Owner, where Transmission Owners, ITCs, and Coordinating Owner have the meanings as defined under the PJM and MISO OATTs.

**2.2.52 "Purchasing-Selling Entity"**
Purchasing Selling Entity shall mean the entity that purchases or sells, and takes title to, energy, capacity, and interconnected operations services.

**2.2.53 "Reciprocal Coordination Agreement"**
Reciprocal Coordination Agreement shall mean an agreement between Operating Entities to implement the reciprocal coordination procedures defined in the Congestion Management Process.

**2.2.54 "Reciprocal Coordinated Flowgate"**
Reciprocal Coordinated Flowgate shall mean a Flowgate that is subject to reciprocal coordination by Operating Entities, under either this Agreement (with respect to Parties only) or a Reciprocal Coordination Agreement between one or more Parties and one or more Third Party Operating Entities. An RCF is:

- A Coordinated Flowgate that is (a) (i) within the operational control of a Reciprocal Entity or (ii) may be subject to the supervision of a Reciprocal Entity as a RC, and (b) affected by the transmission of energy by the Parties or by either Party of both Parties and one or more Reciprocal Entities; or
- A Coordinated Flowgate that is (a) affected by the transmission of energy by one or more Parties and one or more Third Party Operating Entities, and (b) expressly made subject to CMP reciprocal coordination procedures under a Reciprocal Coordination Agreement between or among such Parties and Third Party Operating Entities; or
- A Coordinated Flowgate that is designated by agreement of both Parties as a RCF.

**2.2.55 "Reciprocal Entity"**

Reciprocal Entity shall mean an entity that coordinates the future-looking management of Flowgate capability in accordance with a reciprocal agreement as described in the Congestion Management Process.

**2.2.55.a "Regionally Beneficial Project"**
Regionally Beneficial Project shall have the meaning defined under Attachment FF of the MISO OATT.

**2.2.56 "Reliability Coordinator"**
Reliability Coordinator shall mean that party approved by NERC to be responsible for reliability of an RC Area.

**2.2.57 "Reliability Coordinator Area" or "RC Area"**
Reliability Coordinator Area or RC Area shall mean the collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.

**2.2.58 "SCADA Data"**
SCADA Data shall mean the electric system security data that is used to monitor the electrical state of facilities, as specified in NERC reliability standard TOP-005.

**2.2.59 "State Estimator"**
State Estimator shall mean that computer model that computes the state (voltage magnitudes and angles) of the transmission system using the network model and real-time measurements. Line flows, transformer flows, and injections at the buses are calculated from the known state and the transmission line parameters. The state estimator has the capability to detect and identify bad measurements.

**2.2.60 "System Impact Study"**
System Impact Study shall mean an engineering study that evaluates the impact of a proposed interconnection or transmission service request on the safety and reliability of transmission system and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the generating facility were interconnected or transmission service commenced without project modifications or system modifications.

**2.2.61 "System Operating Limit"**
System Operating Limit shall mean the value (such as MW, MVAR, Amperes, Frequency, or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria.

**2.2.62 "Third Party"**
Third Party refers to any entity other than a Party to this Agreement.

**2.2.63 "Third Party Operating Entity"**

Third Party Operating Entity shall refer to a Third Party entity that operates and controls a portion of the bulk transmission system with the goal of ensuring reliable energy interchange between generators, loads, and other operating entities.

**2.2.64 "Total Flowgate Capability"**
Total Flowgate Capability shall mean the maximum amount of power that can flow across that interface without overloading (either on an actual or contingency basis) any element of the Flowgate. The Flowgate capability is in units of megawatts. If the Flowgate is voltage or stability limited, a megawatt proxy is determined to ensure adequate voltages and stability conditions.

**2.2.64.1 "Transmission Constraint Penalty Factor"**
Transmission Constraint Penalty Factor shall mean the maximum cost of the redispatch incurred to control the flows across a transmission constraint and establishes the maximum limit on the shadow price, consistent with the maximum Transmission Constraint Demand Curve value in Schedule 28-A in the MISO Tariff and the value in the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C., Schedule 1, Section 5.6.2 and the parallel provisions in Attachment K – Appendix of the PJM Open Access Transmission Tariff.

**2.1.65 "Transmission Loading Relief"**
Transmission Loading Relief shall mean the procedures used in the Eastern Interconnection as specified in NERC reliability standard IRO-006 and the NAESB business practice WEQ-008.

**2.2.66 "Transmission Operator"**
Transmission Operator shall mean the entity responsible for the reliability of its "local" transmission system, and that operates or directs the operations of the transmission facilities.

**2.2.67 "Transmission Owner"**
Transmission Owner shall mean a Transmission Owner as defined under the Parties' respective tariff.

**2.2.68 "Transmission Reliability Margin"**
Transmission Reliability Margin shall mean that amount of transmission transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions.

**2.2.69 "Transmission Service Provider"**
Transmission Service Provider shall mean the entity that administers the transmission tariff and provides transmission service to transmission customers under applicable transmission service agreements.

**2.2.70 "Transmission System Emergencies"**
Transmission System Emergencies are conditions that have the potential to exceed or would exceed an IROL.

**2.2.71 "Unit Dispatch Systems"**
Unit Dispatch Systems shall mean those dispatch systems utilized by the Parties to dispatch generation units by calculating the most economic solution while simultaneously ensuring that each of the boundary constraints is resolved reliably.

**2.2.72 "Voltage and Reactive Power Coordination Procedures"**
Voltage and Reactive Power Coordination Procedures are the procedures under Article XIX for coordination of voltage control and reactive power requirements.

**MISO & PJM Market–to–Market**
**Interregional Coordination Process**
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Appendix A: Definitions

## 9 ~~Overview of Coordinated Transaction Scheduling~~RESERVED

~~Coordinated Transaction Scheduling or "CTS" are market rules implemented by MISO and PJM that allow real-time transactions to be scheduled based on a market participant's willingness to purchase energy at a source (in the PJM Balancing Authority Area or the MISO Balancing Authority Area) and sell it at a sink (in the other Balancing Authority Area) if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.~~

~~CTS transactions are ordinarily evaluated on a 15-minute basis consistent with forecasted real-time prices from MISO's Coordinated Transaction Scheduling Dispatch run and the forecasted price information from PJM's Intermediate Term Security Constrained Economic Dispatch solution. Coordinated optimization with CTS improves interregional scheduling efficiency by (i) better ensuring that scheduling decisions take into account relative price differences between the regions, and (ii) moving the evaluation of bids and offers closer to the time scheduling decisions are implemented.~~

~~MISO and PJM may suspend the scheduling of CTS transactions when MISO or PJM are not able to adequately implement schedules as expected due to: (1) a failure or outage of the data link between MISO and PJM prevents the exchange of accurate or timely data necessary to implement the CTS transactions; (2) a failure or outage of any computational or data systems preventing the actual or accurate calculation of data necessary to implement the CTS transactions; or (3) when necessary to ensure or preserve system reliability.~~

# Attachment B

Revisions to the Joint Operating Agreement
Between the
Midcontinent Independent System Operator, Inc.
And
PJM Interconnection, L.L.C.

(Clean Format)

## 2.1 Abbreviations and Acronyms.

**2.1.1 "AC"**
AC shall mean alternating current.

**2.1.2 "AFC"**
AFC shall mean Available Flowgate Capability.

**2.1.2.a "APC"**
APC shall mean Adjusted Production Cost.

**2.1.3 "ARR"**
ARR shall mean Auction Revenue Rights.

**2.1.4 "BA"**
BA shall mean Balancing Authority.

**2.1.5 "BAA"**
BAA shall mean Balancing Authority Area.

**2.1.5.a "CBBRP"**
CBBRP shall mean Cross-Border Baseline Reliability Project.

**2.1.5.b "CBMEP"**
CBMEP shall mean Cross-Border Market Efficiency Project.

**2.1.6 "CBM"**
CBM shall mean Capacity Benefit Margin.

**2.1.7 "CFR"**
CFR shall mean Code of Federal Regulations.

**2.1.8 "CIM"**
CIM shall mean Common Information Model.

**2.1.9 "DC"**
DC shall mean direct current.

**2.1.10 "DFAX"**
DFAX shall mean transfer distribution factors.

**2.1.11 "EHV"**
EHV shall mean Extra High Voltage.

**2.1.12 "EMS"**
EMS shall mean the respective Energy Management Systems utilized by the Parties to manage the flow of energy within their RC Areas.

**2.1.13 "ERAG"**
ERAG shall mean the Eastern Interconnection Reliability Assessment Group that is charged with multi-regional modeling.

**2.1.14 "FERC" (or "Commission")**
FERC shall mean the Federal Energy Regulatory Commission or any successor agency thereto.

**2.1.15 "FTR"**
FTR shall mean financial transmission rights.

**2.1.16 "GLDF"**
GLDF shall mean Generation-to-Load Distribution Factor.

**2.1.17 "ICCP", "ISN" and "ICCP/ISN"**
ICCP, ISN and ICCP/ISN shall mean those common communication protocols adopted to standardize information exchange.

**2.1.18 "IDC"**
IDC shall mean the NERC Interchange Distribution Calculator used for identifying and requesting congestion management relief.

**2.1.19 "IPSAC"**
IPSAC shall mean Inter-regional Planning Stakeholder Advisory Committee.

**2.1.20 "IROL"**
IROL shall mean Interconnection Reliability Operating Limit.

**2.1.21 "ISC"**
ISC shall mean the Inter-RTO Steering Committee.

**2.1.21.a "ITSCED"**
ITSCED shall mean Intermediate Term Security Constrained Economic Dispatch.

**2.1.22 "JRPC"**
JRPC shall mean the Joint RTO Planning Committee.

**2.1.23 "kV"**
kV shall mean kilovolt of electric potential.

**2.1.24 "LBA"**
LBA shall mean Local Balancing Authority.

**2.1.25 "LBAA"**
LBAA shall mean Local Balancing Authority Area.

**2.1.25a "LEC"**
LEC shall mean Lake Erie circulation.

**2.1.26 "LMP"**
LMP shall mean Locational Marginal Price.

**2.1.26a "M2M"**
M2M shall mean market-to-market.

**2.1.26b "MI"**
MI shall mean Michigan.

**2.1.27 "MMWG"**
MMWG shall mean the Multi-regional Modeling Working Group.

**2.1.27a "MOPI"**
MOPI shall mean the Michigan-Ontario PAR Interface.

**2.1.28 "MTEP"**
MTEP shall mean MISO Transmission Expansion Plan.

**2.1.29 "MVAR"**
MVAR shall mean megavolt amp of reactive power.

**2.1.30 "MW"**
MW shall mean megawatt of real power.

**2.1.31 "MWh"**
MWh shall mean megawatt hour of energy.

**2.1.32 "NAESB"**
NAESB shall mean North American Energy Standards Board or its successor organization.

**2.1.33 "NERC"**
NERC shall mean the North American Electricity Reliability Corporation or its successor organization.

**2.1.33a "NLP"**
NLP shall mean Net Load Payment.

**2.1.34 "NSI"**
NSI shall mean net scheduled interchange.

**2.1.35 "OASIS"**
OASIS shall mean the Open Access Same-Time Information System required by FERC for the posting of market and transmission data on the Internet.

**2.1.36 "OATT"**
OATT shall mean the applicable open access transmission tariff.

**2.1.36a "ONT"**
ONT shall mean Ontario.

**2.1.37 "OTDF"**
OTDF shall mean Outage Transfer Distribution Factor.

**2.1.37a "PAR"**
PAR shall mean phase angle regulator.

**2.1.38 "PMAX"**
PMAX shall mean the maximum generator real power output reported in MWs on a seasonal basis.

**2.1.39 "PMIN"**
PMIN shall mean the minimum generator real power output reported in MWs on a seasonal basis.

**2.1.40 "PSS/E"**
PSS/E shall mean Power System Simulator for Engineering.

**2.1.41 "PTDF"**
PTDF shall mean Power Transfer Distribution Factor.

**2.1.42 "QMAX"**
QMAX shall mean the maximum generator reactive power output reported in MVARs at full real power output of the unit.

**2.1.43 "QMIN"**
QMIN shall mean the minimum generator reactive power output reported in MVARs at full real power output of the unit.

**2.1.44 "RC"**
RC shall mean Reliability Coordinator.

**2.1.45 "RCF"**
RCF shall mean Reciprocal Coordinated Flowgate.

**2.1.46 "RCIS"**
RCIS shall mean the Reliability Coordinator Information System.

**2.1.47 "RTEP"**
RTEP shall mean PJM Regional Transmission Expansion Plan.

**2.1.48 "RTO"**
RTO shall mean regional transmission organization.

**2.1.49 "SCADA"**
SCADA shall mean Supervisory Control and Data Acquisition.

**2.1.50 "SDX System"**
SDX System shall mean the system used by NERC to exchange system data.

**2.1.51 "SOL"**
SOL shall mean System Operating Limit.

**2.1.52 "TCUL"**
TCUL shall mean tap-changing-under-load.

**2.1.53 "TFC"**
TFC shall mean Total Flowgate Capability.

**2.1.54 "TLR"**
TLR shall mean Transmission Loading Relief.

**2.1.55 "TOP"**
TOP shall mean Transmission Operator.

**2.1.56 "TRM"**
TRM shall mean Transmission Reliability Margin.

**2.1.57 "UDS"**
UDS shall mean Unit Dispatch Systems.

**2.1.58 "VAR"**
VAR shall mean volt ampere reactive.

## 2.2 Definitions.

Any undefined, capitalized terms used in this Agreement shall have the meaning given under industry custom and, where applicable, in accordance with good utility practices.

### 2.2.1 "a & b multipliers"

"a & b Multipliers" shall mean the multipliers that are applied to TRM in the planning horizon and in the operating horizon to determine non-firm AFC. The "a" multiplier is applied to TRM in the planning horizon to determine non-firm AFC. The "b" multiplier is applied to TRM in the operating horizon to determine non-firm AFC. The "a & b" multipliers can vary between 0 and 1, inclusive. They are determined by individual transmission providers based on network reliability considerations.

### 2.2.2 "Affected System"

Affected System shall mean the electric system of the Party other than the Party to which a request for interconnection or long-term firm delivery service is made and that may be affected by the proposed service.

### 2.2.3 "Agreement"

Agreement shall mean this document, as amended from time to time, including all attachments, appendices, and schedules.

### 2.2.4 "American Electric Power"

American Electric Power shall mean the American Electric Power Company.

### 2.2.4.a "Attaining Balancing Authority" or "Attaining BA"

Attaining Balancing Authority shall have the same meaning set forth in the then current version of the NERC Glossary of Terms used in NERC Reliability Standards.

### 2.2.4.b "Attaining Balancing Authority Area" or "Attaining BAA"

The Attaining Balancing Authority Area shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards

### 2.2.4.c "Attaining Reliability Coordinator" or "Attaining RC"

The Attaining Reliability Coordinator is the entity that is responsible for Reliable Operation of the Bulk Electric System, as those terms are defined in the NERC Glossary of Terms, for the Attaining Balancing Authority.

### 2.2.4.d "Attaining Transmission Operator" or "Attaining TOP"

The Attaining Transmission Operator is the entity that operates or directs operations for the reliability of the Attaining BAA Transmission System.

### 2.2.5 "Available Flowgate Capability"

Available Flowgate Capability shall mean the rating of the applicable Flowgate less the projected loading across the applicable Flowgate less TRM and CBM. The firm AFC is calculated with only the appropriate Firm Transmission Service reservations (or

interchange schedules) in the model, including recognition of all roll-over Transmission Service rights. Non-firm AFC is determined with appropriate firm and non-firm reservations (or interchange schedules) modeled.

**2.2.6 "Balancing Authority"**
Balancing Authority shall mean the responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports interconnection frequency in real-time. For MISO references to a BA may be applicable to a BA and/or an LBA.

**2.2.7 "Balancing Authority Area"**
Balancing Authority Area shall mean the collection of generation, transmission, and loads within the metered boundaries of the BA. The BA maintains load-resource balance within this area. For MISO references to a BAA may be applicable to a BAA and/or an LBAA.

**2.2.8 "Bulk Electric System"**
Bulk Electric System shall mean the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving load with only one transmission source are generally not included in this definition.

**2.2.9 "Commonwealth Edison"**
Commonwealth Edison shall mean the Commonwealth Edison Company.

**2.2.10 "Confidential Information"**
Confidential Information shall have the meaning stated in Section 18.1.1.

**2.2.11 "Congestion Management Process"**
Congestion Management Process means that document incorporated herein as Attachment 2 to this Agreement hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.11.1 "Constraint Relaxation Logic"**
Constraint Relaxation Logic shall mean the logic applied in the market clearing software where the transmission limit is increased to prevent the Transmission Constraint Penalty Factor from setting the shadow price of a M2M Flowgate that is constrained.

**2.2.12 "Coordinated Flowgate"**
Coordinated Flowgate shall mean a Flowgate impacted by an Operating Entity as determined by one of the five studies detailed in Section 3 of the attached document entitled "Congestion Management Process." For a Market-Based Operating Entity, these Flowgates will be subject to the requirements under the Congestion Management portion of the Congestion Management Process (Sections 4 and 5). A Coordinated Flowgate may be under the operational control of a Third Party.

**2.2.13 "Coordinated Operations"**

Coordinated Operations means all activities that will be undertaken by the Parties pursuant to this Agreement.

**2.2.14 "Coordinated System Plan"**
Coordinated System Plan shall have the meaning stated in Section 9.3.7.

**2.2.14.a "Cross-Border Baseline Reliability Project"**
Cross-Border baseline Reliability Project shall have the meaning stated in Section 9.4.4.1.1.

**2.2.14.b "Cross-Border Market Efficiency Project"**
Cross-Border Market Efficiency Project shall have the meaning stated in Section 9.4.4.1.2.

**2.2.15 "Cross-Border Grandfathered Projects"**
Cross Border Grandfathered Projects shall mean the Cross-Border Grandfathered Projects document incorporated herein as Attachment 4 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.16 "Economic Dispatch"**
Economic Dispatch shall mean the sending of dispatch instructions to generation units to minimize the cost of reliably meeting load demands.

**2.2.17 "Effective Date"**
Effective Date shall have the meaning stated in Section 12.1.

**2.2.18 "Emergency Energy Transactions"**
Emergency Energy Transactions shall mean the Emergency Energy Transactions document incorporated herein as Attachment 5 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.19 "Extra High Voltage"**
Extra High Voltage shall mean 230 kV facilities and above stations with voltage regulating capabilities.

**2.2.20 "Facilities Study"**
Facilities Study shall mean a study conducted by the Transmission Service Provider, or its agent, for the interconnection customer to determine a list of facilities, the cost of those facilities, and the time required to interconnect a generating facility with the transmission system or enable the sale of firm transmission service.

**2.2.21 "Feasibility Study"**
Feasibility Study shall mean a preliminary evaluation of the system impact of interconnecting a generating facility to the transmission system or the initial review of a transmission service request.

**2.2.22 "Firm Flow"**

Firm Flow shall mean the estimated impacts of Firm Transmission Service on a particular Coordinated Flowgate.

**2.2.23 "Firm Flow Limit"**
Firm Flow Limit shall mean the maximum value of Firm Flows an entity can have on a Coordinated Flowgate, based on procedures defined in Sections 4 and 5 of the Congestion Management Process.

**2.2.24 "Flowgate"**
Flowgate shall mean a representative modeling of facilities or groups of facilities that may act as significant constraint points on the regional system.

**2.2.25 "Generation Resource"**
Generation Resource shall mean a PJM Generation Capacity Resource, as that term is defined in the PJM Reliability Assurance Agreement, or a MISO Generation Resource or Capacity Resource, as those terms are defined in Module A of MISO Open Access Transmission, Energy and Operating Reserve Markets Tariff.

**2.2.25.a "Generator Pseudo-Tie Market Flow Adjustment"**
Generator Pseudo-Tie Market Flow Adjustment shall mean the amount of calculated energy flows removed from the Attaining Balancing Authority Market Flow for a specified Flowgate representative of the portion of the path from the location of the pseudo-tied generator to the MISO-PJM border.

**2.2.26 "Governing Documents"**
Governing Documents shall mean the PJM Open Access Transmission Tariff, the PJM Operating Agreement, the PJM Consolidated Transmission Owners Agreement, the PJM Reliability Assurance Agreement, the MISO Open Access Transmission and Energy and Operating Reserve Markets Tariff, the Agreement of Transmission Facilities Owners To Organize The Midcontinent Independent System Operator, Inc., A Delaware Non-Stock Corporation," or any other applicable agreement approved by the FERC and intended to govern the relationship by and among PJM and MISO and any of their respective members or market participants.

**2.2.26.a "Hold Harmless Issues"**
Hold Harmless Issues shall have the meaning given in Section 4.3.

**2.2.27 "Intellectual Property"**
Intellectual Property shall mean (i) ideas, designs, concepts, techniques, inventions, discoveries, or improvements, regardless of patentability, but including without limitation patents, patent applications, mask works, trade secrets, and know-how; (ii) works of authorship, regardless of copyright ability, including copyrights and any moral rights recognized by law; and (iii) any other similar rights, in each case on a worldwide basis.

**2.2.28 "Interconnection Service"**
Interconnection Service shall mean the service provided by the Transmission Service Provider associated with interconnecting the generating facility to the transmission

system and enabling it to receive electric energy and capacity from the generating facility at the point of interconnection, pursuant to the terms of the generator interconnection agreement and, if applicable, the tariff.

**2.2.29 "Interconnection Study"**
Interconnection Study shall mean any of the following studies: the interconnection Feasibility Study, the interconnection System Impact Study, and the interconnection Facilities Study, or the restudy of any of the above, described in the generator interconnection procedures.

**2.2.30 "Interconnection Reliability Operating Limit"**
Interconnection Reliability Operating Limit shall mean a System Operating Limit that, if violated could lead to instability, uncontrolled separation(s) or cascading outages that adversely impact the reliability of the Bulk Electric System.

**2.2.30.a "Intermediate Term Security Constrained Economic Dispatch"**
Intermediate Term Security Constrained Economic Dispatch shall mean PJM's algorithm that performs various functions, including but not limited to forecasting dispatch and LMP solutions based on current and projected system conditions for up to several hours into the future.

**2.2.31 "Interregional Coordination Process"**
Interregional Coordination Process shall mean the market-to-market coordination document incorporated herein as Attachment 3 to this Agreement, hereto as it exists on the Effective Date and as it may be amended or revised from time to time.

**2.2.32 "Inter-regional Planning Stakeholder Advisory Committee"**
Inter-regional Planning Stakeholder Advisory Committee shall have the meaning given under Section 9.1.2.

**2.2.33 "Inter-RTO Steering Committee"**
Inter-RTO Steering Committee shall have the meaning given in the Joint and Common Market Agreement.

**2.2.34 "Joint and Common Market"**
Joint and Common Market shall mean, a group of initiatives that are intended to result in achievement of the following objectives: (i) Provide the highest level of inter-regional reliability; (ii) Deliver the lowest cost energy and ancillary services to load across the combined MISO and PJM Markets; and (iii) Plan, build and operate the combined MISO and PJM transmission facilities for maximum joint benefit across the markets.

**2.2.35 "Joint and Common Market Agreement"**
Joint and Common Market Agreement shall mean the Agreement Concerning Inter-regional Coordination, Including Development of Joint and Common Market, executed by the Parties on or about February 12, 2003.

**2.2.36 "Joint Coordinated System Plan"**

Joint Coordinated System Plan shall have the meaning given under Section 9.3.2.

**2.2.37 "Local Balancing Authority"**
Local Balancing Authority shall mean an operational entity which is: (i) responsible for compliance to NERC for the subset of NERC Balancing Authority Reliability Standards defined for its local area within the MISO Balancing Authority Area, and (ii) a party (other than MISO) to the Balancing Authority Amended Agreement which, among other things, establishes the subset of NERC Balancing Authority Reliability Standards for which the LBA is responsible.

**2.2.38 "Local Balancing Authority Area"**
Local Balancing Authority Area shall mean the collection of generation, transmission, and loads that are within the metered boundaries of an LBA.

**2.2.39 "Locational Marginal Price" or "LMP"**
Locational Marginal Price or LMP shall mean the market clearing price for energy at a given location in a Party's RC Area, and "Locational Marginal Pricing" shall mean the processes related to the determination of the LMP.

**2.2.40 "LMP Contingency Processor"**
LMP Contingency Processor shall mean that Locational Marginal Price pricing computer program referred to in Section 11.2.1.

**2.2.41 "Market-Based Operating Entity"**
Market-Based Operating Entity shall mean an Operating Entity that operates a security constrained, bid-based economic dispatch bounded by a clearly defined market area.

**2.2.42 "Market Flows"**
Market Flows shall mean the calculated energy flows on a specified Flowgate as a result of dispatch of generating resources serving market load within a Market-Based Operating Entity's market (excluding tagged transactions).

**2.2.43 "Market Monitor"**
Market Monitor shall monitor market power and other competitive conditions in the Markets and make reports and recommendations as appropriate.

**2.2.44 "MISO"**
MISO has the meaning stated in the preamble of this Agreement.

**2.2.44.a "MOPI M2M Flowgate"**
MOPI M2M Flowgate shall mean a Flowgate subject to the requirements in Section 10 of the Interregional Coordination Process.

**2.2.44.b "Native Balancing Authority" or "Native BA"**
The Native Balancing Authority shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards.

**2.2.44.c "Native Balancing Authority Area" or "Native BAA"**
The Native Balancing Authority Area shall have the same meaning set forth in the then current version of the NERC Glossary of Terms Used in NERC Reliability Standards.

**2.2.44.d "Native Reliability Coordinator" or "Native RC"**
The Native Reliability Coordinator is the entity that is responsible for Reliable Operation of the Bulk Electric System, as those terms are defined in the NERC Glossary of Terms, where the pseudo-tied unit is physically located.

**2.2.44.e "Native Transmission Operator" or "Native TOP"**
The Native Transmission Operator is the entity that operates or directs operations for the reliability of the local transmission system where the pseudo-tied unit is physically located.

**2.3.45 "NERC Compliance Registry"**
NERC Compliance Registry shall mean a listing of all organizations subject to compliance with the approved reliability standards.

**2.2.46 "Network Upgrades"**
Network Upgrades shall have the meaning as defined in MISO and PJM tariffs.

**2.2.47 "Notice"**
Notice shall have the meaning stated in Section 18.10.

**2.2.48 "Operating Entity"**
Operating Entity shall mean an entity that operates and controls a portion of the bulk transmission system with the goal of ensuring reliable energy interchange between generators, loads, and other operating entities.

**2.2.49 "Outages"**
Outages shall mean the planned unavailability of transmission and/or generation facilities dispatched by PJM or MISO, as described in Article VII of this Agreement.

**2.2.50 "Party" or "Parties"**
Party or Parties refers to each party to this Agreement or both, as applicable.

**2.2.51 "PJM"**
PJM has the meaning stated in the preamble of this Agreement.

**2.2.51.a "Project Cost"**
Project Cost shall mean all costs for Network Upgrades, as determined by the RTOs to be a single transmission expansion project, including those costs associated with seeking and obtaining all necessary approvals for the design, engineering, construction, and testing the Network Upgrades. Project Cost will include costs classified by the Transmission Owners and ITCs as transmission plant using the Uniform System of Accounts or equivalent set of accounts for any Coordinating Owner, where Transmission Owners,

ITCs, and Coordinating Owner have the meanings as defined under the PJM and MISO OATTs.

**2.2.52 "Purchasing-Selling Entity"**
Purchasing Selling Entity shall mean the entity that purchases or sells, and takes title to, energy, capacity, and interconnected operations services.

**2.2.53 "Reciprocal Coordination Agreement"**
Reciprocal Coordination Agreement shall mean an agreement between Operating Entities to implement the reciprocal coordination procedures defined in the Congestion Management Process.

**2.2.54 "Reciprocal Coordinated Flowgate"**
Reciprocal Coordinated Flowgate shall mean a Flowgate that is subject to reciprocal coordination by Operating Entities, under either this Agreement (with respect to Parties only) or a Reciprocal Coordination Agreement between one or more Parties and one or more Third Party Operating Entities. An RCF is:

- A Coordinated Flowgate that is (a) (i) within the operational control of a Reciprocal Entity or (ii) may be subject to the supervision of a Reciprocal Entity as a RC, and (b) affected by the transmission of energy by the Parties or by either Party of both Parties and one or more Reciprocal Entities; or
- A Coordinated Flowgate that is (a) affected by the transmission of energy by one or more Parties and one or more Third Party Operating Entities, and (b) expressly made subject to CMP reciprocal coordination procedures under a Reciprocal Coordination Agreement between or among such Parties and Third Party Operating Entities; or
- A Coordinated Flowgate that is designated by agreement of both Parties as a RCF.

**2.2.55 "Reciprocal Entity"**
Reciprocal Entity shall mean an entity that coordinates the future-looking management of Flowgate capability in accordance with a reciprocal agreement as described in the Congestion Management Process.

**2.2.55.a "Regionally Beneficial Project"**
Regionally Beneficial Project shall have the meaning defined under Attachment FF of the MISO OATT.

**2.2.56 "Reliability Coordinator"**
Reliability Coordinator shall mean that party approved by NERC to be responsible for reliability of an RC Area.

**2.2.57 "Reliability Coordinator Area" or "RC Area"**
Reliability Coordinator Area or RC Area shall mean the collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.

**2.2.58 "SCADA Data"**
SCADA Data shall mean the electric system security data that is used to monitor the electrical state of facilities, as specified in NERC reliability standard TOP-005.

**2.2.59 "State Estimator"**
State Estimator shall mean that computer model that computes the state (voltage magnitudes and angles) of the transmission system using the network model and real-time measurements. Line flows, transformer flows, and injections at the buses are calculated from the known state and the transmission line parameters. The state estimator has the capability to detect and identify bad measurements.

**2.2.60 "System Impact Study"**
System Impact Study shall mean an engineering study that evaluates the impact of a proposed interconnection or transmission service request on the safety and reliability of transmission system and, if applicable, an Affected System. The study shall identify and detail the system impacts that would result if the generating facility were interconnected or transmission service commenced without project modifications or system modifications.

**2.2.61 "System Operating Limit"**
System Operating Limit shall mean the value (such as MW, MVAR, Amperes, Frequency, or Volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria.

**2.2.62 "Third Party"**
Third Party refers to any entity other than a Party to this Agreement.

**2.2.63 "Third Party Operating Entity"**
Third Party Operating Entity shall refer to a Third Party entity that operates and controls a portion of the bulk transmission system with the goal of ensuring reliable energy interchange between generators, loads, and other operating entities.

**2.2.64 "Total Flowgate Capability"**
Total Flowgate Capability shall mean the maximum amount of power that can flow across that interface without overloading (either on an actual or contingency basis) any element of the Flowgate. The Flowgate capability is in units of megawatts. If the Flowgate is voltage or stability limited, a megawatt proxy is determined to ensure adequate voltages and stability conditions.

**2.2.64.1 "Transmission Constraint Penalty Factor"**
Transmission Constraint Penalty Factor shall mean the maximum cost of the redispatch incurred to control the flows across a transmission constraint and establishes the maximum limit on the shadow price, consistent with the maximum Transmission Constraint Demand Curve value in Schedule 28-A in the MISO Tariff and the value in the Amended and Restated Operating Agreement of PJM Interconnection, L.L.C.,

Schedule 1, Section 5.6.2 and the parallel provisions in Attachment K – Appendix of the PJM Open Access Transmission Tariff.

**2.1.65 "Transmission Loading Relief"**
Transmission Loading Relief shall mean the procedures used in the Eastern Interconnection as specified in NERC reliability standard IRO-006 and the NAESB business practice WEQ-008.

**2.2.66 "Transmission Operator"**
Transmission Operator shall mean the entity responsible for the reliability of its "local" transmission system, and that operates or directs the operations of the transmission facilities.

**2.2.67 "Transmission Owner"**
Transmission Owner shall mean a Transmission Owner as defined under the Parties' respective tariff.

**2.2.68 "Transmission Reliability Margin"**
Transmission Reliability Margin shall mean that amount of transmission transfer capability necessary to ensure that the interconnected transmission network is secure under a reasonable range of uncertainties in system conditions.

**2.2.69 "Transmission Service Provider"**
Transmission Service Provider shall mean the entity that administers the transmission tariff and provides transmission service to transmission customers under applicable transmission service agreements.

**2.2.70 "Transmission System Emergencies"**
Transmission System Emergencies are conditions that have the potential to exceed or would exceed an IROL.

**2.2.71 "Unit Dispatch Systems"**
Unit Dispatch Systems shall mean those dispatch systems utilized by the Parties to dispatch generation units by calculating the most economic solution while simultaneously ensuring that each of the boundary constraints is resolved reliably.

**2.2.72 "Voltage and Reactive Power Coordination Procedures"**
Voltage and Reactive Power Coordination Procedures are the procedures under Article XIX for coordination of voltage control and reactive power requirements.

**MISO & PJM Market–to–Market**
**Interregional Coordination Process**
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Appendix A: Definitions

# 9 RESERVED