AMENDED AND RESTATED RELIABILITY COORDINATOR AGREEMENT

BETWEEN

LOUISVILLE GAS AND ELECTRIC COMPANY
AND KENTUCKY UTILITIES COMPANY

AND

TENNESSEE VALLEY AUTHORITY

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RELIABILITY COORDINATOR AGREEMENT

This Amended and Restated Reliability Coordinator Agreement (this "Agreement"), including all appendices, exhibits, and attachments, appended hereto, is entered into this 22nd day of August, 2019 ("Execution Date"), between Louisville Gas and Electric Company and Kentucky Utilities Company, corporations organized pursuant to the laws of the State of Kentucky (collectively, "LG&E/KU"), and the Tennessee Valley Authority, a federal government corporation ("TVA") created by and existing under and by virtue of the Tennessee Valley Authority Act of 1933, as amended, 16 U.S.C. §§ 831 *et seq.* (the "TVA Act"). LG&E/KU and TVA may sometimes be referred to herein individually as a "Party" and collectively as the "Parties." In its capacity as Reliability Coordinator (as such term is defined in the North American Electric Reliability Corporation ("NERC") Glossary of Terms Used in NERC Reliability Standards ("Glossary")) under this Agreement, TVA may also be referred to as the "Reliability Coordinator."

RECITALS

WHEREAS, LG&E/KU owns, among other things, an integrated electric transmission system ("Transmission System"), over which they currently provide open access transmission service to customers in the LG&E/KU Balancing Authority Area (as defined in Section 1.5 of LG&E/KU's Open Access Transmission Tariff, as on file with the Federal Energy Regulatory Commission ("FERC") and as may be changed from time to time (the "OATT"));

WHEREAS, TVA and LG&E/KU entered into to an Amended and Restated Reliability Coordinator Agreement on August 25, 2014 ("2014 RC Agreement") under which TVA has integrated the LG&E/KU Balancing Authority Area into the TVA Reliability Coordinator Area (as such term is defined in the NERC Glossary); performs the reliability coordination tasks of a registered Reliability Coordinator; performs transmission planning and regional coordination; approves LG&E/KU's maintenance schedules; identifies upgrades required to maintain reliability; makes non-binding recommendations relating to economic transmission system upgrades; and administers any seams agreements;

WHEREAS, LG&E/KU retains all remaining NERC obligations, including obligations associated with its status as a Balancing Authority and Transmission Operator (as such terms are defined in the NERC Glossary) and obligations to ensure the provision of transmission services under the OATT, and takes action necessary to protect reliability of the Transmission System, including circumstances where such action is necessary to protect, prevent or manage emergency situations;

WHEREAS, the Reliability Coordinator is: (i) a federal government corporation charged with providing electric power, flood control, navigational control, agricultural and industrial development, and other services to a region including Tennessee and parts of six contiguous states; and (ii) registered with and certified by NERC as a Reliability Coordinator;

WHEREAS, the Reliability Coordinator is independent from LG&E/KU, possesses the necessary competence and experience to perform the functions provided for hereunder and is

willing to perform such functions under the terms and conditions agreed upon by the Parties as set forth in this Agreement;

WHEREAS, as part of LG&E/KU's goal to maintain the requisite level of independence in the operation of its Transmission System to prevent any exercise of transmission market power, LG&E/KU has entered into an Independent Transmission Organization Agreement (the "Independent Transmission Organization Agreement"), including subsequent amendments thereto, with TranServ International, Inc., or its successor, (the "Independent Transmission Organization" or "ITO"), pursuant to which the Independent Transmission Organization provides to LG&E/KU certain key transmission-related functions under the OATT;

WHEREAS, TVA, LG&E/KU, and PJM Interconnection, L.L.C. ("PJM") participate in the Congestion Management Process ("CMP") through the amended Joint Reliability Coordination Agreement ("JRCA") with PJM;

WHEREAS, the Midcontinent Independent Operator, Inc. ("MISO"), through its Joint Operating Agreement with PJM, also participates in the CMP;

WHEREAS, by virtue of the reciprocity requirements found in Section 6.2 of the CMP, TVA will coordinate with MISO in order to manage regional coordination issues applicable under the CMP between the LG&E/KU system and MISO;

WHEREAS, TVA and LG&E/KU may choose to participate in similar reliability coordination agreements with other neighboring reliability coordination areas; and

WHEREAS, the Parties wish to amend and restate the 2014 RC Agreement to update the fee schedule, reflect the current CMP and amended JRCA, and otherwise clarify the roles and responsibilities of the Parties with respect to reliability coordination in operations.

NOW THEREFORE, in consideration of the mutual promises contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

Section 1 - Designation; Scope of Functions; Standards of Performance; Reliability Coordination Advisory Committee.

1.1 Designation. LG&E/KU appoints TVA to act as LG&E/KU's designated Reliability Coordinator pursuant to and in accordance with the terms and conditions of this Agreement. The Reliability Coordinator shall have no responsibility to LG&E/KU, except as specifically set forth in this Agreement.

1.2 Scope of Functions. The Reliability Coordinator shall perform the functions assigned to it and described in Attachment A and Attachment B (the "Functions") seven days a week, twenty-four hours a day, for the duration of the Term in accordance with the terms and conditions of this Agreement. In accordance with its obligations under this Section 1.2, the Reliability Coordinator is authorized to, and shall, direct and coordinate timely and appropriate actions by LG&E/KU, including curtailing transmission service or energy schedules, redispatching

generation, and shedding load, in each case, in order to avoid adverse effects on interregional bulk power reliability.

1.2.1 Relationship Between this Agreement and Attachment P to LG&E/KU's OATT. The Parties recognize that the relationship between LG&E/KU and the Reliability Coordinator and the Functions to be performed by the Reliability Coordinator must be reflected in LG&E/KU's OATT. The Reliability Coordinator relationship and the Functions assigned to the Reliability Coordinator under Attachment A and Attachment B to this Agreement shall be reflected in Attachment P to LG&E/KU's OATT. To the extent that there is a conflict between Attachment A and/or Attachment B to this Agreement and Attachment P to LG&E/KU's OATT, Attachment P to LG&E/KU's OATT shall govern. Any changes proposed by LG&E/KU to FERC in Attachment P in LG&E/KU's OATT, pursuant to Section 5.3 of Attachment P in LG&E/KU's OATT, regarding the Functions or any other provisions that concern the Reliability Coordinator shall reflect the mutual agreement of the Parties. Notwithstanding this Section 1.2.1, nothing in this Agreement or Attachment P to LG&E/KU's OATT shall grant FERC any additional jurisdiction over TVA.

1.3 Reliability Coordinator Procedures. The Reliability Coordinator shall develop the procedures and guidelines by which it will perform the Functions (the "Reliability Coordinator Procedures") in coordination with the RCAC (as defined in Section 1.10) The Reliability Coordinator Procedures shall be documented in a NERC-approved reliability plan for the TVA Reliability Coordination Area or in TVA Standard Procedures and Policies. The Reliability Coordinator shall provide LG&E/KU advance written notice of any amendment or change to the Reliability Coordinator Procedures. For purposes of this Agreement, the term "TVA Standard Procedures and Policies" shall mean such procedures and policies related to TVA's operations as may be promulgated and published by TVA pursuant to its legal authorities and obligations.

1.4 Threat to Reliability. If the Reliability Coordinator determines that an actual or potential threat to transmission system reliability exists, and that such threat may impair the reliability of a transmission system, then the Reliability Coordinator shall direct that LG&E/KU take whatever actions are necessary, consistent with Good Utility Practice (as defined below) and in accordance with the applicable reliability criteria, policies, standards, rules, regulations and other requirements of NERC (collectively, the "NERC Standards") and any applicable regional entity(s) (as that term is defined in section 215 of the Federal Power Act, 16 U.S.C. § 824*o*) (collectively, "Regional Standards"), to avoid or mitigate the effects of the threat to transmission system reliability. For purposes of this Agreement, "Good Utility Practice" shall mean any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods, and acts that, in a person's exercise of reasonable judgment in light of the facts as known to that person at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to include the range of acceptable practices, methods, or acts generally accepted in the region.

1.5 Reliability Coordinator Operating Instructions. Except as provided in the immediately succeeding sentence, LG&E/KU shall implement any operating instruction given by the Reliability Coordinator pursuant to Sections 1.2 or 1.4. LG&E/KU shall not be obligated to implement any operating instruction which LG&E/KU determines cannot be physically implemented or will violate safety, equipment, regulatory, or any state or federal statutory requirements applicable to LG&E/KU. LG&E/KU may review any operating instruction given by the Reliability Coordinator pursuant to Sections 1.2 or 1.4, to determine if it is, in LG&E/KU's judgment, in accordance with the requirements of Section 1.8. If LG&E/KU determines that any operating instruction is not in accordance with the requirements of Section 1.8, then it shall immediately so notify the Reliability Coordinator; provided, however, that, except as provided in the second sentence in this Section 1.5, LG&E/KU shall continue to implement the operating instruction until the Reliability Coordinator notifies LG&E/KU otherwise. LG&E/KU's notice to the Reliability Coordinator shall include: (a) information outlining the basis for LG&E/KU's determination that (i) the operating instruction is not in accordance with the requirements of Section 1.8 and, if applicable, (ii) that implementation of the operating instruction will violate any safety, equipment, regulatory, or any state or federal statutory requirements applicable to LG&E/KU; and (b) the alternative action that LG&E/KU would prefer to take to alleviate the problem addressed by the Reliability Coordinator's operating instruction. After prompt consideration of such information, the Reliability Coordinator shall issue an operating instruction to LG&E/KU in accordance with its obligations under this Agreement and LG&E/KU will, subject to the second sentence in this Section 1.5, act in accordance with such operating instruction.

1.6 Coordination with Independent Transmission Organization. In conjunction with its performance of the Functions, the Reliability Coordinator shall coordinate and cooperate with the Independent Transmission Organization and provide, subject to the terms and conditions of this Agreement, including the Reliability Coordinator's obligations with respect to Confidential Information in Section 10, any information that the Independent Transmission Organization may reasonably request in order to carry out its functions under the Independent Transmission Organization Agreement.

1.7 Expansion. Nothing in this Agreement is intended to prevent TVA from (a) coordinating, or cooperating in, interregional activities to relieve problems experienced by other transmission systems or (b) entering into other agreements with one or more third party transmission providers or operators to perform functions for such transmission providers or operators that are the same or similar to the Functions performed hereunder; provided, however, that it does not breach any of its obligations under this Agreement (including its obligations with respect to Confidential Information in Section 10) by entering into or performing any of its obligations under such other agreements; provided, further, that (i) any such other agreements shall provide for LG&E/KU to be reimbursed in an equitable manner for any capital expenditures made pursuant to this Agreement as well as for LG&E/KU's ongoing operations and maintenance expenditures to the extent such capital expenditures and operations and maintenance expenditures are used by the Reliability Coordinator in performing functions under such other agreements, (ii) LG&E/KU agrees to reimburse any such third party transmission providers or operators in an equitable manner for any capital expenditures made by such third parties as well as for such third parties' ongoing operations and maintenance expenditures to the extent such capital expenditures and operations and maintenance expenditures are used by the Reliability Coordinator in performing functions under this Agreement, and (iii) to the extent applicable, the Reliability

Coordinator shall revise the compensation provided for in Section 3.1 in accordance with the terms therein.

1.8 Reliability Coordinator's Standard of Performance. The Reliability Coordinator shall perform its obligations under this Agreement in accordance with: (a) Good Utility Practice; (b) the NERC Standards and Regional Standards; (c) LG&E/KU's specific reliability requirements and operating guidelines (to the extent these are not inconsistent with other requirements specified in this Section 1.8); (d) TVA Standard Procedures and Policies; and, (e) all state and federal laws, including the TVA Act, and the terms of governmental approvals applicable to one or both of the Parties. In performing its responsibilities under this Agreement, the Reliability Coordinator shall not discriminate against similarly situated persons.

1.9 LG&E/KU's Standard of Performance. LG&E/KU shall perform its obligations under this Agreement in accordance with: (a) Good Utility Practice; (b) the NERC Standards and Regional Standards; (c) any other LG&E/KU-specific reliability requirements and operating guidelines (to the extent these are not inconsistent with other requirements specified in this Section 1.9); and (d) all state and federal laws and the terms of governmental approvals applicable to LG&E/KU.

1.10 Reliability Coordination Advisory Committee.

1.10.1 Each Party shall designate one representative to serve on a Reliability Coordination Advisory Committee ("RCAC"), which shall be composed of representatives of each Party and representatives from each entity that has executed a similar reliability coordination agreement designating TVA as its Reliability Coordinator. Each Party may also designate one alternate to act in the absence of its representative on the RCAC. Written notice of each representative and alternate appointment shall be provided to each RCAC entity, and each Party may change its representatives upon written notice to the other RCAC entities.

1.10.2 The RCAC shall assist the Reliability Coordinator in the development of the initial Reliability Coordinator Procedures and the modification of existing Reliability Coordinator Procedures. In connection with these activities, the Reliability Coordinator may provide the other RCAC members with access to necessary data and documents maintained by the Reliability Coordinator, provided that each such RCAC member has signed the NERC Data Confidentiality Agreement (as defined below) and that all Confidential Information is treated as transmission operations and transmission system information pursuant to the NERC Data Confidentiality Agreement.

The RCAC shall meet at least once per Contract Year (as defined below). For purposes of this Agreement, a "Contract Year" shall consist of a twelve (12) month period. "Contract Year 1" shall begin on the Effective Date. Contract Years 2, 3, and 4 shall consist of the next three successive 12-month periods after Contract Year 1.

Section 2 - Independence.

2.1 Key Personnel. All Functions shall be performed by employees of the Reliability Coordinator (the "Key Personnel"). No Key Personnel shall also be employed by LG&E/KU or

any of its Affiliates (as defined in 18 C.F.R. § 35.34(b)(3) of FERC's regulations). The Reliability Coordinator and the Key Personnel shall be, and shall remain throughout the Term, Independent (as defined below) of LG&E/KU, its Affiliates and the Independent Transmission Organization. For purposes of this Agreement: "Independent" shall mean that the Reliability Coordinator and the Key Personnel are not subject to the control of LG&E/KU, its Affiliates or the Independent Transmission Organization, and have full decision making authority to perform all Functions in accordance with the provisions of this Agreement. Any Key Personnel owning securities in LG&E/KU, its Affiliates or the Independent Transmission Organization shall divest such securities within six (6) months of first being assigned to perform such Functions, provided that nothing in this Section 2.1 shall be interpreted or construed to preclude any such Key Personnel from indirectly owning securities issued by LG&E/KU, its Affiliates or the Independent Transmission Organization through a mutual fund or similar arrangement (other than a fund or arrangement specifically targeted toward the electric industry or the electric utility industry or any segment thereof) under which the Key Personnel does not control the purchase or sale of such securities. Participation by any Key Personnel in a pension plan of LG&E/KU, its Affiliates or the Independent Transmission Organization shall not be deemed to be a direct financial interest if the plan is a defined-benefit plan that does not involve the Key Personnel's ownership of the securities. For the avoidance of doubt, LG&E/KU shall not have an approval or consent right with respect to the selection of any Key Personnel.

2.2 Standards of Conduct Treatment. All Key Personnel shall be treated, for purposes of FERC's Standards of Conduct, as transmission employees. All restrictions relating to information sharing and other relationships between merchant employees and transmission employees shall apply to the Key Personnel.

Section 3 - Compensation, Billing and Payment.

3.1 Compensation. LG&E/KU shall pay to TVA an annual fee for performance of the Reliability Coordinator Services ("Annual Fee"). LG&E/KU shall pay to the Reliability Coordinator as compensation for the performance of the Functions under this Agreement as follows:

Subsequent Term Beginning	**Amount**
September 1, 2019	**$2,685,999**
September 1, 2020	**$2,872,835**
September 1, 2021	**$2,872,835**
September 1, 2022	**$2,872,835**
September 1, 2023	**$2,872,835**
September 1, 2024	**$2,872,835**

The Reliability Coordinator agrees that if at any time during the Term it expands its Reliability Coordination Area by providing similar services to additional Transmission Operators, the Reliability Coordinator will review and revise, as appropriate, the above compensation rate. Such revised compensation shall enable the Reliability Coordinator to recover its incremental costs associated with providing the specific service by allocating the costs among those subscribing to the service in an equitable manner (*e.g.*, costs may be allocated using a load ratio share

methodology (a participant's annual non-coincident peak load as a percentage of the total annual non-coincident peak load for those participating in the service)). Costs will be determined by the Reliability Coordinator based on its total cost of providing the service(s) as documented in the Reliability Coordinator's financial systems.

Compensation for Subsequent Terms (as defined in Section 4.2 herein) beyond those delineated above shall be based on the compensation in previous Contract Years and/or the methodology outlined above in this Section 3.1 and shall be negotiated by the Parties in good faith. Such negotiations shall begin not later than six months prior to, and shall be concluded no later than three months prior to, the beginning of the Subsequent Term.

Notwithstanding any provision to the contrary contained in this Agreement, if a Dispute should occur between the Parties with respect to the amount of compensation to be paid by LG&E/KU to the Reliability Coordinator (i) pursuant to this Sections 3.1 or (ii) in respect of additional services (other than the Functions) requested by LG&E/KU that the Reliability Coordinator elects, in its sole discretion, to provide, then, in each case, LG&E/KU shall file notice thereof with FERC. The Parties acknowledge that any FERC order issued with respect to such a dispute is only binding on LG&E/KU, not TVA.

3.2 Compensation After Termination. If LG&E/KU terminates this Agreement before the end of a Contract Year, then the Reliability Coordinator shall not be obligated to refund any amounts paid by LG&E/KU to the Reliability Coordinator as compensation for services provided by the Reliability Coordinator under this Agreement. If, however, the Reliability Coordinator terminates this Agreement before the end of a Contract Year or LG&E/KU and the Reliability Coordinator mutually agree to terminate this Agreement, then the Reliability Coordinator shall be obligated to refund to LG&E/KU an amount equal to the product of (a) any amounts paid by LG&E/KU to the Reliability Coordinator as compensation for services provided by the Reliability Coordinator under this Agreement during the Contract Year in which this Agreement is terminated and (b) the number of whole or partial months remaining in the Contract Year divided by twelve (12).

3.3 Reimbursement of Additional Costs. In addition to the compensation provided for in Section 3.1, LG&E/KU shall reimburse the Reliability Coordinator for (a) any additional costs incurred by the Reliability Coordinator at the request or direction of LG&E/KU or (b) any reasonable additional one-time costs necessarily incurred by Reliability Coordinator related to its activities under this Agreement that are not associated with services provided for in Section 3.1. Any costs under item (b) above shall be appropriately allocated by TVA among the Parties and those other entities that have executed similar reliability coordination agreements designating TVA as their reliability coordinator.

3.4 Payments. All payments by LG&E/KU to the Reliability Coordinator shall be made by the FedWire transfer method to the Reliability Coordinator’s account at the U.S. Treasury in accordance with the wire instructions indicated below, and all such payments shall be deemed received as of the date the electronic funds transfer to the Reliability Coordinator’s account is deemed effective.

Bank Name: TREAS NYC (official abbreviation)

Bank Address: New York Federal Reserve Bank, New York City

33 Liberty Street
New York, New York 10045

ABA Number: 021030004

Account No: 0004912

Beneficiary: Tennessee Valley Authority

Taxpayer ID: 62-0474417

OBI: Provide your organization name and invoice number or explanation of payment.

The Reliability Coordinator shall provide LG&E/KU with one or more contact persons for payment purposes and shall update such list of contact persons as necessary.

Section 4 - Effective Date; Term; Termination; Termination Fees; Transition Assistance Services.

4.1 Effective Date. The Parties acknowledge and agree that the effective date of this Agreement (the "Effective Date") shall be September 1, 2019 or such other date as permitted by FERC.

4.2 Term. This Agreement shall commence on Effective Date (as provided for in Section 4.1), and shall automatically continue for successive one-year terms (each, a "Subsequent Term") unless and until terminated pursuant to the termination provisions hereof. All Subsequent Terms, together with the Transition Assistance Period, if any, shall collectively be referred to as the "Term."

4.3 Mutually-Agreed Termination. This Agreement may be terminated by mutual agreement of the Parties at any time during the Term.

4.4 Termination at End of Term. Either Party may terminate this Agreement at the end of any Subsequent Term upon three (3) year's prior written notice to the other Party.

4.5 Termination for Cause.

4.5.1 Termination by Either Party. Either Party may terminate this Agreement effective immediately upon thirty (30) days' prior written notice thereof to the other Party if:

(a) Material Failure or Default. The other Party fails to comply with, observe or perform, or defaults, in any material respect, in the performance of the terms and conditions of this Agreement, and such failure or default remains uncured for thirty (30) days after notice thereof, provided that such failure or default is susceptible to cure and the other Party is exercising reasonable diligence to cure such failure or default;

(b) Pattern of Failure. It determines, in its sole discretion, that there has been a pattern of failure by the other Party to comply with the standards of performance required under this Agreement;

(c) Gross Negligence, Willful Misconduct or Fraud. The other Party commits gross negligence, willful misconduct or fraud in the performance of its obligations under this Agreement;

(d) Material Misrepresentation. Any representation made by the other Party hereunder shall be false or incorrect in any material respect when made and such misrepresentation is not cured within thirty (30) days of such discovery or is incapable of cure;

(e) Bankruptcy. The other Party: (i) files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause of action under any bankruptcy, insolvency, reorganization or similar law, or has any such petition filed or commenced against it; (ii) makes an assignment or any general arrangement for the benefit of creditors; (iii) otherwise becomes bankrupt or insolvent (however evidenced); (iv) has a liquidator, administrator, receiver, trustee, conservator or similar official appointed with respect to it or any substantial portion of its property or assets; or (v) is generally unable to pay its debts as they fall due;

(f) Dissolution. The other Party dissolves or is dissolved or its legal existence is otherwise terminated;

(g) Failure to Negotiate Amendment. The Parties are unsuccessful in negotiating an amendment or amendments to this Agreement pursuant to Section 17.6;

(h) Regulatory Changes/Modifications. FERC, in accepting this Agreement for filing, makes any material changes, modifications, additions, or deletions to this Agreement; or

(i) Extended Force Majeure. A Party is excused because of Force Majeure (as defined in Section 11 herein) for more than thirty (30) days from performing any of its material obligations under this Agreement.

4.5.2 Termination by LG&E/KU. LG&E/KU may terminate this Agreement effective immediately upon thirty (30) days' prior written notice thereof to the Reliability Coordinator if:

(a) the Reliability Coordinator loses its NERC certification once obtained; or

(b) FERC issues an order determining that TVA should no longer serve as LG&E/KU's Reliability Coordinator pursuant to this Agreement.

4.5.3 Termination by the Reliability Coordinator. The Reliability Coordinator may terminate this Agreement effective immediately upon thirty (30) days' prior written notice thereof to LG&E/KU if:

(a) LG&E/KU determines to cease being a Balancing Authority and/or Transmission Operator, provided that LG&E/KU shall provide the Reliability Coordinator as much advance written notice of such determination as is practicable to allow the Reliability Coordinator to terminate this Agreement on or prior to the time LG&E/KU ceases to be a Balancing Authority or Transmission Operator;

(b) FERC or any other person or entity takes any action to subject the Reliability Coordinator to FERC's plenary jurisdiction under the Federal Power Act ("FPA"); or

(c) Effective Date has not occurred within eighteen (18) months of the Execution Date.

4.6 Return of Materials. Upon any termination of this Agreement or the conclusion of any Transition Assistance Period pursuant to Section 4.8.1, whichever is later, the Reliability Coordinator shall timely and orderly turn over to LG&E/KU all materials that were prepared or developed prior thereto pursuant to this Agreement, and return or destroy, at the option of LG&E/KU, all Data and other information supplied by LG&E/KU to the Reliability Coordinator or created by the Reliability Coordinator on behalf of LG&E/KU.

4.7 Survival. All provisions of this Agreement which are by their nature or terms intended to survive the termination of this Agreement, including the obligations set forth in Sections 7 and 10, shall survive termination of this Agreement.

4.8 Transition Assistance Services.

4.8.1 Transition Assistance Period. Commencing on the date this Agreement is terminated and continuing for up to one (1) year thereafter (the "Transition Assistance Period"), the Reliability Coordinator shall (a) provide the Functions (and any replacements thereof or substitutions therefor), to the extent LG&E/KU requests such Functions to be performed during the Transition Assistance Period, and (b) cooperate with LG&E/KU in the transfer of the Functions (collectively, the "Transition Assistance Services"). During the Transition Assistance Period, the Parties shall use good faith efforts to ensure a smooth transition.

4.8.2 Transition Assistance Services. The Reliability Coordinator shall, upon LG&E/KU's request, provide the Transition Assistance Services during the Transition Assistance Period at the Reliability Coordinator's actual cost for such services. The quality and level of performance of the Functions by the Reliability Coordinator during the Transition Assistance Period shall not be degraded. After the expiration of the Transition Assistance Period, the Reliability Coordinator shall answer questions from LG&E/KU regarding the Functions on an "as needed" basis at the Reliability Coordinator's then-standard billing rates.

4.8.3 Key Personnel. During the Transition Assistance Period, the Reliability Coordinator shall not terminate, reassign or otherwise remove any Key Personnel without providing LG&E/KU thirty (30) days' prior notice of such termination, reassignment or removal unless such employee (a) voluntarily resigns from the Reliability Coordinator, (b) is dismissed by the Reliability Coordinator for cause, or (c) dies or is unable to work due to his or her disability.

4.9 Change in Reliability Entity. This Agreement is based on the existence of NERC and the applicability of the NERC Standards. If NERC ceases to exist in its current form or is replaced with an entity with authority over a Party's transmission system, the Parties shall promptly meet to determine whether to revise this Agreement to reflect the new reliability entity, if any, and the Parties' obligations in light of the new reliability entity or to terminate this Agreement in accordance with Section 4.2.

4.10 Prior Obligations and Liabilities Unaffected by Termination. Termination of this Agreement shall not relieve the Parties of any of their respective cost obligations or other obligations and liabilities related to this Agreement that were incurred prior to the effective date of termination of this Agreement.

Section 5 - Data Management.

5.1 Supply of Data. During the Term, LG&E/KU shall supply to the Reliability Coordinator, and/or grant the Reliability Coordinator access to all Data that the Reliability Coordinator reasonably requires to perform the Functions. The Parties shall agree upon the initial format and manner in which such Data shall be provided. For purposes of this Agreement, "Data" means all information, text, drawings, diagrams, images or sounds which are embodied in any electronic or tangible medium and which (a) are supplied or in respect of which access is granted to the Reliability Coordinator by LG&E/KU under this Agreement, which shall be LG&E/KU's Data, (b) are prepared, stored or transmitted by the Reliability Coordinator solely on behalf of LG&E/KU, which shall be LG&E/KU's Data; or (c) are compiled by the Reliability Coordinator by aggregating Data owned by LG&E/KU and Data owned by third parties, which shall be Reliability Coordinator's Data.

5.2 Property of Each Party. Each Party acknowledges that the other Party's Data and the other Party's software, base data models and operating procedures for software or base data models ("Processes") are the property of such other Party and agrees that it will do nothing inconsistent with such ownership, including preserving all intellectual property and/or proprietary rights in such other Party's Data and Processes as provided in Section 6.

5.3 Data Integrity. Each Party shall reasonably assist the other Party in establishing measures to preserve the integrity and prevent any corruption or loss of Data, and the Parties shall reasonably assist each other in the recovery of any corrupted or lost Data. Each Party shall retain and preserve any of the other Party's Data that are supplied to it during the Term, and shall exercise commercially reasonable efforts to preserve the integrity of the other Party's Data that are supplied to it during the Term, in order to prevent any corruption or loss of the other Party's Data.

5.4 Confidentiality. Each Party's Data shall be treated as Confidential Information in accordance with the provisions of Section 10.

Section 6 - Intellectual Property.

6.1 Pre-Existing Intellectual Property. Each Party shall own (and continue to own) all trade secrets, Processes and designs and other intellectual property that it owned prior to entering this Agreement, including any enhancements thereto ("Pre-Existing Intellectual Property"). Each Party acknowledges the ownership of the other Party's Pre-Existing Intellectual Property and agrees that it will do nothing inconsistent with such ownership. Each Party agrees that nothing in this Agreement shall give it any right, title or interest in the other Party's Pre-Existing Intellectual Property, other than the rights set forth in this Agreement. The Reliability Coordinator's Pre-Existing Intellectual Property shall include the Reliability Coordinator Retained Rights set forth in Section 6.3. LG&E/KU's Pre-Existing Intellectual Property shall include LG&E/KU Retained Rights set forth in Section 6.4.

6.1.1 Exclusion. Nothing in this Agreement shall prevent either Party from using general techniques, ideas, concepts and know-how gained by its employees during the performance of its obligations under this Agreement in the furtherance of its normal

business, to the extent that it does not result in disclosure of the other Party's Data or any data generated from the other Party's Data or other Confidential Information or an infringement by LG&E/KU or the Reliability Coordinator of any intellectual property right. For the avoidance of doubt, the use by a Party of such general techniques, ideas, concepts and know-how gained by its employees during the performance of its obligations under this Agreement shall not be deemed to be an infringement of the other Party's intellectual property rights so long as such matters are retained in the unaided memories of such employees and any Confidential Information is treated in accordance with the provisions of Section 10.

6.2 Jointly-Owned Intellectual Property. Except for the Data described in Section 5.1, all deliverables, whether software or otherwise, to the extent originated and prepared by the Reliability Coordinator exclusively in connection with the performance of its obligations under this Agreement shall be, upon payment of all amounts that may be due from LG&E/KU to the Reliability Coordinator, jointly owned by LG&E/KU and Reliability Coordinator ("Jointly-Owned Intellectual Property"). Each Party shall have the right to use the Jointly-Owned Intellectual Property without any right or duty or accounting to the other Party, except as provided in this Section 6.2. Upon the Reliability Coordinator using, transferring or licensing Jointly-Owned Intellectual Property for or to a third party, the Reliability Coordinator shall reimburse LG&E/KU in an equitable manner as determined by the Parties in good faith for the actual amounts paid by LG&E/KU to the Reliability Coordinator that relate to such Jointly- Owned Intellectual Property. Except as stated in the foregoing sentence, the Reliability Coordinator shall have no other obligation to account to LG&E/KU for any such use, transfer, license, disclosure, copying, modifying or enhancing of the Jointly-Owned Intellectual Property. Notwithstanding anything herein to the contrary, LG&E/KU may use the Jointly-Owned Intellectual Property for its internal business purposes, including licensing or transferring its interests therein to a third party for purposes of operating or performing functions in connection with LG&E/KU's transmission business.

6.3 Reliability Coordinator Retained Rights. The Reliability Coordinator shall retain all right, title and interest in its proprietary know-how, concepts, techniques, processes, materials and information that were or are developed entirely independently of this Agreement ("Reliability Coordinator Retained Rights"), whether or not such Reliability Coordinator Retained Rights are embodied in a deliverable, whether software or otherwise originated and prepared by the Reliability Coordinator in connection with the performance of its obligations under this Agreement. With respect to the Reliability Coordinator Retained Rights embodied in any deliverable, whether software or otherwise originated and prepared by the Reliability Coordinator in connection with the performance of its obligations under this Agreement, LG&E/KU is hereby granted a nonexclusive, perpetual, worldwide, royalty-free, fully paid-up license under such Reliability Coordinator Retained Rights to use such deliverable for LG&E/KU's internal business purposes only, including licensing or transferring its interests therein to an Affiliate of LG&E/KU or a third party for purposes of operating or performing functions in connection with LG&E/KU's transmission business.

6.4 LG&E/KU Retained Rights. LG&E/KU shall retain all right, title and interest in its proprietary know-how, concepts, techniques, processes, materials and information that were or are developed entirely independently of this Agreement ("LG&E/KU Retained Rights"), whether or not such LG&E/KU Retained Rights are embodied in a deliverable, whether software or

otherwise originated and prepared by LG&E/KU in connection with the performance of its obligations under this Agreement. With respect to LG&E/KU Retained Rights embodied in any software or otherwise originated and prepared by LG&E/KU in connection with the performance of its obligations under this Agreement, the Reliability Coordinator is hereby granted a nonexclusive, worldwide, royalty-free, fully paid-up license under such LG&E/KU Retained Rights to use such deliverable for the Reliability Coordinator's performance of its obligations under this Agreement only; provided that LG&E/KU shall not be liable in any way for the use of or reliance on such Reliability Coordinator Retained Rights by the Reliability Coordinator's Affiliate or third party for any purpose whatsoever.

6.5 Reliability Coordinator Non-Infringement; Indemnification. The Reliability Coordinator warrants to LG&E/KU that all Reliability Coordinator's Data and Processes, Reliability Coordinator Pre-Existing Intellectual Property, Reliability Coordinator Retained Rights, and deliverables prepared, produced or first developed by the Reliability Coordinator in connection with the performance of its obligations under this Agreement shall not infringe on any third party patent, copyright, trade secret or other third party proprietary rights. The Reliability Coordinator shall defend, hold harmless and indemnify LG&E/KU and its Affiliates and their respective employees, officers, directors, principals, owners, partners, shareholders, agents, representatives, consultants, and subcontractors (collectively, "LG&E/KU Representatives") from and against all claims, lawsuits, penalties, awards, judgments, court arbitration costs, attorneys' fees, and other reasonable out-of-pocket costs incurred in connection with such claims or lawsuits based upon the actual or alleged infringement of any of the foregoing rights; provided that LG&E/KU gives prompt written notice of any such claim or action to the Reliability Coordinator, permits the Reliability Coordinator to control the defense of any such claim or action with counsel of its choice, and cooperates with the Reliability Coordinator in the defense thereof; and further provided that such claim or action is not based on any alteration, modification or combination of the deliverable with any item, information or process not provided by the Reliability Coordinator, where there would be no infringement in the absence of such alteration, modification or combination. If any infringement action results in a final injunction against LG&E/KU or the LG&E/KU Representatives with respect to Reliability Coordinator's Data and Processes, Reliability Coordinator Pre-Existing Intellectual Property, Reliability Coordinator Retained Rights or deliverables prepared, produced or first developed by the Reliability Coordinator in connection with the performance of its obligations under this Agreement or in the event the use of such matters or any part thereof, is, in such lawsuit, held to constitute infringement, the Reliability Coordinator agrees that it shall, at its option and sole expense, either (a) procure for LG&E/KU or the LG&E/KU Representatives the right to continue using the infringing matter, or (b) replace the infringing matter with non-infringing items of equivalent functionality or modify the same so that it becomes non-infringing and retains its full functionality. If the Reliability Coordinator is unable to accomplish (a) or (b) above, the Reliability Coordinator shall reimburse LG&E/KU for all costs and fees paid by LG&E/KU to the Reliability Coordinator for the infringing matter. The above constitutes the Reliability Coordinator's complete liability for claims of infringement relating to any the Reliability Coordinator's Data and Processes, Reliability Coordinator Pre-Existing Intellectual Property, Reliability Coordinator Retained Rights, and deliverables prepared, produced or first developed by the Reliability Coordinator in connection with the performance of its obligations under this Agreement.

6.6 LG&E/KU Non-Infringement; Indemnification. LG&E/KU warrants to the Reliability Coordinator that, to its knowledge, all LG&E/KU's Data (except for Data created by

the Reliability Coordinator on behalf of LG&E/KU) and Processes, LG&E/KU Pre-Existing Intellectual Property, and LG&E/KU Retained Rights shall not infringe on any third party patent, copyright, trade secret or other third party proprietary rights. LG&E/KU shall defend, hold harmless and indemnify the Reliability Coordinator and its Affiliates and their respective employees, officers, directors, principals, owners, partners, shareholders, agents, representatives, consultants, and subcontractors against all claims, lawsuits, penalties, awards, judgments, court costs, and arbitration costs, attorneys' fees, and other reasonable out-of-pocket costs incurred in connection with such claims or lawsuits based upon the actual or alleged infringement of any of the foregoing rights; provided that the Reliability Coordinator gives prompt written notice of any such claim or action to LG&E/KU, permits LG&E/KU to control the defense of any such claim or action with counsel of its choice, and cooperates with LG&E/KU in the defense thereof; and further provided that such claim or action is not based on any alteration, modification or combination of the deliverable with any item, information or process not provided by LG&E/KU to the Reliability Coordinator, where there would be no infringement in the absence of such alteration, modification or combination. The above constitutes LG&E/KU's complete liability for claims of infringement relating to any of the LG&E/KU's Data and Processes, LG&E/KU Pre-Existing Intellectual Property, and LG&E/KU Retained Rights.

Section 7 - Indemnification.

7.1 Indemnification by the Parties. Each Party ("Indemnifying Party") shall indemnify, release, defend, reimburse and hold harmless the other Party and its Affiliates, and their respective directors, officers, employees, principals, representatives and agents (collectively, the "Indemnified Parties") from and against any and all claims, demands, liabilities, losses, causes of action, awards, fines, penalties, litigation, administrative proceedings and investigations, costs and expenses, and attorney fees (each, an "Indemnifiable Loss") asserted against or incurred by any of the Indemnified Parties arising out of, resulting from or based upon (a) a breach by the Indemnifying Party of its obligations under this Agreement, (b) claims of bodily injury or death of any person or damage to real and/or tangible personal property caused by the negligence or willful misconduct of the Indemnifying Party and its Affiliates and their respective directors, officers, employees, principals, representatives, agents or contractors during the Term, or (c) the acts or omissions of the Indemnifying Party and its Affiliates and their respective directors, officers, employees, principals, representatives, agents or contractors during the Term.

7.2 No Consequential Damages. Neither Party shall be liable to the other Party under this Agreement (by way of indemnification, damages or otherwise) for any indirect, incidental, exemplary, punitive, special or consequential damages, except in the case of gross negligence or willful misconduct.

7.3 Cooperation Regarding Claims. If an Indemnified Party receives notice or has knowledge of any Indemnifiable Loss that may result in a claim for indemnification by such Indemnified Party against an Indemnifying Party pursuant to this Section 7, such Indemnified Party shall as promptly as possible give the Indemnifying Party notice of such Indemnifiable Loss, including a reasonably detailed description of the facts and circumstances relating to such Indemnifiable Loss, a complete copy of all notices, pleadings and other papers related thereto, and in reasonable detail the basis for its claim for indemnification with respect thereto. Failure to promptly give such notice or to provide such information and documents shall not relieve the Indemnifying Party from the obligation hereunder to respond to or defend the Indemnified Party against such Indemnifiable Loss unless such failure shall materially diminish the ability of the

Indemnifying Party to respond to or to defend the Indemnified Party against such Indemnifiable Loss. The Indemnifying Party, upon its acknowledgment in writing of its obligation to indemnify the Indemnified Party in accordance with this Section 7, shall be entitled to assume the defense or to represent the interest of the Indemnified Party with respect to such Indemnifiable Loss, which shall include the right to select and direct legal counsel and other consultants, appear in proceedings on behalf of such Indemnified Party and to propose, accept or reject offers of settlement, all at its sole cost. If and to the extent that any such settlement is reasonably likely to involve injunctive, equitable or prospective relief or materially and adversely affect the Indemnified Party's business or operations other than as a result of money damages or other money payments, then such settlement will be subject to the reasonable approval of the Indemnified Party. Nothing herein shall prevent an Indemnified Party from retaining its own legal counsel and other consultants and participating in its own defense at its own cost and expense.

Section 8 - Contract Managers; Dispute Resolution.

8.1 LG&E/KU Contract Manager. LG&E/KU shall appoint an individual (the "LG&E/KU Contract Manager") who shall serve as the primary LG&E/KU representative under this Agreement. The LG&E/KU Contract Manager shall (a) have overall responsibility for managing and coordinating the performance of LG&E/KU's obligations under this Agreement, and (b) be authorized to act for and on behalf of LG&E/KU with respect to all matters relating to this Agreement. Notwithstanding the foregoing, the LG&E/KU Contract Manager may, upon prior written notice to the Reliability Coordinator, delegate such of his or her responsibilities to other LG&E/KU employees, as the LG&E/KU Contract Manager deems appropriate. LG&E/KU may, upon prior written notice to the Reliability Coordinator, change the LG&E/KU Contract Manager.

8.2 Reliability Coordinator Contract Manager. The Reliability Coordinator shall appoint, among the Key Personnel, an individual (the "Reliability Coordinator Contract Manager") who shall serve as the primary Reliability Coordinator representative under this Agreement. The Reliability Coordinator Contract Manager shall (a) have overall responsibility for managing and coordinating the performance of the Reliability Coordinator's obligations under this Agreement, and (b) be authorized to act for and on behalf of the Reliability Coordinator with respect to all matters relating to this Agreement. Notwithstanding the foregoing, the Reliability Coordinator Contract Manager may, upon prior written notice to LG&E/KU, delegate such of his or her responsibilities to other Key Personnel, as the Reliability Coordinator Contract Manager deems appropriate. The Reliability Coordinator may, upon prior written notice to LG&E/KU, change the Reliability Coordinator Contract Manager. For the avoidance of doubt, LG&E/KU shall not have an approval or consent right with respect to the selection of the Reliability Coordinator Contract Manager.

8.3 Resolution of Disputes. Any dispute, claim or controversy between the Parties arising out of or relating to this Agreement (each, a "Dispute") shall be resolved in accordance with the procedures set forth in this Section 8.3; provided, however, that this Section 8.3 shall not apply to Disputes arising from or relating to (a) the amount of compensation to be paid by LG&E/KU pursuant to the last sentence of Section 3.1, which shall be resolved pursuant thereto, or (b) confidentiality or intellectual property rights (in which case either Party shall be free to seek available legal or equitable remedies).

8.3.1 Notice of Dispute. Each Party shall provide written notice to the other party of any Dispute, including a description of the nature of the Dispute.

8.3.2 Dispute Resolution by Contract Managers. Any Dispute shall first be referred to the LG&E/KU Contract Manager and the Reliability Coordinator Contract Manager, who shall negotiate in good faith to resolve the Dispute.

8.3.3 Dispute Resolution by Executive Management Representatives. If the Dispute is not resolved within fifteen (15) days of being referred to the LG&E/KU Contract Manager and the Reliability Coordinator Contract Manager pursuant to Section 8.3.2, then each Party shall have five (5) days to appoint an executive management representative who shall negotiate in good faith to resolve the Dispute.

8.3.4 Exercise of Remedies at Law or in Equity. If the Parties' executive management representatives are unable to resolve the Dispute within thirty (30) days of their appointment, then each Party shall be free to pursue any remedies available to it and to take any action in law or equity that it believes necessary or convenient in order to enforce its rights or cause to be fulfilled any of the obligations or agreements of the other Party.

8.4 LG&E/KU Rights Under FPA Unaffected. Nothing in this Agreement is intended to limit or abridge any rights that LG&E/KU may have to file or make application before FERC under Section 205 of the FPA to revise any rates, terms or conditions of the OATT or any other FPA jurisdictional agreement.

8.5 Reliability Coordinator Rights Under the TVA Act and FPA Unaffected. Nothing in this Agreement is intended to limit or abridge any rights that the Reliability Coordinator may have under the TVA Act or the FPA, nor to require the Reliability Coordinator to violate the area limitations set forth in the TVA Act.

8.6 Statute of Limitations; Continued Performance. The Parties agree to waive the applicable statute of limitations during the period of time that the Parties are seeking to resolve a Dispute pursuant to Sections 8.3.2 and 8.3.3, and the statute of limitations shall be tolled for such period. The Parties shall continue to perform their obligations under this Agreement during the resolution of a Dispute.

Section 9 - Insurance.

9.1 Requirements. The Reliability Coordinator shall provide and maintain during the Term insurance coverage in the form and with minimum limits of liability as specified below, unless otherwise agreed to by the Parties.

9.1.1 Worker's compensation insurance in accordance with the Federal Employees Compensation Act (FECA).

9.1.2 Commercial general liability or equivalent insurance with a combined single limit of not less than $1,000,000 per occurrence. Such insurance shall include products/completed operations liability, owners protective, blanket contractual liability, personal injury liability and broad form property damage.

9.2 Insurance Matters. All insurance coverages required pursuant to Section 9.1 shall (a) be provided by insurance companies that have a Best Rating of A or higher, (b) provide that LG&E/KU is an additional insured (other than the workers' compensation insurance), (c) provide that LG&E/KU will receive at least thirty (30) days' written notice from the insurer prior to the cancellation or termination of or any material change in any such insurance coverages, and (d)

include waivers of any right of subrogation of the insurers thereunder against LG&E/KU. Certificates of insurance evidencing that the insurance required by Section 9.1 is in force shall be delivered by the Reliability Coordinator to LG&E/KU prior to the Effective Date.

9.3 Compliance. The Reliability Coordinator shall not commence performance of any Functions until all of the insurance required pursuant to Section 9.1 is in force, and the necessary documents have been received by LG&E/KU pursuant to Section 9.2. Compliance with the insurance provisions in Section 9 is expressly made a condition precedent to the obligation of LG&E/KU to make payment for any Functions performed by the Reliability Coordinator under this Agreement. The minimum insurance requirements set forth above shall not vary, limit or waive the Reliability Coordinator's legal or contractual responsibilities or liabilities under this Agreement.

Section 10 - Confidentiality.

10.1 Definition of Confidential Information. For purposes of this Agreement, "Confidential Information" shall mean, in respect of each Party, all activities by such Party and information and documentation of such Party, whether disclosed to or accessed by the other Party, in each case, in connection with this Agreement; provided, however, that the term "Confidential Information" shall not include information that: (a) is independently developed by the recipient, as demonstrated by the recipient's written records, without violating the disclosing Party's proprietary rights; (b) is or becomes publicly known (other than through unauthorized disclosure); (c) is disclosed by the owner of such information to a third party free of any obligation of confidentiality; (d) is already known by the recipient at the time of disclosure, as demonstrated by the recipient's written records, and the recipient has no obligation of confidentiality other than pursuant to this Agreement or any confidentiality agreements between the Parties entered into before the Effective Date; or (e) is rightfully received by a Party free of any obligation of confidentiality.

10.2 Protection of Confidential Information. All Confidential Information shall be held in confidence by the recipient to the same extent and in at least the same manner as the recipient protects its own confidential information, and such Confidential Information shall be used only for purposes of performing obligations under this Agreement. Except as otherwise provided in Section 10.4, neither Party shall disclose, publish, release, transfer, or otherwise make available Confidential Information of, or obtained from, the other Party in any form to, or for the use or benefit of, any person or entity without the disclosing Party's prior written consent. Each Party shall be permitted to disclose relevant aspects of the other Party's Confidential Information to its officers, directors, agents, professional advisors, contractors, subcontractors and employees and to the officers, directors, agents, professional advisors, contractors, subcontractors and employees of its Affiliates, to the extent that such disclosure is reasonably necessary for the performance of its duties and obligations or the determination, preservation or exercise of its rights and remedies under this Agreement; provided, however, that the recipient shall take all reasonable measures to ensure that Confidential Information of the disclosing Party is not disclosed or duplicated in contravention of the provisions of this Agreement by such officers, directors, agents, professional advisors, contractors, subcontractors and employees. The obligations in this Section 10 shall not restrict any disclosure pursuant to any local, state or federal governmental agency or authority if such release is necessary to comply with applicable laws, governmental regulations or orders of regulatory bodies or courts; provided that, other than in respect of disclosures pursuant to Section 10.4, the recipient shall give prompt notice to the disclosing Party in reasonable time to exercise

whatever legal rights the disclosing Party may have to prevent or limit such disclosure. Further, the recipient shall cooperate with the disclosing Party in preventing or limiting such disclosure.

10.3 NERC Data Confidentiality Agreement. In addition to, and not in limitation of, the confidentiality restrictions in Section 10.2, each Party shall sign the NERC Confidentiality Agreement for Electric System Operating Reliability Data approved by Board of Trustees on May 6, 2009, including subsequent amendments thereto, ("NERC Data Confidentiality Agreement") and shall treat all Confidential Information as transmission operations and transmission system information pursuant to the NERC Data Confidentiality Agreement.

10.4 FERC Requests for Confidential Information. Notwithstanding anything in this Agreement to the contrary, if FERC or its staff, during the course of an investigation or otherwise, requests information from the Reliability Coordinator related to services provided by the Reliability Coordinator to LG&E/KU that the Reliability Coordinator is otherwise required to maintain in confidence pursuant to this Agreement, the Reliability Coordinator shall provide the requested information to FERC or its staff within the time provided for in the request for information. In providing such information to FERC or its staff, the Reliability Coordinator shall, consistent with 18 C.F.R. §§ 388.112 and 388.113, request that the information be treated as confidential and non-public by FERC and its staff and that the information be withheld from public disclosure. The Reliability Coordinator shall notify LG&E/KU when it is notified by FERC or its staff that a request for public disclosure of, or decision to publicly disclose, confidential information has been received, at which time either the Reliability Coordinator or LG&E/KU may respond before such information is made public, pursuant to 18 C.F.R. §§ 388.112 and 388.113.

Section 11 - Force Majeure.

11.1 Neither Party shall be liable to the other Party for any failure or delay of performance hereunder due to causes beyond such Party's reasonable control, which by the exercise of reasonable due diligence such Party is unable, in whole or in part, to prevent or overcome (a "Force Majeure"), including acts of God, act of the public enemy, fire, explosion, vandalism, cable cut, storm or other catastrophes, weather impediments, national emergency, insurrections, riots, wars or any law, order, regulation, direction, action or request of any government or authority or instrumentality thereof. Neither Party shall be considered in default as to any obligation under this Agreement if prevented from fulfilling the obligation due to an event of Force Majeure, except for the obligation to pay any amount when due, provided that the affected Party:

11.1.1 gives notice to the other Party of the event or circumstance giving rise to the event of Force Majeure;

11.1.2 affords the other Party reasonable access to information about the event or circumstances giving rise to the event of Force Majeure;

11.1.3 takes commercially reasonable steps to restore its ability to perform its obligations hereunder as soon as reasonably practicable, provided that the affected Party shall not be obligated to take any steps that are not otherwise in accordance with Good Utility Practice; and

11.1.4 exercises commercially reasonable efforts to perform its obligations hereunder.

Section 12 - Reporting; Audit.

12.1 Reporting. The Reliability Coordinator shall make regular reports to FERC and LG&E/KU's retail regulators as may be required by applicable law and regulations or as may be requested by such authorities.

12.2 Books and Records. The Reliability Coordinator shall maintain full and accurate books and records pertinent to this Agreement, and the Reliability Coordinator shall maintain such books and records for three (3) years following the expiration or early termination of this Agreement or longer if necessary to resolve a pending Dispute. LG&E/KU will have the right, at reasonable times and under reasonable conditions, to inspect and audit, or have an independent third party inspect and audit, the Reliability Coordinator's operations and books to (a) ensure compliance with this Agreement, (b) verify any cost claims or other amounts due hereunder, and (c) validate the Reliability Coordinator's internal controls with respect to the performance of the Functions. The Reliability Coordinator shall maintain an audit trail, including all original transaction records, of all financial and non-financial transactions resulting from or arising in connection with this Agreement as may be necessary to enable LG&E/KU or the independent third party, as applicable, to perform the foregoing activities. LG&E/KU shall be responsible for any costs and expenses incurred in connection with any such inspection or audit, unless such inspection or audit discovers that LG&E/KU was charged inappropriate or incorrect costs and expenses, in which case, the Reliability Coordinator shall be responsible for a percentage of the costs and expenses incurred in connection with such inspection or audit equal to the percentage variance by which LG&E/KU was charged inappropriate or incorrect costs and expenses. The Reliability Coordinator shall provide reasonable assistance necessary to enable LG&E/KU or an independent third party, as applicable, and shall not be entitled to charge LG&E/KU for any such assistance. Amounts incorrectly or inappropriately invoiced by the Reliability Coordinator to LG&E/KU, whether discovered prior to or subsequent to payment by LG&E/KU, shall be adjusted or reimbursed to LG&E/KU by the Reliability Coordinator within twenty (20) days of notification by LG&E/KU to the Reliability Coordinator of the error in the invoice.

12.3 Regulatory Compliance. The Reliability Coordinator shall comply with all reasonable requests by LG&E/KU to comply with Section 404 of the Sarbanes-Oxley Act and related regulatory requirements. LG&E/KU may hire, at its expense, or LG&E/KU may direct the Reliability Coordinator to hire, at LG&E/KU expense, an independent auditor to review, audit and prepare audit reports associated with the Reliability Coordinator's controls and systems relating to the Functions and LG&E/KU's financial statements and reports, in accordance with SAS No. 70, Type II. Such reports may not be required more frequently than twice per Contract Year. The Reliability Coordinator shall notify LG&E/KU prior to or at the time of any significant or material change to any internal process or financial control of the Reliability Coordinator that would or might impact the Functions performed for or on behalf of LG&E/KU or that would, or might, have a significant or material effect on such process's mitigation of risk or upon the integrity of LG&E/KU's financial reporting or disclosures and provide sufficient details of the change so as to enable LG&E/KU and/or its independent auditors to review the change and evaluate its impact on its internal controls and financial reporting. The Reliability Coordinator shall cooperate with the independent auditors and LG&E/KU to enable the preparation of the reports necessary to comply with Section 404 of the Sarbanes-Oxley Act, consistent with the other provisions of this Agreement.

Section 13 - Independent Contractor.

The Reliability Coordinator shall be and remain during the Term an independent contractor with respect to LG&E/KU, and nothing contained in this Agreement shall be (a) construed as inconsistent with that status, or (b) deemed or construed to create the relationship of principal and agent or employer and employee, between the Reliability Coordinator and LG&E/KU or to make either the Reliability Coordinator or LG&E/KU partners, joint ventures, principals, fiduciaries, agents or employees of the other Party for any purpose. Neither Party shall represent itself to be an agent, partner or representative of the other Party. Neither Party shall commit or bind, nor be authorized to commit or bind, the other Party in any manner, without such other Party's prior written consent. Personnel employed, provided or used by any Party in connection herewith will not be employees of the other Party in any respect. Each Party shall have full responsibility for the actions or omissions of its employees and shall be responsible for their supervision, direction and control.

Section 14 - Taxes.

Each Party shall be responsible for the payment of its own taxes, including taxes based on its net income, employment taxes of its employees, taxes on any property it owns or leases, and sales, use, gross receipts, excise, value-added or other transaction taxes.

Section 15 - Notices.

15.1 Notices. Except as otherwise specified herein, any notice required or authorized by this Agreement shall be deemed properly given to a Party when sent to its designated representative by facsimile or other electronic means (with a confirmation copy sent by United States mail, first-class postage prepaid), by hand delivery, or by United States mail, first-class postage prepaid. The Parties' designated representatives are as follows:

If to LG&E/KU:

Louisville Gas and Electric Company
220 West Main St.
Louisville, Kentucky 40202
Facsimile: (502) 627-4002

And

Kentucky Utilities Company
220 West Main St.
Louisville, Kentucky 40202
Facsimile: (502) 627-4002

If to the Reliability Coordinator:

Tennessee Valley Authority
1101 Market Street, PCC 2A
Chattanooga, Tennessee 37402-2801
Facsimile: (423) 697-4120

15.2 Changes. Either Party may, from time to time, change the names, addresses, facsimile numbers or other notice information set out in Section 15.1 by notice to the other Party in accordance with the requirements of Section 15.1.

Section 16 - Key Personnel; Work Conditions.

16.1 Key Personnel. All Key Personnel shall be properly certified and licensed, if required by law, and be qualified and competent to perform the Functions.

16.2 Conduct of Key Personnel and Reporting. The Reliability Coordinator agrees to require that the Key Personnel comply with the Reliability Coordinator's employee code of conduct, a current copy of which has been provided to LG&E/KU. The Reliability Coordinator may amend its employee code of conduct at any time, provided that the Reliability Coordinator shall promptly provide the LG&E/KU Contract Manager with a copy of the amended employee code of conduct. If any Key Personnel commits fraud or engages in material violation of the Reliability Coordinator's employee code of conduct, the Reliability Coordinator shall promptly notify LG&E/KU as provided above and promptly remove any such Key Personnel from the performance of the Functions.

16.3 Personnel Screening. The Reliability Coordinator shall be responsible for conducting, in accordance with applicable law (including the Fair Credit Reporting Act, The Fair and Accurate Credit Transactions Act, and Title VII of the Civil Rights Act of 1964), adequate pre-deployment screening of the Key Personnel prior to commencing performance of the Functions. By deploying Key Personnel under this Agreement, the Reliability Coordinator represents that it has completed the Screening Measures (as defined below) with respect to such Key Personnel. To the extent permitted by applicable law, the term "Screening Measures" shall include, at a minimum, a background check including: (a) a Terrorist Watch Database Search; (b) a Social Security Number trace; (c) motor vehicle license and driving record check; and (d) a criminal history check, including, a criminal record check for each county/city and state/country in the employee's residence history for the maximum number of years permitted by law, up to seven (7) years. Unless prohibited by law, if, prior to or after assigning a Key Personnel to perform the Functions, the Reliability Coordinator learns of any information that the Reliability Coordinator considers would adversely affect such Key Personnel's suitability for the performance of the Functions (including based on information discovered from the Screening Measures), the Reliability Coordinator shall not assign the Key Personnel to the Functions or, if already assigned, promptly remove such Key Personnel from performing the Functions and immediately notify LG&E/KU of such action.

16.4 Security. LG&E/KU shall have the option of barring from LG&E/KU's property any Key Personnel whom LG&E/KU determines is not suitable in accordance with the applicable laws pursuant to Sections 16.1 through 16.3.

Section 17 - Miscellaneous Provisions.

17.1 Governing Law. This Agreement and the rights and obligations of the Parties hereunder shall be governed by and construed in accordance with applicable state and federal laws, without regard to the laws requiring the applicability of the laws of another jurisdiction.

17.2 Amendment. This Agreement shall not be varied or amended unless such variation or amendment is agreed to by the Parties in writing.

17.3 Assignment. Neither Party shall sell, assign, or otherwise transfer any or all of its respective rights hereunder, or delegate any or all of its respective obligations under this Agreement.

17.4 No Third Party Beneficiaries. Nothing in this Agreement is intended to confer any benefits upon any person or entity not a Party to this Agreement. This Agreement is made solely for the benefit of the Parties and nothing herein shall be construed as a stipulation for the benefit of others, and no third party shall be entitled to enforce this Agreement against any Party hereto.

17.5 Waivers. No waiver of any provision of this Agreement shall be effective unless it is signed by the Party against which it is sought to be enforced. The delay or failure by either Party to exercise or enforce any of its rights under this Agreement shall not constitute or be deemed a waiver of that Party's right thereafter to enforce those rights, nor shall any single or partial exercise of any such right preclude any other or further exercise thereof or the exercise of any other right.

17.6 Severability; Renegotiation. The invalidity or unenforceability of any portion or provision of this Agreement shall in no way affect the validity or enforceability of any other portion or provision herein. If any provision of this Agreement is found to be invalid, illegal or otherwise unenforceable, the same shall not affect the other provisions hereof or the whole of this Agreement and shall not render invalid, illegal or unenforceable this Agreement or any of the remaining provisions of this Agreement. If any provision of this Agreement or the application thereof to any person, entity or circumstance, is held by a court or regulatory authority of competent jurisdiction to be invalid, void or unenforceable, or if a modification, condition or other change to this Agreement is imposed by a court or regulatory authority of competent jurisdiction which materially affects the benefits or obligations of the Parties, then the Parties shall in good faith negotiate such amendment or amendments to this Agreement as will restore the relative benefits and obligation of the Parties immediately prior to such holding, modification or condition. If such negotiations are unsuccessful, then either Party may terminate this Agreement pursuant to Section 4.5.1.

17.7 Representations and Warranties. Each Party represents and warrants to the other Party as of the Execution Date and the Effective Date as follows:

17.7.1 Organization. It is duly organized, validly existing and in good standing under the laws of the State in which it was organized or applicable Federal law, and has all the requisite power and authority to own and operate its material assets and properties and to carry on its business as now being conducted and as proposed to be conducted under this Agreement.

17.7.2 Authority. It has the requisite power and authority to execute and deliver this Agreement and, subject to the procurement of applicable regulatory approvals, to perform its obligations under this Agreement. The execution and delivery of this Agreement by it and the performance of its obligations under this Agreement have been duly authorized by all necessary corporate action required on its part.

17.7.3 Binding Effect. Assuming the due authorization, execution and delivery of this Agreement by the other Party, this Agreement constitutes its legal, valid and binding obligation enforceable against it in accordance with its terms, except as the same may be limited by bankruptcy, insolvency or other similar applicable laws affecting creditors'

rights generally, and by general principles of equity regardless of whether such principles are considered in a proceeding at law or in equity.

17.7.4 Regulatory Approval. It has obtained or will obtain by the Effective Date, any and all approvals of, and acceptances for filing by, and has given or will give any notices to, any applicable federal or state authority, that are required for it to execute, deliver, and perform its obligations under this Agreement.

17.7.5 No Litigation. There are no actions at law, suits in equity, proceedings, or claims pending or, to its knowledge, threatened against it before or by any federal, state, foreign or local court, tribunal, or governmental agency or authority that might materially delay, prevent, or hinder the performance by such entity of its obligations hereunder.

17.7.6 No Violation or Breach. The execution, delivery and performance by it of its obligations under this Agreement do not and shall not: (a) violate its organizational documents; (b) violate any applicable law, statute, order, rule, regulation or judgment promulgated or entered by any applicable federal or state authority, which violation could reasonably be expected to materially adversely affect the performance of its obligations under this Agreement; or (c) result in a breach of or constitute a default of any material agreement to which it is a party.

17.8 Further Assurances. Each Party agrees that it shall execute and deliver such further instruments, provide all information, and take or forbear such further acts and things as may be reasonably required or useful to carry out the purpose of this Agreement and are not inconsistent with the provisions of this Agreement.

17.9 Entire Agreement. This Agreement and the Attachments hereto set forth the entire agreement between the Parties with respect to the subject matter hereof, and supersede all prior agreements, whether oral or written, related to the subject matter of this Agreement, including that certain Reliability Coordinator Agreement, dated as of January 10, 2006, between the Parties. The terms of this Agreement and the Attachments hereto are controlling, and no parole or extrinsic evidence, including to prior drafts and drafts exchanged with any third parties, shall be used to vary, contradict or interpret the express terms, and conditions of this Agreement.

17.10 Good Faith Efforts. Each Party agrees that it shall in good faith take all reasonable actions necessary to permit it and the other Party to fulfill their obligations under this Agreement. Where the consent, agreement or approval of any Party must be obtained hereunder, such consent, agreement or approval shall not be unreasonably withheld, delayed or conditioned. Where a Party is required or permitted to act, or omit to act, based on its opinion or judgment, such opinion or judgment shall not be unreasonably exercised. To the extent that the jurisdiction of any federal or state authority applies to any part of this Agreement or the transactions or actions covered by this Agreement, each Party shall cooperate with the other Party to secure any necessary or desirable approval or acceptance of such authorities of such part of this Agreement or such transactions or actions.

17.11 Time of the Essence. With respect to all duties, obligations and rights of the Parties, time shall be of the essence in this Agreement.

17.12 Interpretation. Unless the context of this Agreement otherwise clearly requires:

17.12.1 all defined terms in the singular shall have the same meaning when used in the plural and vice versa;

17.12.2 the terms "hereof," "herein," "hereto" and similar words refer to this entire Agreement and not to any particular Section, Attachment or any other subdivision of this Agreement;

17.12.3 references to "Section" or "Attachment" refer to this Agreement, unless specified otherwise;

17.12.4 references to any law, statute, rule, regulation, notification or statutory provision shall be construed as a reference to the same as it applies to this Agreement and may have been, or may from time to time be, amended, modified or re-enacted;

17.12.5 references to "includes," "including" and similar phrases shall mean "including, without limitation;"

17.12.6 the captions, section numbers and headings in this Agreement are included for convenience of reference only and shall not in any way affect the meaning or interpretation of this Agreement;

17.12.7 "or" may not be mutually exclusive, and can be construed to mean "and" where the context requires there to be a multiple rather than an alternative obligation; and

17.12.8 references to a particular entity include such entity's successors and assigns to the extent not prohibited by this Agreement.

17.12.9 any capitalized terms used in this Agreement, including the Appendices, that are not defined in this Agreement or in the Appendices, shall have the meaning established in the applicable NERC documentation.

17.13 Joint Effort. Preparation of this Agreement has been a joint effort of the Parties and the resulting document shall not be construed more severely against one of the Parties than against the other and no provision in this Agreement is to be interpreted for or against any Party because that Party or its counsel drafted such provision. Each Party acknowledges that in executing this Agreement it has relied solely on its own judgment, belief and knowledge, and such advice as it may have received from its own counsel, and it has not been influenced by any representation or statement made by the other Party or its counsel not contained in this Agreement.

17.14 Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument, binding upon LG&E/KU and the Reliability Coordinator, notwithstanding that LG&E/KU and the Reliability Coordinator may not have executed the same counterpart.

Section 18 – Confidential Critical Infrastructure Information Protection. Notwithstanding any other applicable confidentiality provisions in this RC Agreement including Section 10 above, the following provisions of this Section 18 shall apply with respect to LG&E/KU's Protected Assets and Information. Any capitalized terms in this provision not otherwise defined herein shall have the meaning assigned in the NERC Glossary of Terms. "LG&E/KU's Protected Assets and Information" is defined as: (i) LG&E/KU's BES Cyber Assets and BES Cyber Systems, (ii) LG&E/KU's Cyber Assets used in access control and monitoring of LG&E/KU's Electronic Security Perimeter(s), (iii) LG&E/KU's Cyber Assets that authorize or log access to LG&E/KU's Physical Security Perimeter(s) or (iv) any information identified by LG&E/KU as BES Cyber System Information, disaster recovery plans, incident response plans, and any other confidential information relating to the reliability or operability of the Bulk Electric

System. LG&E/KU's Protected Assets and Information and information generated or otherwise developed by the Reliability Coordinator in connection with its performance of the Reliability Coordinator functions that is related to LG&E/KU's Protected Assets and Information, collectively, shall be treated as "Confidential Critical Infrastructure Information" for the purposes of this RC Agreement. The Reliability Coordinator shall not disclose any Confidential Critical Infrastructure Information (which will be clearly marked or otherwise identified by LG&E/KU as Confidential Critical Infrastructure Information) to any person or entity, except strictly on a need-to-know basis, and shall take all necessary actions to protect the Confidential Critical Infrastructure Information, including, without limitation, ensuring that appropriate electronic and/or password access controls are in place; ensuring such information is handled, stored, and labelled in accordance with applicable regulatory requirements (including applicable NERC Reliability Standards); encrypting all such information stored on laptops or removable media (such as a USB drive); and maintaining any such hard copy information in a secure, locked storage container and not permitting any unauthorized individual to view, handle or possess such information. The Reliability Coordinator shall provide to LG&E/KU a list of all the Reliability Coordinator employees, subcontractors or other persons associated with the Reliability Coordinator with access to any Confidential Critical Infrastructure Information when and as requested by LG&E/KU. The Reliability Coordinator will provide notification by contacting the LG&E/KU's NERC Compliance representative identified below immediately upon becoming aware that it has disclosed any Confidential Critical Infrastructure Information in violation of this Section 18. The Reliability Coordinator shall ensure that each recipient of any Confidential Critical Infrastructure Information understands and complies with the requirements to protect Confidential Critical Infrastructure Information from inappropriate disclosure as set forth in this Section 18. Notwithstanding anything to the contrary in the Contract, with respect to any Confidential Critical Infrastructure Information, the restrictions set forth in this Section 18 shall remain in effect indefinitely from the date such Confidential Critical Infrastructure Information was first disclosed to or obtained or discovered by the Reliability Coordinator. The Reliability Coordinator shall, upon request and as directed by LG&E/KU, promptly return to LG&E/KU, or otherwise properly dispose of, any and all Confidential Critical Infrastructure Information that is in the possession of the Reliability Coordinator or any of its employees or subcontractors. Notwithstanding the foregoing, LG&E/KU shall not provide and the Reliability Coordinator shall not require LG&E/KU to provide Confidential Critical Infrastructure Information that also constitutes BES Cyber System Information without the Parties first agreeing on such other protective measures as will be applied to such BES Cyber System Information in accordance with applicable NERC Standards.

The parties have caused this Reliability Coordinator Agreement to be executed by their duly authorized representatives as of the dates shown below.

LOUISVILLE GAS AND ELECTRIC COMPANY

Name: Tom Jessee
Title: Vice President, Transmission
Date: 8/20/2019

KENTUCKY UTILITIES COMPANY

Name: Tom Jessee
Title: Vice President, Transmission
Date: 8/20/2019

TENNESSEE VALLEY AUTHORITY

8/22/2019

Name: Aaron P. Melda
Title: Vice President, Transmission Operations & Power Supply
Date:

ATTACHMENT A
TO THE RELIABILITY COORDINATOR AGREEMENT

DESCRIPTION OF THE PRIMARY FUNCTIONS

The Reliability Coordinator is responsible for bulk transmission reliability and power supply reliability functions. Bulk transmission reliability functions include reliability analysis, loading relief procedures, re-dispatch of generation and ordering curtailment of transactions and/or load. Power supply reliability functions include monitoring Balancing Authority Area performance and ordering the Balancing Authority to take actions, including load curtailment and increasing/decreasing generation in situations where an imbalance between generation and load places the system in jeopardy. The procedures to be followed by the Reliability Coordinator shall be consistent with those of NERC and are spelled out in the NERC Approved Reliability Plan for the TVA Reliability Coordinator Area and TVA Standard Programs and Processes.

I. Reliability Coordinator General Functions:

The Reliability Coordinator shall perform the following functions:

a) Serving as the certified and registered NERC Reliability Coordinator and represent the TVA Reliability Coordinator Area at the NERC and regional entity level.

b) Implementing applicable NERC and regional entity initiatives, such as maintaining a connection to the Eastern Interconnect Data Sharing Network ("EIDSN"), day-ahead load-flow analysis, transmission loading relief procedures, and information exchange.

c) Developing and coordinating with the Reliability Coordination Advisory Committee ("RCAC") new Reliability Coordinator Procedures and revisions to existing Reliability Coordinator Procedures.

d) Exchanging timely, accurate, and relevant Transmission System information with LG&E/KU, the ITO, and with other reliability coordinators.

e) Developing and maintaining system models and tools needed to perform analysis needed to develop operational plans.

f) Coordinating with neighboring reliability coordinators and other operating entities as appropriate to ensure regional reliability.

g) All other reliability coordinator functions as required for compliance with applicable NERC Reliability Standards and Regional Standards, as the same may be amended or modified from time to time.

II. Real-time Operations:

A. Reliability Coordinator Functions:

The Reliability Coordinator shall perform the following functions:

a) Monitoring, analyzing, and coordinating the reliability of LG&E/KU's facilities and interfaces with other Balancing Authorities, Transmission Operators, and other

reliability coordinators.

b) Performing analyses to develop an evaluation of system conditions. LG&E/KU will provide necessary information (e.g., outages and transactions) and Transmission System conditions, as applicable, to the Reliability Coordinator in accordance with applicable NERC Reliability Standards. The results of these analyses will be provided to LG&E/KU and neighboring reliability coordinators in accordance with applicable NERC Standards and Regional Standards.

c) Determining, directing, and documenting appropriate actions to be taken by LG&E/KU, the ITO and Reliability Coordinator for real-time contingency analysis ("RTCA") and real-time overloads in accordance with the NERC Reliability Standards, including curtailment of transmission service or energy schedules, re-dispatch of generation and load shedding as necessary to alleviate facility overloads and abnormal voltage conditions, and other circumstances that affect interregional bulk power reliability.

d) Coordinating transmission loading relief and voltage correction actions with LG&E/KU and with other reliability coordinators.

e) The Reliability Coordinator will perform Real Time Assessments ("RTA") of the LG&E/KU Transmission Operator and Balancing Authority Areas if LG&E/KU notifies the Reliability Coordinator of a loss of tools or functionality. If ICCP data is available from LG&E/KU, the Reliability Coordinator will perform an RTA within the time period prescribed by NERC and Regional Standards using real time data. If ICCP data is interrupted or unavailable, the Reliability Coordinator will perform the RTA within the prescribed time period using last best available data. Based upon output of contingency analysis tools and knowledge of real time operating conditions, pre- or post-contingency actions shall be taken as necessary. This will ensure the reliability of the LG&E/KU Transmission Operator and Balancing Authority Areas and operating conditions are within acceptable reliability criteria in preventing SOL and IROL exceedances. To ensure timely implementation of applicable Operating Plans, the Reliability Coordinator will share the results of the RTA through tools or other mutually agreed upon means. The Reliability Coordinator will notify LG&E/KU of any system outage or service interruption that impacts the tools used to perform the RTA or communicate the RTA results.

B. <u>LG&E/KU Responsibilities</u>:

LG&E/KU shall have the following responsibilities:

a) Ensuring appropriate telemetry and providing Reliability Coordinator real-time operational information for monitoring.

b) Receiving from the Reliability Coordinator all reliability alerts for TVA Reliability Coordinator Area and neighboring reliability coordinator areas.

c) Following Reliability Coordinator operating instructions (e.g., curtailments or load shedding) during system emergencies or to implement Transmission Loading Relief procedures.

d) Receiving from Reliability Coordinator all notices regarding Transmission System limitations or other reliability issues, as appropriate.

e) Providing data updates with system changes for ICCP studies within a timely manner during RTA or other data loss instances.

III. <u>Forward Operations</u>:

A. Reliability Coordinator Functions:

The Reliability Coordinator shall perform the following functions:

a) Performing analyses and develop an evaluation of the expected next-day Transmission System operations. The results of these analyses shall be provided to LG&E/KU, the ITO and neighboring reliability coordinators in accordance with applicable NERC Reliability Standards and Regional Standards.

b) Performing analysis of planned transmission and generation outages and coordination of outages with NERC, participants in reliability coordination agreements, and other reliability coordinators as appropriate and as required by NERC. This entails analysis and coordination of planned outages which are beyond next day and intra-day outages.

c) Analyzing and approving all planned maintenance schedules on facilities 100kV and above and planned maintenance of generation facilities submitted by LG&E/KU in conjunction with other work on the regional transmission grid to determine the impact of LG&E/KU's planned maintenance schedule on the reliability of the facilities under TVA's purview as Reliability Coordinator, and the purview of neighboring reliability coordinators, and any other relevant effects; and coordinate impacts on available transfer capability with the ITO.

d) Coordinating, as required by either NERC or other agreements, planned maintenance schedules with all adjacent reliability coordination areas and/or Balancing Authority Areas and Transmission Providers; as well as the ITO.

B. <u>LG&E/KU Responsibilities</u>:

LG&E/KU shall have the following responsibilities:

a) Providing generation-related information (e.g., outages and transactions) and expected Transmission System conditions (e.g., transmission facility outages and transactions), as applicable, to the Reliability Coordinator for the next-day operation in accordance with applicable NERC Reliability Standards and Regional Standards.

b) Submitting facility ratings and operational data for all generators and transmission facilities in the LG&E/KU footprint.

c) Coordinating with the ITO and submitting to the Reliability Coordinator generation dispatch information for the LG&E/KU footprint and following Reliability Coordinator operating instructions regarding dispatch adjustments to mitigate congestion.

d) Submitting to the Reliability Coordinator generation operation plans and commitments for reliability analysis.

e) Submitting to the Reliability Coordinator transmission maintenance plans for reliability analysis.

f) Following Reliability Coordinator requests to revise transmission maintenance plans as required to ensure grid reliability.

g) Receiving from Reliability Coordinator all notices regarding reliability analyses for the TVA Reliability Area as well as neighboring reliability coordinators.

h) Representing LG&E/KU on the RCAC and in all RCAC deliberations.

IV. Regional Congestion Management

For the purposes of this section IV, capitalized terms will have the definitions used in the Congestion Management Process ("CMP"), unless otherwise noted in this section IV.

A. Reliability Coordinator Functions:

The following functions to be performed by the Reliability Coordinator shall be performed in conjunction with the functions to be performed by the Independent Transmission Operator under the Independent Transmission Organization Agreement and will fully incorporate the LG&E/KU operations into the procedures and protocols governing other facilities in the Reliability Coordinator's Reliability Coordination Area in accordance with the CMP:

a) Identifying Coordinated Flowgates and determination of flowgates requiring Reciprocal Coordination (twice annually).

b) Performing Historic Firm Flow Calculations -- implement transmission service reservation set and designated resources provided by LG&E/KU for established freeze date; calculate historic firm flow values and ratios for all coordinated flowgates on LG&E/KU's system (bi-annually).

c) Developing reciprocal coordination agreements that establish how each Operating Entity will consider its own flowgates as well as the usage of other Operating Entities when it determines the amount of flowgate or constraint capacity remaining. This process will include both operating horizon determination as well as forward looking capacity allocation.

d) Implementing AFC Process -- determine Available Flowgate Capability ("AFC") attribute requirements; obtain NNL Impact Data; implement Allocation Calculation Process; implement AFC calculation process.

e) The Reliability Coordinator will provide the ITO flowgate AFCs on an hourly basis and flowgate allocations on a daily basis.

B. LG&E/KU Responsibilities:

LG&E/KU is obligated to uphold the terms and conditions of the CMP, and providing the Reliability Coordinator with the information and support it needs in

order to carry out its duties as LG&E/KU's Reliability Coordinator. LG&E/KU shall have the following responsibilities. LG&E/KU will be responsible for coordinating with the ITO and providing Transmission System data to the Reliability Coordinator including, but not limited to:

Operating information:

(i) Transmission Service Reservations;
(ii) Load forecast requirements;
(iii) Flowgates requirements;
(iv) AFC data requirements;
(v) PSSE Models Requirements;
(vi) Designated Network Resources requirements;
(vii) Jointly owned units;
(viii) Dynamic schedules;
(ix) NNL allocations requirements; and,
(x) NNL Evaluator Requirements.

Projected operating information:

(i) Unit commitment/merit order;
(ii) Firm purchase and sales (including grandfathered agreements);
(iii) Independent power producer information including current operating level, projected operating levels, Scheduled Outage start and end dates;
(iv) Planned and actual operational start-up dates for any permanently added, removed, or significantly altered transmission segments; and
(v) Planned and actual start-up testing and operational start-up dates for any permanently added, removed, or significantly altered generation units.

C. <u>ITO Responsibilities</u>:

The ITO shall have the following responsibilities in support of the CMP:

a) Providing to the Reliability Coordinator all transmission facility plans and facility upgrade schedules.

b) Providing to the Reliability Coordinator the status of all transmission service requests and all new transmission service agreements.

c) Receiving from the Reliability Coordinator all flowgate AFCs on an hourly basis and flowgate allocations on a daily basis.

d) Converting flowgate information provided by the Reliability Coordinator to ATC values for posting on OASIS and for analyzing TSRs.

e) Implementing CMP business rules for AFC vs. ASTFC.

f) Honoring all AFC allocations and AFC over-rides from other CMP participants in the evaluation and granting of transmission service.

V. Reliability Coordination Planning

A. Reliability Coordinator Functions:

The Reliability Coordinator will ensure a long-term (one year and beyond) plan is available for adequate resources and transmission within the TVA Reliability Coordinator Area. The Reliability Coordinator will coordinate the Reliability Coordinator Area Plan with those of neighboring reliability coordinators and Planning Coordinators (including LG&E/KU as the Planning Coordinator) to ensure wide-area grid reliability.

In addition, the Reliability Coordinator will review the long-term Annual Transmission Plan ("Annual Plan") provided by the ITO to consider how the Annual Plan aligns with the TVA Reliability Coordinator Area Plan and the plans of other operating entities in the Reliability Coordinator Area in order to assess whether the plans meet NERC Standards and applicable Regional Standards. The Reliability Coordinator will advise the ITO of potential solutions in the event the Annual Plan does not meet those standards or does not align with the TVA Reliability Coordinator Area Plan.

More specifically, the Reliability Coordinator functions include:

a) Integrating the transmission and resource (demand and capacity) system models provided by the ITO with those of other Reliability Coordinator Area operating entities to ensure Transmission System reliability and resource adequacy.

b) Applying methodologies and tools to assess and analyze the Transmission System's expansion plans and the resource adequacy plans.

c) Collecting all information and data required for modeling and evaluation purposes.

d) Verifying that the respective plans of the Resource Planners and Transmission Planners within the TVA Reliability Coordinator Area meet NERC Standards and applicable Regional Standards and integrating those plans into the Reliability Coordinator Area Plan, as appropriate.

e) Coordinating the Reliability Coordinator Area Plan with neighboring reliability coordinators, as appropriate.

f) Coordinating the Reliability Coordinator Area Plan with neighboring Planning Coordinators/reliability coordinators' plans, as appropriate, to provide a broad multi-regional bulk system planning view.

B. LG&E/KU Responsibilities:

LG&E/KU shall have the following responsibilities:

a) Providing to the Reliability Coordinator demand and energy end-use customer

forecasts, capacity resources, and demand response programs.

b) Providing to the Reliability Coordinator generator unit performance characteristics and capabilities.

c) Providing to Reliability Coordinator long-term capacity purchases and sales.

ATTACHMENT B

DIVISION OF RESPONSIBILITIES FOR THE PLANNING FUNCTION

Overview

This Attachment B to the Reliability Coordinator Agreement is designed to provide a division of responsibilities between LG&E/KU, the ITO and the Reliability Coordinator. Long-term Transmission Planning for LG&E/KU's footprint will be conducted as an iterative process as follows: 1) LG&E/KU will develop the Annual Plan and submit the Annual Plan to the ITO for initial approval; 2) The ITO will review and conduct an engineering assessment of the Annual Plan; and if it is approved, the ITO will submit the Annual Plan to the Reliability Coordinator; 3) The Reliability Coordinator will conduct a regional assessment of the Annual Plan, subject to the conditions below; 4) The Reliability Coordinator will submit any changes based on its regional assessment to the ITO for final review and approval. The ITO will ensure that transmission planning on the Transmission Owner's system is done on an independent, non-discriminatory basis. This process is further detailed below.

1. Plan Development by LG&E/KU

LG&E/KU will be responsible for the following tasks:

1.1 **System Models for Transmission Planning**. LG&E/KU will develop and maintain all transmission and resource (demand and capacity) system models, to evaluate Transmission System performance and resource adequacy. As part of these duties LG&E/KU is responsible for:

1.1.1 Creating the Base Case Model for the Transmission System. This Model will include all existing long-term, firm uses of the Transmission System, including: (i) Network Integration Transmission Service; (ii) firm transmission service for LG&E/KU's Native Load; (iii) Long-Term Point-to-Point Transmission Service; and (iv) firm transmission service provided in accordance with grandfathered agreements. The Base Case Model will be developed pursuant to the modeling procedures used in developing the NERC multi-regional and SERC regional models.

1.1.2 Providing the Base Case Model to the ITO for review and approval according to the iterative process outlined in the overview to this Attachment B.

1.1.3 Maintaining other transmission models including, but not limited to steady-state, dynamic and short circuit models.

1.2 **Assess, develop, and document Resource and Transmission Expansion plans**. LG&E/KU will assess, develop, and document Resource and Transmission Expansion plans including the Annual Plan. These plans include the following responsibilities:

1.2.1 Maintaining and apply methodologies and appropriate tools for the development, analysis and simulation of the Transmission System in the

assessment and development of transmission expansion plans and the analysis and development of resource adequacy plans.

1.2.2 Developing a long-term (generally one year and beyond) plan for the reliability (adequacy) of the Transmission System.

1.2.3 Defining system protection and control needs and requirements, including special protection systems (remedial action schemes), to meet reliability standards.

1.2.4 Developing and report, as appropriate, on the Annual Plan for assessment and compliance with reliability standards.

1.2.5 Monitoring and report, as appropriate, its Annual Plan implementation.

1.3 **Information**. LG&E/KU will define, collect and develop information required for planning purposes, including:

1.3.1 **Transmission facility characteristics and ratings.** Collect and maintain specific transmission information regarding characteristics of transmission facilities, lines, equipment, and methodologies, for determining the appropriate thermal ratings of circuits and transformers, including information on transmission line design temperature, voltage and stability limits and other transformer test data.

1.3.2 **Demand and energy end-use customer forecasts, capacity resources, and demand response programs.** Including:

i. Load forecasts for all existing delivery points for the following ten years, including transmission (wholesale and retail) connected substations and distribution substations, and coincident and non-coincident peak demands and power factor at each delivery point;

ii. Plans for new delivery points for the following ten years;

iii. Resource plans for the following 10 years;

iv. Expectations for market access to on- and off-system generation resources;

v. All planned on-system distributed generation resources; and

vi. Information on all interruptible loads.

1.3.3 **Generator unit performance characteristics and capabilities.** LG&E/KU shall provide the ITO with all necessary data, information, and applicable requirements that govern the operation of any generating facilities interconnected with the Transmission System, as the ITO may require for performance of its various functions. LG&E/KU shall submit and coordinate generator unit schedules as necessary to permit the ITO to assess transmission transfer capability and to permit the Reliability Coordinator to assess transmission reliability. LG&E/KU shall submit, on an annual basis, data concerning projected loads, designated network resources, generation and transmission maintenance schedules, and other

such operating data as the ITO may require for performance its various functions.

1.3.4 Long-term capacity purchases and sales. LG&E/KU will maintain a list of all long-term capacity purchases and sales and include this information in its model development and the Annual Plan.

2 ITO Review and Assessment

The ITO will be responsible for the following tasks:

2.1 Independently reviewing and approving LG&E/KU's Planning Guidelines. If the ITO concludes that additional explanatory detail is required, LG&E/KU will modify the appropriate business practice documents to include the additional detail. The ITO will ensure that the final versions of the Planning Criteria are posted on OASIS;

2.2 Reviewing and approving LG&E/KU's Base Case Model; reviewing, evaluating, and commenting on the Annual Plan as developed by LG&E/KU. This review and evaluation will be based on all applicable planning criteria and statewide or multi-state transmission planning requirements;

2.3 Monitoring LG&E/KU's transmission facility ratings based on access to data necessary to evaluate such ratings;

2.4 Performing an Independent assessment of the Transmission System using the Planning Guidelines and the Base Case Model. As part of this assessment, the ITO will independently evaluate whether: (i) LG&E/KU's Annual Plan complies with the Planning Guidelines and the Base Case Model; and (ii) whether there are upgrade projects in the Annual Plan that are not necessary to meet the Planning Guidelines and the Base Case Model;

2.5 Holding a Transmission Planning Conference to gather input and consider the planning process and LG&E/KU's Annual Plan; and

2.6 Providing LG&E/KU with its conclusions regarding the reliability assessment and evaluation of the Annual Plan, including any outstanding issues that the ITO believes LG&E/KU should address. LG&E/KU will have the opportunity to review the ITO's conclusions and may submit a revised Annual Plan and supporting documentation to the ITO to address any outstanding issues. Once the Annual Plan has been finalized by LG&E/KU, the ITO will submit the Annual Plan to the Reliability Coordinator for regional coordination.

3 Regional Coordination

The Reliability Coordinator will be responsible for the following tasks:

3.1 Integrating and verifying that the respective plans for the regional area meet reliability standards.

3.2 Identifying and reporting on potential Transmission System and resource adequacy deficiencies in the regional area, and provide alternate plans that mitigate these

deficiencies.

3.3 Reviewing and reporting, as appropriate, on LG&E/KU's Annual Plan for assessment and compliance with reliability standards within their regional area.

3.4 Notifying impacted transmission entities within their regional area of any planned transmission changes that may impact their facilities.

3.5 Submitting Annual Plan, including any changes based on the regional coordination, to the ITO for final approval.

4 Final Review and Assessment

4.1 The ITO shall have final review and assessment of all plans. If the ITO cannot approve a plan after regional coordination, then the ITO will return the plan to LG&E/KU for further development as appropriate. The process for final approval of any previously rejected plan will follow the same iterative process as outlined above.

4.2 The ITO will post LG&E/KU's finalized Annual Plan on OASIS.

5 Implementation of Plan and Construction of Upgrades

5.1 LG&E/KU is responsible for the implementation of the Annual Plan. LG&E/KU will make a good faith effort to design, certify, and build facilities approved by the ITO in the Annual Plan.

5.2 In the case where the Reliability Coordinator or the ITO does not agree with the Annual Plan, nothing in this Attachment B shall prevent LG&E/KU from constructing those facilities it deems necessary to reliably meet its obligation to serve its Transmission Customers, point-to-point, Network Integration Service, and Native Load Customers.

EXHIBIT 1

TO THE RELIABILITY COORDINATOR AGREEMENT

LG&E and KU hereby incorporate the Baseline Congestion Management Process (Version 1.11), dated June 1, 2017, which is attached hereto.

Congestion Management Process (CMP) MASTER

Executive Summary

This Congestion Management Process document provides significant detail in the areas of Market Flow Calculation. These additional details are the result of discussions between multiple Operating Entities.

As Operating Entities expand and implement their respective markets, one of the primary seams issues that must be resolved is how different congestion management methodologies (market-based and traditional) will interact to ensure that parallel flows and impacts are recognized and controlled in a manner that consistently ensures system reliability. This proposed solution will greatly enhance current Interchange Distribution Calculator (IDC) granularity by utilizing existing real-time applications to monitor and react to Flowgates external to an Operating Entity's footprint.

In brief, the process includes the following concepts:

- Participating Operating Entities will agree to observe limits on an extensive list of coordinated external Flowgates.

- Like all Control Areas (CA), Market-Based Operating Entities will have Firm Market Flows upon those Flowgates.

- Market-Based Operating Entities will determine Firm Market Flows and constrain their operations to limit Firm Market Flows on the Coordinated Flowgates to no more than the calculated Firm Flow Limit established in the analysis.

- In real-time, Market-Based Operating Entities will calculate and monitor one-hour ahead projected and actual flows.

- Market-Based Operating Entities will post to the IDC the actual and the one-hour ahead projected Market Flow, consisting of the Firm Market Flow and the additional Non-Firm Market Flow, for both internal and external Coordinated Flowgates.

- Market-Based Operating Entities will provide to the IDC detailed representation of their marginal units, so that the IDC can continue to effectively compute the effects of all tagged transactions regardless of the size of the market area. These tagged transactions will include transactions into the market, transactions out of the market, transactions through the market, and tagged grandfathered transactions within the market.

- When there is a Transmission Loading Relief (TLR) 3a request or higher called on a Coordinated Flowgate, and the Market-Based Operating Entity's actual/one-hour ahead projected Market Flows exceed the Firm Flow Limits, Market-Based Operating Entities will respond to their relief obligations by redispatching their systems in a manner that is consistent with how non-market entities respond to their share of Network and Native Load (NNL) relief obligations per the IDC congestion management report.

- Because the IDC will have the real-time/one-hour ahead projected flows throughout the Market-Based Operating Entity's system (as represented by the impacts upon various Coordinated Flowgates), the effectiveness of the IDC will be greatly enhanced

- The above processes refer to the "Congestion Management" portion of the paper, which will be implemented by Market-Based Operating Entities.

- Additional entities may choose to enter into similar Reciprocal Coordination Agreements that describe how Available Transfer Capability (ATC)/Available Flowgate Capability (AFC), Firm Flows, and outage maintenance will be coordinated on a forward basis.

- The complete process will allow participating Operating Entities to address the reliability aspects of congestion management seams issues between all parties whether the seams are between market to non-market operations or market-to-market operations.

Change Summary

Generate baseline Congestion Management Process (CMP) document based on CMP documents executed by:

- Manitoba Hydro and Midcontinent Independent System Operator, Inc. (MISO)
- Mid-Continent Area Power Pool (MAPP) and MISO
- MISO and PJM Interconnection, L.L.C. (PJM)
- MISO, PJM and Tennessee Valley Authority (TVA)
- MISO and Southwest Power Pool, Inc. (SPP)

The document also includes subsequent changes agreed upon by a majority of the Congestion Management Process Council (CMPC). For items which are specific to a limited number of agreements, the CMP members have used an approach of documenting these unique items in separate appendices rather than in the base document. The CMPC members reserve all rights with respect to the different options identified in the appendices attached hereto without any obligation to adopt or support such options. The CMPC members reserve the right to oppose any position taken by another CMPC member in a FERC filing or otherwise with respect to the choice of options listed in the appendices. Nothing contained herein shall be construed to indicate the support or agreement by the CMPC members to an option presented in the appendices.

Revision 1.1 (November 30, 2007)

Per FERC Order ER07-1417-000, in the "Forward Coordination Processes" section 6.6 added the word "outage" between "unit" and "scheduling" in the following sentence, "Market-Based Operating Entities will use the Flowgate limit to restrict unit outage scheduling for a Coordinated Flowgate when maintenance outage coordination indicates possible congestion and there is recent TLR activity on a Flowgate."

Revision 1.2 (May 2, 2008)

The Market Flow Threshold is changing from 3% to 5%. The NERC Standards Committee approved changing the Market Flow Threshold for the field test at its April 10, 2008 meeting.

Revision 1.3 (July 16, 2008)

Per FERC Order issued in Docket Nos. ER08-884-000 and ER08-913-000, *Appendix H (Market Flow Threshold Field Test Terms And Conditions)* was added.

Revision 1.4 (October 31, 2008)

The percentages were changed in Sections *4.4 (Firm Market Flow Calculation Rules) and 5.5 (Market-Based Operating Entity Real-time Actions)* to be consistent with changes made under

Revision 1.2. *Appendix H – Market Flow Threshold Field Test Terms And Conditions* was updated to reflect the NERC approved Market Flow Threshold Field Test extension to October 31, 2009.

Revision 1.5 (December 18, 2008)

Updated Section 5.2 (*Quantify and Provide Data for Market Flow*) and *Appendix B – Determination of Marginal Zone Participation Factors* to support changes to the manner in which MISO uses marginal zones and submits marginal zone information to the IDC.

Revision 1.6 (February 19, 2009)

Appendix H – Market Flow Threshold Field Test Terms And Conditions was updated to reflect that MISO no longer has a contractual obligation to observe a 0% threshold for MISO Market Flows on Flowgates where both MAPP and MISO are reciprocal.

Revision 1.7 (November 1, 2009)

Applied updates based on the results of the Market Flow Threshold Field Test including clarifications that allocations are calculated down to zero percent. Changes have been applied to the *Executive Summary, Section 4.1 Market Flow Determination, Section 4.4 Firm Market Flow Calculation Rules, Section 5.5 Market-Based Operating Entity Real-time Actions, Section 6.6 Forward Coordination Processes, Section 6.6.3 Limiting Firm Transmission Service, Section 6.7 Sharing or Transferring Unused Allocations, and Appendix H – Application of Market Flow Threshold Field Test Conditions.*

Revision 1.8 (May 31, 2010)

Applied updates to further standardize the "Allocation Adjustment for New Transmission Facilities and/or Designated Network Resources" process. Changes have been made to *Appendix F – FERC Dispute Resolution and Appendix G – Allocation Adjustments for New Transmission Facilities and/or Designated Network Resources.*

Revision 1.9 (January 4, 2011)

Modified to incorporate the revisions to the JOA, including revisions to Attachments 2 and 3, submitted as part of the Settlement Agreement and Offer of Settlement in Docket Nos. EL10-45-000, EL10-46-000, and EL10-60-000.

Revision 1.10 (July 25, 2016)

Generated updated baseline CMP document executed by the following entities:

- Manitoba Hydro and MISO
- Minnkota Power Cooperative, Inc. and MISO
- MISO and PJM

- PJM and TVA
    - Louisville Gas and Electric Company/Kentucky Utilities Company (LG&E/KU) and Associated Electric Cooperative, Inc. (AECI) executed separate agreements with TVA stipulating the CMP provisions executed by PJM and TVA apply to AECI and LG&E/KU as Reciprocal Entities.
- MISO and SPP
- MISO Attachment LL

Section	Revision Description
3.2	Clarified language on inclusion of Coordinated Flowgates in AFC process. Removed consideration of reverse impacts when performing Flowgate studies.
3.2.1	Revised language to better describe how the four Flowgate studies used to identify Coordinated Flowgates are performed.
3.2.6	Added a new section requiring coordination between Parties before making a Flowgate permanent that includes a Tie Line monitored element.
4.1 4.1.1	Revised language to require a Market-Based Operating Entity to consistently account for export and import tagged transactions in the identified calculations using one of the three methodologies set forth in the new Section 4.1.1. Revisions have previously been accepted by FERC in the CMP documents executed between MISO and PJM, MISO and SPP, and PJM and TVA.
6.10	Added a new section listing the requirements that must be satisfied for a Combining Party to incorporate a Non-Reciprocal Entity's load and the associated generation serving that load into the Reciprocal's Entity's Allocation calculations.
Appendix A	Added the following defined terms: Agreement, Combining Party, Non-Reciprocal Entity, Party, Third-Party, and Tie Line.
Appendix B	Revised language addressing how a Market-Based Operating Entity using the Marginal Zone methodology will determine marginal zone participation factors. Revisions have previously been accepted by FERC in the CMP documents executed between MISO and PJM, MISO and SPP, and PJM and TVA.
Appendix C	Clarified in Figure C-1 and Table C-1 the steps on inclusion of Coordinated Flowages in the AFC process.

Revision 1.11 (June 1, 2017)

Per NERC Operating Reliability Subcommittee applied updates necessary for MISO to incorporate External Asynchronous Resources into MISO Market Flows.

Section	Revision Description
3.2	Updated the number of Coordination Flowgate studies from four to five.
3.2.1	Clarified Study 4 applies internal CA/CA permutations and added a new Study 5 specific to External Asynchronous Resources.
3.2.2	Updated the number of Coordination Flowgate studies from four to five.
3.2.5	
4.1	Added how the External Asynchronous Resources will be considered in Market Flow and the exclusion of the related tags from IDC.
6.2	Updated the number of Coordination Flowgate studies from four to five.
6.8	Specified the priority of the Market Flow will correspond to the priority of the tag.
Appendix A	Added a new definition specific to MISO, External Asynchronous Resources. Updated the number of Coordination Flowgate studies from four to five.
Appendix C	Updated the number of Coordination Flowgate studies from four to five in Table C-1.

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Section 1 – Introduction

It is the intention of the Reciprocal Entities to utilize the processes within this document. It is further the intention to develop this process in a way that will allow other regional entities with similar concerns to utilize the concepts within this process to aid in the resolution of their own seams issues.

1.1 Problem Definition

1.1.1 The Nature of Energy Flows

Energy flows are distinctly different from the manner in which the energy commodity is purchased, sold, and ultimately scheduled. In the current practice of "contract path" scheduling, schedules identify a source point for generation of energy, a series of wheeling agreements being utilized to transport that energy, and a specific sink point where that energy is being consumed by a load. However, due to the electrical characteristics of the Eastern Interconnection, energy flows are more dispersed than what is described within that schedule. This disconnect becomes of concern when there is a need to take actions on contract-path schedules to effect changes on the physical system (for example, the curtailment of schedules to relieve transmission constraints).

In the Eastern Interconnection, much of this concern has been addressed through the use of the North American Electric Reliability Corporation (NERC) and/or North American Energy Standards Board (NAESB) TLR process. Through this process, Reliability Coordinators utilize the IDC to determine appropriate actions to provide that relief. The IDC bases its calculations on the use of transaction tags: electronic documents that specify a source and a sink, which can be used to estimate real power flows through the use of a network model. In order to change flows, the IDC is given a particular constraint and a desired change in flows. The IDC returns back all source to sink transactions that contribute to that constraint and specifies schedule changes to be made that will effect that change in flows.

In other parts of the Eastern Interconnection, however, the use of centralized economic dispatch results in a solution that does not focus on changing entire transactions (effectively redispatching through the use of imbalance energy), but rather redispatch itself. In this procedure, the party attempting to provide relief does not need to know that a balanced source to sink transaction should be adjusted; rather, they are aware of a net generation to load balance and the impacts of different generators on various constraints. Bid-based security constrained central dispatch based on Locational Marginal Pricing is a regional implementation of this practice.

Currently, these two practices are somewhat incompatible. Due to the electrical characteristics of the Interconnection and geographic scope of the regions, this incompatibility has been of limited concern. However, regional market expansion has begun to draw attention to this operational disjoint, as the expansion itself exacerbates the negative effects of the incompatibility.

1.1.2 Granularity in the IDC

The IDC uses an approximation of the Interconnection to identify impacts on a particular transmission constraint that are caused by flows between Control Areas. This approximation allows for a Reliability Coordinator to identify tagged transactions with specific sources and sinks that are contributing to the constraint. While tagged transactions may specify sources and sinks in a very specific manner, the IDC in general cannot respect this detail, and instead consolidates the impacts of several generators and loads into a homogenous representation of the impacts of a single Control Area. This is referred to as the granularity of the IDC. Current granularity is typically defined to the Control Area level; finer granularity is present in certain special situations as deemed necessary by NERC.

1.1.3 Reduced Data and Granularity Coarseness

As centrally dispatched energy markets expand their footprint, two related changes occur with regard to the above process. In some cases, data previously sent to the IDC is no longer sent due to the fact that it is no longer tagged. In others, transactions remain tagged, but the increased market footprint results in an increase in granularity coarseness within the IDC; that is, the apparent Control Area boundary becomes the same as the market boundary so that what had been historically 30 or more Control Areas now appears as one.

In the first change, transactions contained entirely within the market footprint are considered to be utilizing network service (even when the market spans multiple Control Areas). As such, there is no requirement for them to be tagged (or such requirement is waived by NERC), and therefore, no requirement that they be sent to the IDC. This is of concern from a reliability perspective, as the IDC will no longer have a large pool of transactions from which to provide relief, although the energy flows may remain consistent with those prior to the market expansion. In other words, flows subject to TLR curtailment prior to the market expansion are no longer available for that process.

In the second change, the expansion of the footprint itself results in a dilution of the approximation utilized by the IDC. When a market region is relatively small (or isolated), the Control Area to Control Area approximation of that region's impact on transmission constraints is acceptable; actions within the market footprint generally have a similar and consistent impact on all transmission facilities outside the footprint. However, when the market footprint expands significantly, and is co-mingled with non-market Control Areas, the ability to utilize the historic approximation of electrically representative flows fails to effectively predict energy flow. Impacts on external facilities can vary significantly depending on the dispatch of the resources within the market footprint. With regard to the IDC, this information is effectively lost within the expanded footprint, and results in an increase in the level of granularity coarseness, or a "loss of granularity."

1.1.4 Accounting for Loop Flows

The processes for accounting for loop flows caused by uses of the transmission system between Control Areas are different under a market environment. Absent a market, loop flows from Transmission Service reservations between Control Areas are identified and accounted for by importing transmission reservations from surrounding systems. Under a market environment, the market will not have explicit transmission reservations for evolving market dispatch conditions between market Control Areas. Thus, a mechanism for accounting for anticipated Market Flows on non-market systems is necessary.

1.1.5 Conclusion

The net effect of these changes is that reliability must be managed through different processes than those used before the market region's expansion. While relief can still be requested using the current process, both the ability to predict the effectiveness of a curtailment to provide that relief and the general pool of transactions available for curtailment are reduced. This CMP offers a strategy for eliminating this concern through a process that provides more information (finer granularity) to the NERC IDC for the market area. This new congestion management process will ensure that reliability is not adversely affected as markets expand by providing information and relief opportunities previously unavailable to the IDC.

1.2 Process Scope and Limitations

1.2.1 Vision Statement

As Operating Entities become Market-Based Operating Entities, and expand their various markets, one of the primary seams issues that must be resolved is how different congestion management methodologies (market-based and traditional TLR) will interact to ensure parallel flows and impacts are recognized and controlled in a manner that consistently ensures system reliability and equitability. Reliability Coordinators can mandate emergency procedures to maintain safe operating limits, however, without coordination agreements that maintain flow limits in advance, the market would become volatile and the burden for relieving excess flow would ignore the economics of the entities which would be required to redispatch. For these entities, this process will offer a manner in which Market-Based Operating Entities can coordinate parallel flows with Operating Entities that have not yet or do not contemplate implementing markets. This process will provide more proactive management of transmission resources, more accurate information to Reliability Coordinators, and more candidates for providing relief when reliability is threatened due to transmission overload conditions.

1.2.2 Process Scope

This process has been written specifically with the goal of coordinating seams between Reciprocal Entities and their respective neighbors.

1.3 Goals and Metrics

This document focuses on a solution to meet the following goals and requirements:

1. Develop a congestion management process whereby transmission overloads can be prevented through a shared and effective reduction in Flowgate or constraint usage by Reciprocal Entities and adjoining Reliability Coordinators.
2. Agree on a predefined set of Flowgates or constraints to be considered by all Reciprocal Entities, and a process to maintain this set as necessary.
3. Determine the best way to calculate flow due to market impacts on a defined set of Flowgates.
4. Develop Reciprocal Coordination Agreements that establish how each Operating Entity will consider its own Flowgate or constraint usage as well as the usage of other Operating Entities when it determines the amount of Flowgate or constraint capacity remaining. This process will include both operating horizon determination as well as forward looking capacity allocation.
5. Develop a procedure for managing congestion when Flowgates are impacted by both tagged and untagged energy flow.
6. Develop a procedure for determining the priorities of untagged energy flows (created through parallel flows from the market).
7. Agree on steps to be taken by Operating Entities to unload a constraint on a shared basis.
8. Determine whether procedure(s) for managing congestion will differ based on where the Flowgate is located (*i.e.*, inside Reciprocal Entity A, inside Reciprocal Entity B, or outside both Reciprocal Entity A and Reciprocal Entity B).
9. Confirm that the solution will be equitable, transparent, auditable, and independent for all parties.
10. Develop methodology to preserve and accommodate grandfathered transmission rights, contract rights, and other joint-use agreements.
11. Develop methodology to address changes in Total Transfer Capability (TTC), such as future system topology changes, new Designated Network Resources (DNRs), facility uprates/derates, prior outage limitations, etc., with respect to Allocation implications.
12. Develop a methodology for releasing Allocations if other parties do not join the process or if there is ATC going unused.

1.4 Assumptions

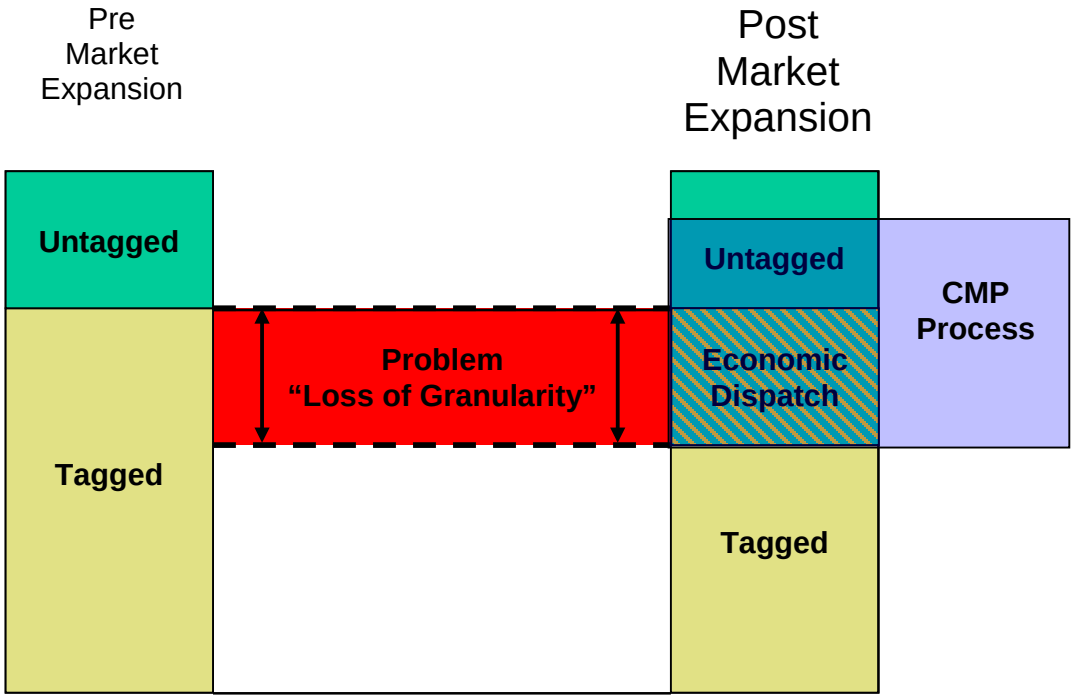
The processes set forth in this document were based on the following assumptions:

- Point-to-point schedules sinking in, sourcing from, or passing through a Market-Based Operating Entity will be tagged.

- The IDC or a similar repository of schedules is needed at the Interconnection's current state and for the foreseeable future.
- The Market-Based Operating Entity can compute the impacts of the untagged market dispatch on the Flowgates as currently required by the IDC.
- The Market-Based Operating Entity's Energy Management System (EMS) has the capability to monitor and respond to real-time and projected flows created by its real-time dispatch.
- The Reliability Coordinator of the area in which a Flowgate exists will be responsible for monitoring the Flowgate, determining any amount of relief needed, and entering the required relief in the IDC.
- The IDC has been modified to accept the calculated values of the impact of real-time generation in order to determine which schedules require curtailment in conjunction with the required Market-Based Operating Entity's redispatch.
- The IDC can calculate the total amount of MW relief required by the Market-Based Operating Entity (schedule curtailments required plus the relief provided by redispatch).

2.1 Summary of Process

In order to coordinate congestion management, a bridge must be established that provides for comparable actions between Operating Entities. Without such a bridge, it is difficult, if not impossible, to ensure reliability and system coordination in an efficient and equitable manner. To effect this coordination of congestion management activities, we propose a methodology for determining both firm and non-firm flows resulting from Market-Based Operating Entity dispatch on external parties' Flowgates.



Market Flows are defined as 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. (Note: For the purposes of the Reciprocal Coordination process discussed later, Firm Transmission Service (7F) will be combined with the untagged firm component of Market Flows in the calculation of Historic Firm Flow. The Historic Firm Flow is described later in this document).

Market Flows can be divided into Firm Market Flows and Non-Firm Market Flows. Firm Market Flows are considered as firm use of the transmission system for congestion management purposes and will be curtailed on a proportional basis with other firm uses during periods of firm curtailments and are equivalent to Firm Transmission Service. Non-Firm Market Flows are considered as non-firm use of the transmission system for congestion management purposes and will be curtailed on a proportional basis with other non-firm uses during periods of non-firm curtailments and are equivalent to non-firm Transmission Service. As such, Reliability Coordinators can request Market-Based Operating Entities to provide relief under TLR based on these transmission priorities.

By applying the above philosophy to the problem of coordinating congestion management, we can determine not only the impacts of a Market-Based Operating Entity's dispatch on a particular Flowgate; we can also determine the appropriate firmness of those flows. This results in the ability to coordinate both proactive and reactive congestion management between operating entities in a way that respects the current TLR process, while still allowing for the flexibility of internal congestion management based on market prices.

There are two areas that must be defined in order for this process to work effectively:

- **Coordinated Flowgate Definition.** In order to ensure that impacts of dispatch are properly recognized, a list of Flowgates must be developed around which congestion management may be effected and coordination can be established.
- **Congestion Management.** By coordinating congestion management efforts and enhancing the TLR process to recognize both untagged energy flows and data of finer granularity, we can ensure that when TLR is called, the appropriate non-firm flows are reduced before Firm Flows. This coordination will result in a reduction of TLR 5 events, as more relief will be available in TLR 3 to mitigate a constraint. This is accomplished through the calculation of flows due to economic dispatch, as well as by providing marginal unit information to aid in interchange transaction management.

The next sections of this document discuss each of these areas in detail.

Section 3 – Impacted Flowgate Determination

3.1 Flowgates

Flowgates are facilities or groups of facilities that may act as significant constraint points on the system. As such, they are typically used to analyze or monitor the effects of power flows on the bulk transmission grid. Operating Entities utilize Flowgates in various capacities to coordinate operations and manage reliability. For the purpose of this process, there are three kinds of Flowgates: AFC Flowgates, which are defined in Appendix A, Coordinated Flowgates (CFs), which are defined below, and Reciprocal Coordinated Flowgates (RCFs), which are defined in "Reciprocal Operations" Section 6. A diagram illustrating how these three categories of Flowgates are determined is included as Appendix C.

3.2 Coordinated Flowgates

An Operating Entity will conduct sensitivity studies to determine which Flowgates are significantly impacted by the flows of the Operating Entity's Control Zones (historic Control Areas that existed in the IDC). An Operating Entity identifies these Flowgates by performing the following five studies to determine which Flowgates the Operating Entity will monitor and help control. As set forth in Appendix C, a Flowgate passing any one of these studies will be considered a Coordinated Flowgate and AFCs shall be computed for these Flowgates, unless mutually agreed otherwise by the Operating Entities and any Reciprocal Entities for the Flowgate. An Operating Entity shall add a Coordinated Flowgate to its AFC process as soon as practical in accordance with the Operating Entity's processes. Nothing in this section precludes an Operating Entity or Reciprocal Entity from calculating AFCs for any Flowgates.

An Operating Entity may also specify additional Flowgates that have not passed any of the five studies to be Coordinated Flowgates where the Operating Entity expects to utilize the TLR process to manage congestion. For a list of Coordinated Flowgates between Reciprocal Entities, see each Reciprocal Entity's Open Access Same-Time Information System (OASIS) website.

Coordinated Flowgates are identified to determine which Flowgates an entity impacts significantly. This set of Flowgates may then be used in the congestion management processes and/or Reciprocal Operations defined in this document.

When performing the five Flowgate studies, a 5% threshold will be used based on the positive impact. Use of a 5% threshold in the studies may not capture all Flowgates that experience a significant impact due to operations. The Operating Entities have agreed to adopt a lower threshold at the time NERC and/or NAESB implements the use of a lower threshold in the TLR process.

3.2.1 Flowgate Studies

Study 1) – IDC GLDF

(using the IDC tool)

Upon request by an Operating Entity, a study will be performed using the IDC reflecting the topology of the system from the System Data Exchange (SDX) or any industry-accepted system with similar capabilities. The IDC can provide a list of Flowgates for any user-specified Control Area whose Generator to Load Distribution Factor (GLDF) NNL impact is 5% or greater. Using the historic Control Area representation in the IDC, if any one generator has a GLDF that is 5% or greater as determined by the IDC, this Flowgate will be considered a Coordinated Flowgate.

Study 2) – IDC PSS/E Base Case GLDF

(no transmission outages – offline study)

Upon request by an Operating Entity, the Operating Entity to which the request is made will perform a generator analysis to determine which Flowgates impacted by those CAs will be included in the list of Coordinated Flowgates. To provide better confidence that the Operating Entity has effectively captured the subset of Flowgates upon which its generators have a significant impact, the Operating Entity will perform an offline study utilizing Managing and Utilizing System Transmission (MUST) or other industry-accepted software with similar capabilities. The Operating Entity will perform off-line studies using the IDC PSS/E base case. If any generator has a GLDF that is 5% or greater as determined by this Study 2, this Flowgate will be considered a Coordinated Flowgate. Study 1 above and this Study 2 are separate studies. There is no requirement that a Flowgate must pass both studies in order to be coordinated.

Study 3) – IDC PSS/E Base Case GLDF

(transmission outage - offline study)

Upon request by an Operating Entity, the Operating Entity to which the request is made will perform a Flowgate analysis to determine which Flowgates impacted by those CAs will be included in the list of Coordinated Flowgates. The Flowgates determined using Study 2 above or Study 4 below that have a 3% to 5% distribution factor will be analyzed in this Study 3 against prior outage conditions. The Operating Entity will perform off-line studies using the IDC PSS/E base case utilizing MUST or other industry- accepted software with

similar capabilities. The Operating Entity, in consultation with affected operating authorities, will perform a prior outage analysis, including both internal and external outages, by applying one of the following:

1. transmission facilities operated at 100kV and above, in the CA where the Flowgate's monitored facility(ies) is located and in CAs that are first tier to the CA where the Flowgate's monitored facility(ies) is located; or

2. transmission facilities operated at 100kV and above within 10 buses from the monitored facility(ies).

If any Flowgates with a 3% to 5% distribution factor from Study 2 or Study 4 are impacted by 5% or more from a prior outage condition (Line Outage Distribution Factor (LODF) from this Study 3, the Flowgate will be added to the list of Coordinated Flowgates.

Study 4) – IDC Base Case Transfer Distribution Factors

(no transmission outages – offline study)

Upon request by an Operating Entity, the Operating Entity to which the request is made will perform a Flowgate analysis to determine which Flowgates impacted by those CAs will be included in the list of Coordinated Flowgates. The Operating Entity performing this analysis will analyze internal transactions between each historic CA/CA permutation. OTDF Flowgates will be analyzed with the contingent element out of service. The Operating Entity will perform off-line studies using the IDC PSS/E base case utilizing MUST, or other industry-accepted software with similar capabilities to determine the Transfer Distribution Factors (TDFs). Flowgates that are impacted by 5% or greater by Study 4 will be considered a Coordinated Flowgate.

Study 5) – External Asynchronous Resource (EAR)

Upon request by an Operating Entity, MISO shall rerun Study 4 (no outage scenario) to determine the flowgates impacted by its EAR. Additionally, a second study will be performed using the IDC reflecting the topology of the system from the System Data Exchange (SDX) or any industry-accepted system with similar capabilities. Both studies performed under Study 5 shall utilize the following assumptions: 1) the source to sink TDF calculation of the EAR shall be evaluated in the same way IDC would evaluate the impacts of the associated tag (e.g., source and sink of the EAR); and 2) any flowgate that is determined to be impacted by the EAR by 5% or greater will be considered a Coordinated Flowgate.

3.2.2 Disputed Flowgates

If a Reciprocal Entity believes that another Reciprocal Entity implementing the congestion management portion of this process has a significant impact on one of their Flowgates, but that Flowgate was not included in the Coordinated Flowgate list, the involved Reciprocal Entities will use the following process.

- If an operating emergency exists involving the candidate Flowgate, the Reciprocal Entities shall treat the facilities as a temporary Coordinated Flowgate prior to the study procedure below. If no operating emergency or imminent danger exists, the study procedure below shall be pursued prior to the candidate Flowgate being designated as a Coordinated Flowgate.
- The Reciprocal Entity conducts studies to determine the conditions under which the other Reciprocal Entity would have a significant impact on the Flowgate in question. The Reciprocal Entity conducting the study then submits these studies to the other Reciprocal Entity implementing this process. The Reciprocal Entity's studies should include each of the five studies described above; in addition to any other studies they believe illustrate the validity of their request. The other Reciprocal Entity will review the studies and determine if they appear to support the request of the Reciprocal Entity conducting the study. If they do, the Flowgate will be added to the list of Coordinated Flowgates.
- If, following evaluation of the supplied studies, any Reciprocal Entity still disputes another Reciprocal Entity's request, the Reciprocal Entity will submit a formal request to the NERC Operations Reliability Subcommittee (ORS) asking for further review of the situation. The ORS will review the studies of both the requesting Reciprocal Entity and the other Reciprocal Entity, and direct the participating Reciprocal Entities to take appropriate action.

3.2.3 Third Party Request Flowgate Additions

Each Party shall provide opportunities for Third Parties or other entities to propose additional Coordinated Flowgates and procedures for review of relevant non-confidential data in order to assess the merit of the proposal. The current procedure for the review and maintenance of Coordinated Flowgates is set forth in Appendix C.

3.2.4 Frequency of Coordinated Flowgate Determination

The determination of Coordinated Flowgates will be performed at the initial implementation of the CMP and then on a periodic basis, as described in Appendix C.

3.2.5 Dynamic Creation of Coordinated Flowgates

For temporary Flowgates developed "on the fly," the IDC will utilize the current IDC methodology for determining NNL contribution until the Market-Based Operating Entity has begun reporting data for the new Flowgate. Interchange transactions into, out of, or across the Market-Based Operating Entity will continue to be E-tagged and available for curtailment in TLR 3, 4, or 5.

Market-Based Operating Entities will study the Flowgate in a timely manner and begin reporting Flowgate data within no more than two business days (where the Flowgate has already been designated as an AFC Flowgate). This will ensure that the Market-Based Operating Entity has the time necessary to properly study the Flowgate using the five studies detailed earlier in this document and determine the Flowgate's relationship with the Market-Based Operating Entity's dispatch. For internal Flowgates, the Market-Based Operating Entity will redispatch during a TLR 3 to manage the constraint as necessary until it begins reporting the Firm and Non-Firm Market Flows; during a TLR 5, the IDC will request NNL relief in the same manner as today. Alternatively, for internal and external Flowgates, an Operating Entity may utilize an appropriate substitute Coordinated Flowgate that has similar Market Flows and tag impacts as the temporary Flowgate. In this case, an Operating Entity would have to realize relief through redispatch and TLR 3. An example of an appropriate substitute would be a Flowgate with a monitored element directly in series with a temporary Flowgate's monitored element and with the same contingent element. If the Flowgate meets the necessary criteria, the Market-Based Operating Entity will begin to provide the necessary values to the IDC in the same manner as Market Flow values are provided to the IDC for all other Coordinated Flowgates. The necessary criteria for adding a Flowgate are defined in Appendix C. If in the event of a system emergency (TLR 3b or higher) and the situation requires a response faster than the process may provide, the Market-Based Operating Entities will coordinate respective actions to provide immediate relief until final review.

3.2.6 Coordination of Tie Line Flowgate Additions

The Parties shall follow the coordination process outlined in this section for Flowgates that include a Tie Line between the Parties as a monitored element. The provisions in this section shall not apply to any temporary Flowgates.

Procedures:

1. Unless otherwise agreed to by the Parties, the managing entity for a Tie Line Flowgate is the Party that has functional control over the most limiting equipment for the Flowgate.

2. The managing entity for a Tie Line Flowgate shall calculate AFCs, post AFCs, process requests for transmission service, manage real-time congestion, and calculate Allocations for the Tie Line Flowgate.

3. Before the creation of a new Tie Line Flowgate in the IDC, the managing entity for the Tie Line Flowgate must notify the other Party no less than sixty (60) days in advance of the addition of the Tie Line Flowgate in the IDC. The new Flowgate will initially be created as a temporary Flowgate in the IDC by the managing entity. If all other requirements outlined in this Section 3.2.6 are completed during the sixty (60) days following notice, the Flowgate can be made permanent before the sixty (60) day deadline by mutual agreement of the Parties.

4. A Party that identifies a new Tie Line Flowgate through a study shall provide the study assumptions, methodology, and all other relevant data to the other Party in a timely manner.

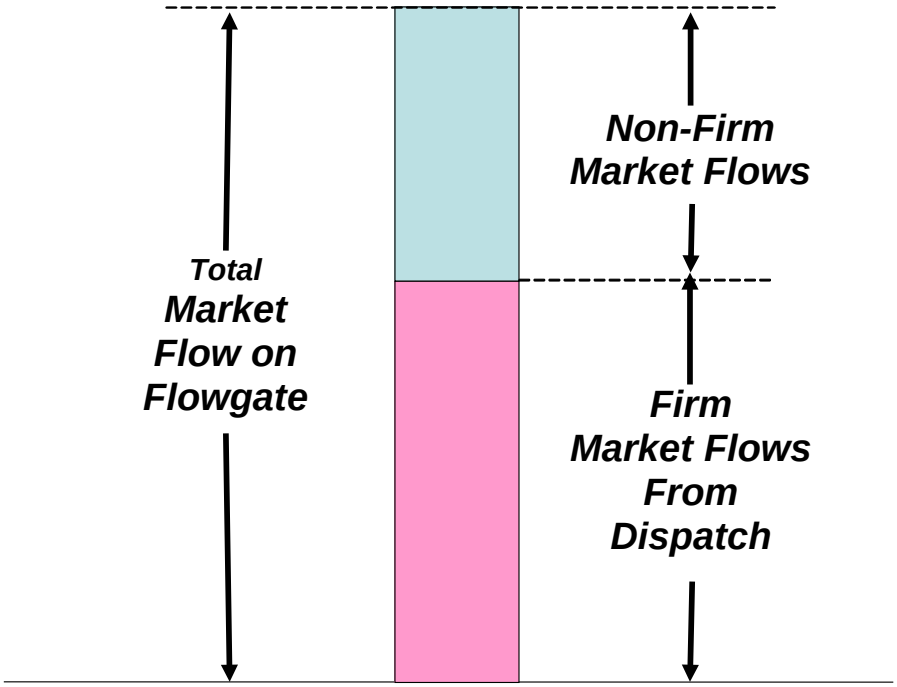
5. AFC Calculation and Posting AFCs:
    a. The managing entity will calculate and post AFCs for Tie Line Flowgates in accordance with the managing entity's processes (i.e., the managing entity will treat the Flowgates as internal Flowgates).
    b. The managing entity will post AFC files for Tie Line Flowgates for use by other transmission providers.
    c. The managing entity will apply AFC factors for Tie Line Flowgates (e.g., TRM, CBM, "a" and "b" multipliers, etc.) using the managing entity's own processes.

6. Upon the completion of items 1 through 5, the managing entity may create a permanent Tie Line Flowgate.

7. The Party that is not the managing entity will replace the temporary Tie Line Flowgate with the permanent Tie Line Flowgate in its applicable operating system(s).

Section 4 – Market-Based Operating Entity Flow Calculations: Market Flow, Firm Market Flow, and Non-Firm Market Flow

Market Flows on a Coordinated Flowgate can be quantified and considered in each direction**.** Market Flow is then further designated into two components: Firm Market Flow, which is energy flow related to contributions from the Network and Native Load serving aspects of the dispatch, and Non-Firm Market Flow, which is energy flow related to the Market-Based Operating Entity's market operations.



Note: Market flows equal generation to load flows in market areas.

Each Market-Based Operating Entity will calculate their actual real-time and projected directional Market Flows, as well as their directional Firm and Non-Firm Market Flows, on each Coordinated Flowgate. The following sections outline how these flows will be computed.

4.1 Market Flow Determination

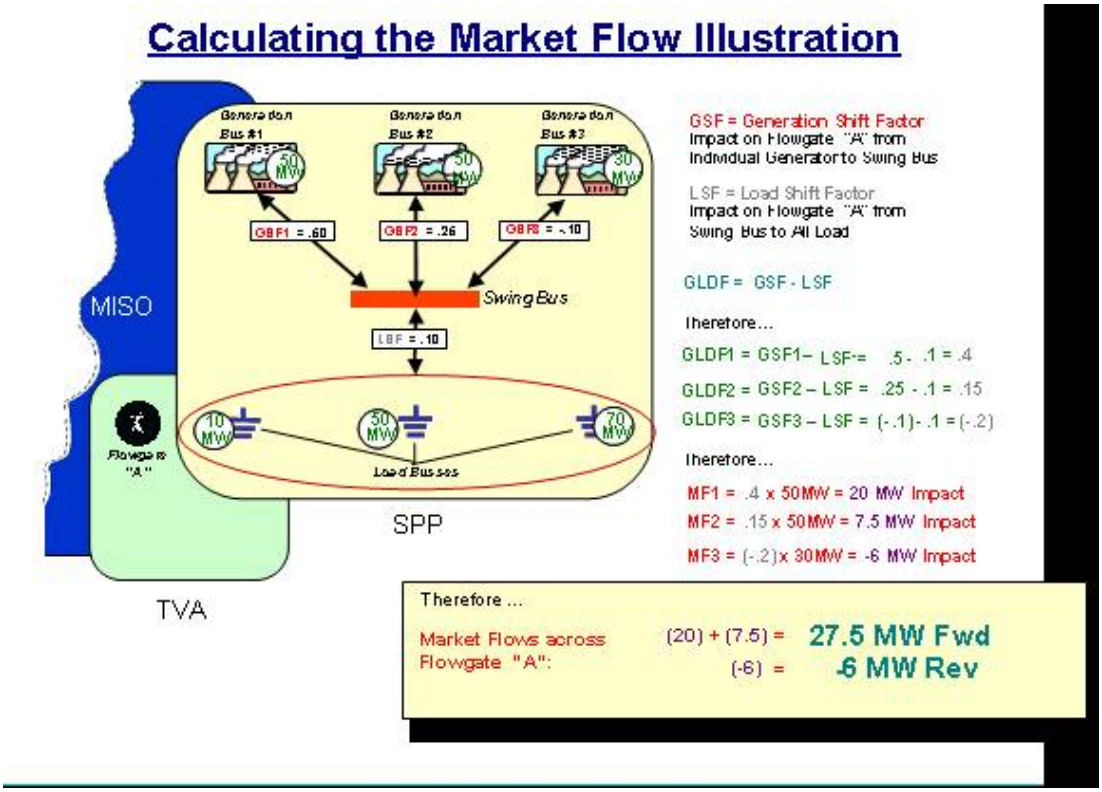
The determination of Market Flows builds on the "Per Generator" methodologies that were developed by the NERC Parallel Flow Task Force. The "Per Generator Method Without Counter Flow" was presented to and approved by both the NERC Security Coordinator Subcommittee (SCS) and the Market Interface Committee (MIC).[1] This methodology is presently used in the IDC to determine NNL contributions.

Similar to the Per Generator Method, the Market Flow calculation method is based on Generator Shift Factors (GSFs) of a market area's assigned generation and the Load Shift Factors (LSFs) of its load on a specific Flowgate, relative to a system swing bus. The GSFs are calculated from a single bus location in the base case (e.g. the terminal bus of each generator) while the LSFs are defined as a general scaling of the market area's load. The Generator to Load Distribution Factor (GLDF) is determined through superposition by subtracting the LSF from the GSF.

[1] "Parallel Flow Calculation Procedure Reference Document," NERC Operating Manual. 11 Feb, 2003. <http://www.nerc.com/~oc/opermanl.html>

The determination of the Market Flow contribution of a unit to a specific Flowgate is the product of the generator's GLDF multiplied by the actual output (in megawatts) of that generator. The total Market Flow on a specific Flowgate is calculated in each direction; forward Market Flows is the sum of the positive Market Flow contributions of each generator within the market area, while reverse Market Flow is the sum of the negative Market Flow contributions of each generator within the market area.

For purposes of the Market Flow determination, the market area may be either: (1) the entire RTO footprint, as in the following illustration; or (2) a subset of the RTO region, such as a pre-integration NERC-recognized Control Area, as necessary to ensure accurate determinations and consistency with pre-integration flow determinations. Each Market-Based Operating Entity shall choose only one of these two options to calculate its Market Flows. With regard to the second option, the total Market Flow of an RTO shall be the sum of the flows from and between such market areas.



The Market Flow calculation differs from the Per Generator Method in the following ways:

- The contribution from all market area generators will be taken into account.
- In the Per Generator Method, only generators having a GLDF 5% or greater are included in the calculation. Additionally, generators are included only when the sum of the maximum generating capacity at a bus is greater than 20 MW. The Market Flow

calculations will use all flows, in both directions, down to a 5% threshold for the IDC to assign TLR curtailments and down to a 0% threshold for information purposes. Forward flows and reverse flows are determined as discrete values.

- The contribution of all market area generators is based on the present output level of each individual unit.
- The contribution of the market area load is based on the present demand at each individual bus.

By expanding on the Per Generator Method, the Market Flow calculation evolves into a methodology very similar to the "Per Generator Method," while providing granularity on the order of the most granular method developed by the IDC Granularity Task Force.

Directional flows are required for this process to ensure a Market-Based Operating Entity can effectively select the most effective generation pattern to control the flows on both internal and external constraints, but are considered as distinct directional flows to ensure comparability with existing NERC and/or NAESB TLR processes. Under this process, the use of real-time values in concert with the Market Flow calculation effectively implements one of the more accurate and detailed methods of the six IDC Granularity Options considered by the NERC IDC Granularity Task Force.

Each Market-Based Operating Entity shall choose one of the three methodologies set forth in Section 4.1.1 (*Methodologies to Account for Tagged Transactions*) below to account for import and export tagged transactions and shall apply it consistently for each of the following calculations:

1. the Market Flow calculation;
2. the Firm Flow Limit calculation;
3. the Firm Flow Entitlement calculation; and
4. the tagged transaction impact calculation which occurs in the IDC.

Market Flows represent the impacts of internal generation (including generators pseudo-tied into the market area and excluding generators pseudo-tied out of the market area) serving internal load (including load pseudo-tied into the market area and excluding load pseudo-tied out of the market area) and tagged grandfathered transactions within the market area. Market Flows shall not include the impacts from import tagged transaction(s) into and export tagged transaction(s) out of the market area where the impacts of the interchange transactions are accounted for by the IDC. A Market-Based Operating Entity shall utilize the IDC to calculate the impacts of import tagged transactions into and export tagged transactions out of the market area that are not captured in the Market Flow calculation. The impact of the EAR shall be included in the Market Flow calculation using the methodology selected in Section 4.1.1 (*Methodologies to Account for Tagged Transactions*); the related tags will be excluded in IDC. For an import EAR, load will be adjusted, and for an export EAR, generation will be adjusted, in accordance with the methodology selected in Section 4.1.1 (*Methodologies to Account for Tagged Transactions*).

Units assigned to serve a market area's load do not need to reside within the market area's footprint to be considered in the Market Flow calculation. Units outside of the market area that are pseudo-

tied into the market to serve the market area's load will be included in the Market Flow calculation. However, units outside of the market area will not be considered when those units will have tags associated with their transfers (i.e., where pseudo-tie does not exist).

Additionally, there may be situations where the participation of a generator in the market that is not modeled as a pseudo-tie may be less than 100% (e.g., a unit jointly owned in which not all of the owners are participating in the market). This situation occurs when the generator output controlled by the non-participating parties is represented as interchange with a corresponding tag(s) and not as a pseudo-tie generator internal to each party's Control Area. Except for the generator output represented by qualifying interchange transactions from jointly owned units described in the following paragraph, such situations will be addressed by including the generator output in that Market-Based Operating Entity's Market Flow calculation with the amount of generator output not participating in the market being scaled down within the Market-Based Operating Entity's region or regions in accordance with one of the following three methodologies described and defined below in Section 4.1.1: the Marginal Zone Method, POR-POD Method, or Slice-of-System Method.

When a jointly owned unit, which is also listed as a Designated Network Resource for the Historic Firm Flow calculation, participates in more than one market (each of which report Market Flow to the IDC), and the generator output from that unit between the two markets is represented as interchange with a corresponding tag(s) that is accounted for by the IDC and not as a pseudo-tie generator internal to each market's Control Area, its modeling in the Market Flow calculation will be aligned with that in the Historic Firm Flow calculation. The amount of generator output from that unit scheduled between the two markets will be treated as a unit- specific export tagged transaction in the Market Flow calculation of the Market-Based Operating Entity where the generator is located and will be treated as a load-specific import tagged transaction in the Market Flow calculation of the other Market-Based Operating Entity.

- For exports out of one market area associated with the jointly owned unit(s), the generator output of jointly owned unit will be scaled down by an amount which is the lesser of the corresponding export tagged transaction(s) and unit ownership of an owner participating in other market area.

- For imports into the other market area associated with the jointly owned external unit(s), the Control Zone load or bus load(s) will be scaled down by an amount which is the lesser of the corresponding import tagged transaction(s) and unit ownership of an owner participating in the market area.

Import tagged transactions, export tagged transactions, and grandfathered tagged transactions within the market area, must be properly accounted for in the determination of Market Flows.

Below is a summary of the calculations discussed above.

For a specified Flowgate, the Market Flow impact of a market area is given as:

Total Directional "Market Flows" = ∑ (Directional "Market Flow" contribution of each unit in the Market-Based Operating Entity's area), grouped by impact direction

where,

"Market Flow" contribution of each unit in the Market-Based Operating Entity's area =

($GLDF_{Adj}$) (Adjusted Real-Time generator output)

and,

$GLDF_{Adj}$ is the Generator to Load Distribution Factor

Where the generator shift factor (GSF_{Adj}) uses Adjusted Real-Time generator output and the load shift factor (LSF_{Adj}) uses Adjusted Real-Time bus loads.

$GLDF_{Adj} = GSF_{Adj} - LSF_{Adj}$

Adjusted Real-Time generator output is the output of an individual generator as reported by the state estimator solution that has been adjusted for exports associated with joint ownership, if any, and then further adjusted for the remaining exports utilizing the chosen methodology in Section 4.1.1.

Adjusted Real-Time bus load is the sum of all bus loads in the market as reported by the state estimator solution that have been adjusted for imports associated with joint ownership, if any, and then further adjusted for the remaining imports utilizing the chosen methodology in Section 4.1.1..

The real-time and one-hour ahead projected "Market Flows" will be calculated on-line utilizing the Market-Based Operating Entity's state estimator model and solution. This is the same solution presently used to determine real-time market prices as well as providing on-line reliability assessment and the periodicity of the Market Flow calculation will be on the same order. Inputs to the state estimator solution include the topology of the transmission system and actual analog values (e.g., line flows, transformer flows, etc…). This information is provided to the state estimator automatically via SCADA systems such as NERC's ISN link.

Using an on-line state estimator model to calculate "Market Flows" provides a more accurate assessment than using an off-line representation for a number of reasons. The calculation incorporates a significant amount of real-time data, including:

- **Actual real-time and projected generator output.** Off-line models often assume an output level based on a nominal value (such as unit maximum capability), but there is no guarantee that the unit will be operating at that assumed level, or even on-line. Off-line models may not reflect the impact of pumped-storage units when in pumping mode; these units may be represented as a generator even when pumping. Additionally off-line models may not reflect the impact of units such as wind generators. A real-time calculation explicitly represents the actual operating modes of these units.
- **Actual real-time bus loads.** Off-line assessments may not be able to accurately account for changes in load diversity. Off-line models are often based on seasonal winter and summer peak load base cases. While representative of these peak periods, these cases

may not reflect the load diversity that exists during off-peak and shoulder hours as well as off-peak and shoulder months. A real-time calculation explicitly accounts for load diversity. Off-line assessments may also reflect load reduction programs that are only in effect during peak periods.

- **Actual real-time breaker status.** Off-line assessments are often bus models, where individual circuit breakers are not represented. On-line models are typically node models where switching devices are explicitly represented. This allows for the real-time calculation to automatically account for split bus conditions and unusual topology conditions due to circuit breaker outages.

Additionally, the calculation rate of the on-line assessment is much quicker and accurate than an off-line assessment, as the on-line assessment immediately incorporates changes in system topology and generators. Facility outages are automatically incorporated into the real-time assessment.

In order to provide reliable and consistent flow calculations, entities utilizing this process as the basis for coordination must ensure that the modeling data and assumptions used in the calculation process are consistent. Reciprocal Entities will coordinate models to ensure similar computations and analysis. Reciprocal Entities will each utilize real-time ICCP and ISN data for observable areas in each of their respective state estimator models and will utilize NERC data for areas outside the observable areas to ensure their models stay synchronized with each other and the NERC IDC.

4.1.1 Methodologies to Account for Tagged Transactions

A Market-Based Operating Entity shall choose one of the following methodologies to account for export and import tagged transactions in the Market Flow reported to the IDC and utilized for market-to-market, and shall also use the same methodology to account for export and import tagged transactions in the Firm Flow Limit and Firm Flow Entitlement calculations, as well as calculated tag impacts by the IDC:

1. Point-of-receipt (POR) / point-of-delivery (POD) Method (POR-POD Method) - Export tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to the IDC), shall be accounted for based on the POR of the transmission service reservation, as the transmission service was originally sold, that is listed on the export tagged transaction by proportionally offsetting the MW output of all units (i) in the Market-Based Operating Entity's Control Area, (ii) pre-integration NERC-recognized Control Area(s), or (iii) sub-regions within its Control Area. Import tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC), shall be accounted for based on the POD of the transmission service reservation, as the transmission service was originally sold, that is listed on the export tagged transaction by proportionally offsetting the MW load of all load buses (i) in the Market Based Operating Entity's Control Area, (ii) pre-integration NERC-recognized Control Area(s), or (iii) sub-regions within the Control Area; or

2. Marginal Zone Method – Export tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC), shall be accounted for by adjusting the MW output of the units in the Market-Based Operating Entity's Control Area, regions, or subregions within its Control Area by the total MW amount of all the Market-Based Operating Entity's export tagged transactions excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC) using: (1) marginal zone participation factors, as defined and calculated in Appendix B (*Determination of Marginal Zone Participation Factors*); and (2) the anticipated availability of a generator to participate in the interchange of the marginal zone. Import tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to the IDC), shall be accounted for by adjusting the MW load of the load buses in the Market-Based Operating Entity's Control Area, regions or subregions within the Control Area, by the total MW amount of all the Market-Based Operating Entity's import tagged transactions excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC) using marginal zone participation factors, as defined and calculated in Appendix B (*Determination of Marginal Zone Participation Factors*); or
3. Slice of System Method – Export tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC), shall be accounted for by proportionately adjusting the MW output of each of the units in the Market-Based Operating Entity's Control Area by the total MW amount of all the Market-Based Operating Entity's export tagged transactions excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to the IDC). Import tagged transactions, excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to the IDC), shall be accounted by proportionately adjusting the MW load of each of the load buses in the Market-Based Operating Entity's Control Area by the total MW amount of all the Market-Based Operating Entity's import tagged transactions excluding tagged transactions associated with jointly owned units participating in more than one market (each of which report Market Flow to IDC).

Each Market-Based Operating Entity shall post and maintain a document on its public website that describes calculations and assumptions used in those calculations regarding the chosen methodology and its application to the treatment of import and export transactions to the calculation of Market Flows, Firm Flow Limits, and Firm Flow Entitlements, and tag impacts calculated by the IDC.

4.2 Firm Flow Determination

Firm Market Flows represent the directional sum of flows created by Designated Network Resources serving designated network loads within a particular market area. They are based primarily on the configuration of the system and its associated flow characteristics; utilizing generation and load values as its primary inputs. Therefore, these Firm Market Flows can be determined based on expected usage and the Allocation of Flowgate capacity.

An entity can determine Firm Market Flows on a particular Flowgate using the same process as utilized by the IDC. This process is summarized below:

1. Utilize a reference base case to determine the Generation Shift Factors for all generators in the current Control Areas' respective footprints to a specific swing bus with respect to a specific Flowgate.
2. Utilize the same base case to determine the Load Shift Factors for the Control Area's load to a specific swing bus with respect to that Flowgate.
3. Utilize superposition to calculate the Generation to Load Distribution Factors (GLDF) for the generators with respect to that Flowgate.
4. Multiply the expected output used to serve native load from each generator by the appropriate GLDF to determine that generator's flow on the Flowgate.
5. Sum these individual contributions by direction to create the directional Firm Market Flow impact on the Flowgate.

4.3 Determining the Firm Flow Limit

Given the Firm Market Flow determinations described in the previous section, Market-Based Operating Entities can assume them to be their Firm Flow Limits. These limits define the maximum value of the Market Flows that can be considered as firm in each direction on a particular Flowgate. Prior to real time, a calculation will be done based on updated hourly forecasted loads and topology. The results should be an hourly forecast of directional Firm Market Flows. This is a significant improvement over current IDC processes, which uses a peak load value instead of an hourly load more closely aligned with forecasted data.

4.4 Firm Flow Limit Calculation Rules

The Firm Flow Limits for both 0% Market Flows and 5% Market Flows will be calculated based on certain criteria and rules. The calculation will include the effects of firm network service in both forward and reverse directions. The process will be similar to that of the IDC but will include one set of impacts down to 0% and another set down to 5%. The down to 0% impacts will be used to determine Firm Flow Limits on 0% Market Flows. The down to 5% impacts will be used to determine Firm Flow Limits on 5% Market Flows. The following points form the basis for the calculation.

1. The generation-to-load calculation will be made on a Control Area basis. The impact of generation-to-load will be determined for Coordinated Flowgates.

2. The Flowgate impact will be determined based on individual generators serving aggregated CA load. Only generators that are Designated Network Resources for the CA load will be included in the calculation.
3. Forward Firm Flow Limits for 0% Market Flows will consider impacts in the additive direction down to 0%, and reverse Firm Flow Limits for 0% Market Flows will consider impacts in the counter flow direction down to 0%. Forward Firm Flow Limits for 5% Market Flows will be determined by subtracting impacts between 0% and 5% in the additive direction from the Forward Firm Flow Limit for 0% Market Flows. Reverse Firm Flow Limits for 5% Market Flows will be determined by subtracting the impacts between 0% and 5% in the counter-flow direction from the reverse Firm Flow Limit for 0% Market Flows. Market Flow impacts and allocations using a 5% threshold are reported to the IDC to assign TLR curtailments. Market Flow impacts and allocations using a 0% threshold are reported to the IDC for information purposes.
4. Designated Network Resources located outside the CA will not be included in the generation-to-load calculation if OASIS reservations exist for these generators.
5. If a generator or a portion of a generator is used to make off-system sales that have an OASIS reservation, that generator or portion of a generator should be excluded from the generation-to-load calculation.
6. Generators that will be off-line during the calculated period will not be included in the generation-to-load calculation for that period.
7. CA net interchange will be computed by summing all Firm Transmission Service reservations and all Designated Network Resources that are in effect throughout the calculation period. Designated Network Resources are included in CA net interchange to the extent they are located outside the CA and have an OASIS reservation. The net interchange will either be positive (exports exceed imports) or negative (imports exceed exports).
8. If the net interchange is negative, the period load is reduced by the net interchange.
9. If the net interchange is positive, the period load is not adjusted for net interchange.
10. The generation-to-load calculation will be made using generation-to-load distribution factors that represent the topology of the system for the period under consideration.
11. PMAX of the generators should be net generation (excluding the plant auxiliaries) and the CA load should not include plant auxiliaries.
12. The portion of jointly owned units that are treated as schedules will not be included in the generation-to-load calculation if an OASIS reservation exists.

Section 5 – Market-Based Operating Entity Congestion Management

Once there has been an establishment of the Firm Flow Limit that is possible given Firm Market Flow calculation, that data will be used in the operating environment in a manner that relates to real time energy flows.

5.1 Calculating Market Flows

On a periodic basis, the Market-Based Operating Entity will calculate directional Market Flows for all Coordinated Flowgates. These flows will represent the actual flows in each direction at the time of the calculation, and be used in concert with the previously calculated Firm Flow Limits to determine the portion of those flows that should be considered firm and non-firm.

5.2 Quantify and Provide Data for Market Flow

Every fifteen minutes, the Market-Based Operating Entity will be responsible for providing to Reliability Coordinators the following information:

- Firm Market Flows for all Coordinated Flowgates in each direction
- Non-Firm Market Flows for all Coordinated Flowgates in each direction

The Firm Market Flow (Priority 7-FN) will be equivalent to the calculated Market Flow, up to the Firm Flow Limit. In real time, any Market Flow in excess of the Firm Flow Limit will be reported as Non-Firm Market Flow (Priority 6-NN) (note that under reciprocal operations, some of this Non-Firm Market Flow may be quantified as Priority 2-NH).

This information will be provided for both current hour and next hour, and is used in order to communicate to Reliability Coordinators the amount of flows to be considered firm on the various Coordinated Flowgates in each direction. When the Firm Flow Limit forecast is calculated to be greater than Market Flow for current hour or next hour, actual Firm Flow Limit (used in TLR5) will be set equal to Market Flow.

Additionally, as frequently as once an hour, but no less frequently than once every three months, the Market-Based Operating Entity will submit to the Reliability Coordinator sets of data describing the marginal units and associated participation factors for generation within the market footprint. The level of detail of the data may vary, as different Operating Entities will have different unique situations to address. However, this data will at a minimum be supplied for imports to and exports from the market area, and will contain as much information as is determined to be necessary to ensure system reliability. This data will be used by the Reliability Coordinators to determine the impacts of schedule curtailment requests when they result in a shift in the dispatch within the market area.

5.3 Day-Ahead Operations Process

The Market-Based Operating Entities will use a day-ahead operations process to establish the Firm Flow Limit on Coordinated Flowgates. If the Market-Based Operating Entities utilize a day-ahead unit commitment, they will supplement the day-ahead unit commitment with a security constrained economic dispatch tool, which uses a network analysis model that mirrors the real-time model found within their state estimators. As such, the day-ahead unit commitment and its associated Security Constrained Economic Dispatch respects facility limits and forecasted system constraints. Facility limits of Coordinated Flowgates under the functional control of Market-Based Operating Entities and the allocations of all Reciprocal Coordinated Flowgates will be honored.

For Coordinated Flowgates, a Market-Based Operating Entity can only use one of the following two methods to establish Firm Flow Limit. A Market-Based Operating Entity must use either the day-ahead unit commitment and its associated Security Constrained Economic Dispatch, or a Market-Based Operating Entity's GTL and unused Firm Transmission Service impacts, up to the Flowgate Limit, on the Coordinated Flowgate. At any given time, a Market Based Operating Entity must use only one method for all Coordinated Flowgates and must give ninety days notice to all other Reciprocal Entities, if it decides to switch from one method to the other method. On a case by case basis, with agreement by all Reciprocal Entities the ninety-day notice period may be waived.

5.4 Real-time Operations Process – Operating Entity Capabilities

Operating Entities' real-time EMSs have very detailed state estimator and security analysis packages that are able to monitor both thermal and voltage contingencies every few minutes. State estimation models will be at least as detailed as the IDC model for all the Coordinated and Reciprocal Coordinated Flowgates. Additionally, Reciprocal Entities will be continually working to ensure the models used in their calculation of Market Flow are kept up to date.

The Market-Based Operating Entities' state estimators and Unit Dispatch Systems (UDS) will utilize these real-time internal flows and generator outputs to calculate both the actual and projected hour ahead flows (i.e., total Market Flows, Non-Firm Market Flows, and Firm Market Flows) on the Coordinated Flowgates. Using real-time modeling, the Market-Based Operating Entity's internal systems will be able to more reliably determine the impact on Flowgates created by dispatch than the NERC IDC. The reason for this difference in accuracy is that the IDC uses static SDX data that is not updated in real-time. In contrast to the SDX data, the Market-Based Operating Entity's calculations of system flows will utilize each unit's actual output, updated at least every 15 minutes on an established schedule.

5.5 Market-Based Operating Entity Real-time Actions

The Market-Based Operating Entity will upload the real-time and one-hour ahead projected Firm Market Flows (7-FN) and Non-Firm Market Flows (6-NN) on these Flowgates to the IDC every 15 minutes, as requested by the NERC IDCWG and OATI (note that under reciprocal operations, some of this 6-NN may be quantified as Priority 2-NH). Market Flows will be calculated, down to five percent and down to zero percent, and uploaded to the IDC. When the real-time actual flow exceeds the Flowgate limit and the Reliability Coordinator, who has responsibility for that Flowgate, has declared a TLR 3a or higher, the IDC will determine tag curtailments, Market Flow relief obligations and NNL relief obligations using a 5% tag impact, Market Flow impact and NNL impact threshold. The Market-Based Operating Entity will respond to the relief obligation by

redispatching their system in a manner that is consistent with how non-market entities respond to their NNL relief obligations. Note the Market-Based Operating Entity and the non-market-entities may provide relief through either: (1) a reduction of flows on the Flowgate in the direction required, or (2) an increase of reverse flows on the Flowgate.

Market-Based Operating Entities will implement this redispatch by binding the Flowgate as a constraint in their Unit Dispatch System (UDS). UDS calculates the most economic solution while simultaneously ensuring that each of the bound constraints is resolved reliably. Additionally, the Market-Based Operating Entity will make any point-to-point transaction curtailments as specified by the NERC IDC.
The Reliability Coordinator calling the TLR will be able to see the relief provided on the Flowgate as the Market-Based Operating Entity continues to upload its contributions to the real-time flows on this Flowgate.

Section 6 - Reciprocal Operations

Reciprocal Coordination Agreements can be executed on a market-to-market basis, a market-to-non-market basis, and a non-market-to-non-market basis. While the congestion management portions of this document are intended to apply specifically to Market-Based Operating Entities, the agreement to allocate Flowgate capability is not dependent on an entity operating a centralized energy market. Rather, it simply requires that a set of Flowgates be defined upon which coordination shall occur and an agreement to perform such coordination.

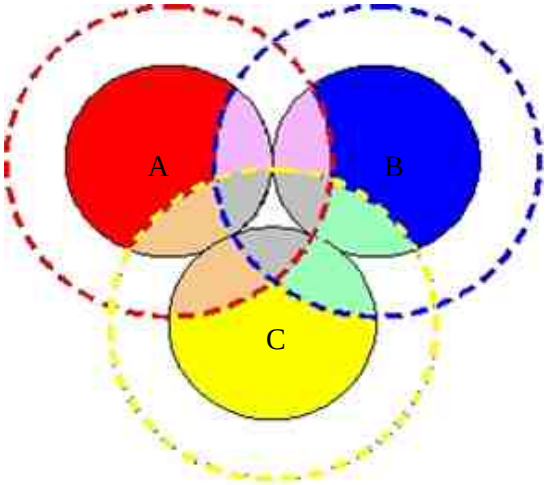
6.1 Reciprocal Coordinated Flowgates

In order to coordinate congestion management on a proactive basis, Operating Entities may agree to respect each other's Flowgate limitations during the determination of AFC/ATC and the calculation of firmness during real-time operations. Entities agreeing to coordinate this future-looking management of Flowgate capacity are Reciprocal Entities. The Flowgates used in that process are Reciprocal Coordinated Flowgates.

6.2 The Relationship Between Coordinated Flowgates and Reciprocal Coordinated Flowgates

Coordinated Flowgates are associated with a specific Operating Entity's operational sphere of influence. Reciprocal Coordinated Flowgates are associated with the implementation of a Reciprocal Coordination Agreement between two Reciprocal Entities. By virtue of having executed such an agreement, a Flowgate Allocation can occur between these two Reciprocal Entities as well as all other Reciprocal Entities that have executed Reciprocal Coordination Agreements with at least one of these two Reciprocal Entities. When considering an implementation between two Reciprocal Entities, it is generally expected that each of the Reciprocal Coordinated Flowgates will meet the following three criteria:

- It will meet the criteria for Coordinated Flowgate status for both the Reciprocal Entities,
- It will be under the functional control of one of the two Reciprocal Entities and
- Both Reciprocal Entities have executed Reciprocal Coordination Agreements either with each other or with a Third Party Reciprocal Entity.



As shown in the illustration above, Operating Entity A, Operating Entity B and Operating Entity C each have their own set of Coordinated Flowgates (represented by the blue, yellow and red dotted-line circles). Where those sets of Coordinated Flowgates overlap AND they are in either Operating Entity A's, Operating Entity B's or Operating Entity C's service territory (the gray area), they will be considered Reciprocal Coordinated Flowgates between all three entities. Where those sets of Coordinated Flowgates overlap AND they are in either Operating Entity A's or Operating Entity B's service territory (the purple area), they will be considered Reciprocal Coordinated Flowgates between Operating Entity B and Operating Entity A only. Where those sets of Coordinated Flowgates overlap AND they are in either Operating Entity B's or Operating Entity C's service territory (the green area), they will be considered Reciprocal Coordinated Flowgates between Operating Entity B and Operating Entity C only. Where those sets of Coordinated Flowgates overlap AND they are in either Operating Entity A's or Operating Entity C's service territory (the orange area), they will be considered Reciprocal Coordinated Flowgates between Operating Entity A and Operating Entity C only.

To the extent that entities other than Market-Based Operating Entities may enter into a Reciprocal Coordination Agreements, they may offer to coordinate on Flowgates that are Coordinated Flowgates (i.e., have passed one of the five tests defined within this document or otherwise been deemed to be a Coordinated Flowgate).

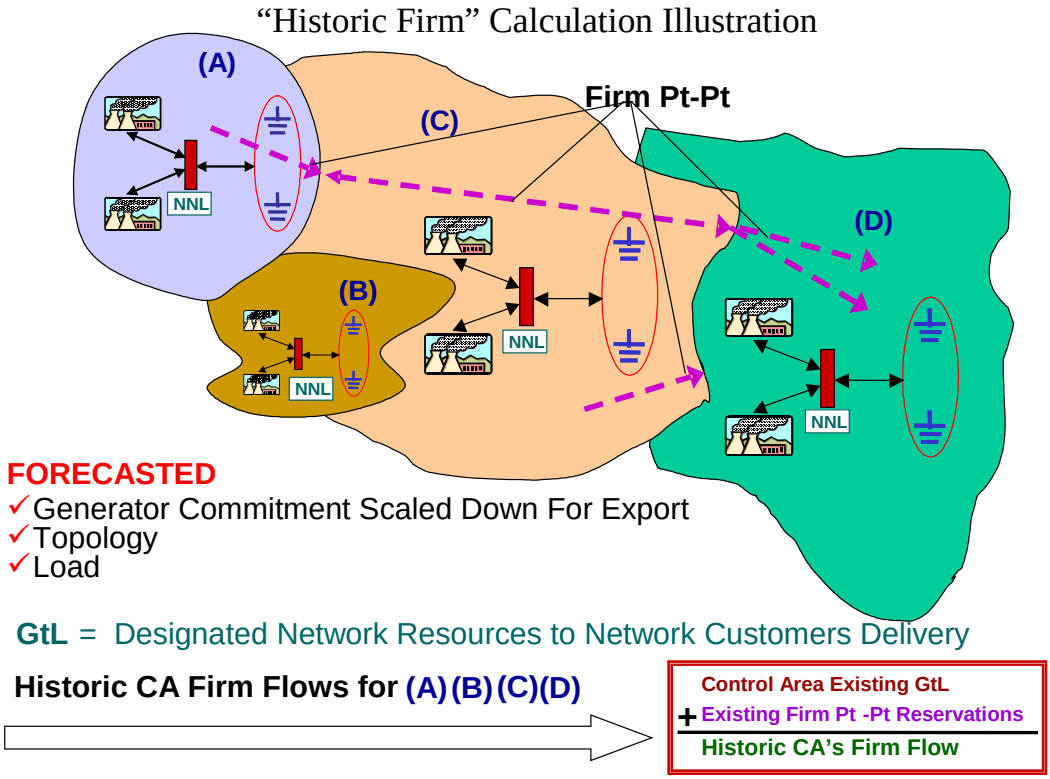
6.3 Coordination Process for Reciprocal Flowgates

The following process and timing will be used for coordinating the ATC/AFC calculations and Firm Flow Limit calculations/Allocations between Reciprocal Entities. Further, the process quantifies and limits Priority 6 – NN service on the Reciprocal Coordinated Flowgates, as well as determines priority 2-NH service. All Reciprocal Entities' Firm Flow Limits will be calculated on the same basis.

6.4 Calculating Historic Firm Flows

As a starting point for identifying Allocations, an understanding must be developed of what Firm Flows would be in the historic Control Area structure. In other words, there must be a quantification of the Firm Flows that would have occurred if all Control Areas maintained their current configuration and continued to: (1) serve their native load with their Designated Network

Resources, and (2) import and export energy at historical levels (based upon Firm Transmission Service reservations as of the Freeze Date, which is currently set as April 1, 2004. This flow is referred to as Historic Firm Flow.



Reciprocal Entities will utilize the IDC Base Case model, or a mutually agreed upon alternative model as the reference base case for these calculations.

6.5 Recalculation of Initial Historic Firm Flow Values and Ratios

The Firm Transmission Service and Designated Network Resource to customer load defined by the Historic Firm Flow calculation will be updated in the recalculation of Historic Firm Flow utilizing any new Designated Network Resources, updated customer loads, and new transmission facilities. The original historic Control Areas will be retained for the recalculation of Historic Firm Flow. New Designated Network Resources will be included in the recalculation to the extent these new Designated Network Resources have been arranged for the exclusive use of load within the historic Control Areas and to the extent the total impact of all Designated Network Resources does not exceed the historic Control Area impact of Designated Network Resources as of a "Freeze Date" (defined as April 1, 2004). Any changes to Designated Network Resources and/or the transmission system that increase transmission capability will be assessed in accordance with the Reciprocal Entities AFC Coordination procedures prior to the increasing of Historic Firm Flow related to those systems.

The initial Historic Firm Flow calculated values and resulting Allocation ratios will be recalculated as seasonal cases are produced. This recalculation will utilize the same Firm Transmission Service reservations that were used in the initial Historic Firm Flow calculation. The same Firm Transmission Service reservations are used so that Market-Based Operating Entities that have their Firm Transmission Service internalized, grant fewer internal Firm Transmission Service reservations, or have their original Firm Transmission Service reservations end, because of their market operations, will retain at least the same level of Firm Transmission Service as in the initial Historic Firm Flow calculation. Therefore, the Firm Transmission Service component of the Historic Firm Flow will be frozen on the "Freeze Date" at the initially calculated level for both market and non-market entities.

Any new Control Areas that are added to the Firm Flow calculation process for any Reciprocal Entity, or another Operating Entity, will use Firm Transmission Service reservations from the initial Historic Firm Flow calculation date to establish their Firm Transmission Service component of the Historic Firm Flow.

As the recalculation for Historic Firm Flow is made for each time period, the higher of allocation value will be retained between the initial Historic Firm Flow calculation and the recalculation (See "Forward Coordination Process" Section 6.6, step 8.f). To the extent an Operating Entity has made commitments based on the higher of Allocation value, a recalculation does not reduce previously calculated Allocations.

When a Flowgate experiences a transitory limit reduction or de-rating, there will be no change made to the historic allocations. In effect, the Operating Entity responsible for the Flowgate is expected to absorb the impact of the de-rating by not reducing the historic allocation of the other Operating Entities. This practice is consistent with the use of the higher-of logic in the historic allocation process. Where a change in system conditions, such as a significant transmission outage, affects flows on a longer term basis the Reciprocal Entities will discuss whether historic allocations, including an over-ride of the higher-of logic, should be rerun to recognize the effects of the change in system conditions in the historic allocations. The historic allocations shall be rerun only if the affected Reciprocal Entities mutually agree.

6.6 Forward Coordination Processes

1. For each Reciprocal Coordinated Flowgate, a managing entity and an owning entity will be defined. The manager will be responsible for all calculations regarding that Flowgate; the owner will define the set of Firm Transmission Service reservations to be utilized when determining Firm Transmission Service impacts on that Flowgate.
2. Managing entities will calculate both Historic Firm Gen-to-Load Flow impacts and historic Firm Transmission Service impacts for all entities. These impacts will be used to define the Historic Ratio and the Allocation of transmission capability.
3. The managing entity will utilize the current NERC IDC Base Case (or other mutually agreeable base case) to determine impacts. The case should be updated with the most current set of outage data for the time period being calculated.
4. Managing entities will calculate Allocations on the following schedule:

Allocation Run Type	Allocation Process Start	Range Allocated	Allocation Process Complete
April Seasonal Firm	Every April 1 at 8:00 EST	Twelve monthly values from October 1 of the current year through September 30 of the next year	April 1 at 12:00 EST
October Seasonal Firm	Every October 1 at 8:00 EST	Twelve monthly values from April 1 of next year through March 31 of the following year	October 1 at 12:00 EST
Monthly Firm	Every month on the second day of the month at 8:00 EST	Six monthly values for the next six successive months	2nd of the month at 12:00 EST
Weekly Firm	Every Monday at 8:00 EST	Seven daily values for the next Monday through Sunday	Monday at 12:00 EST
Two-Day Ahead Firm	Every Day at 17:00 EST	One daily value for the day after tomorrow	Current Day at 18:00 EST
Day Ahead Non-Firm	Every Day at 8:00 EST	Twenty-four hourly values for the next 24-hour period (Next Day HE1-HE24 EST)	Current Day at 9:00 EST

5. Historic Ratios are defined during the seasonal runs the first time an impact is calculated. For example, the 2004 April seasonal firm run would define the Historic Ratio for April 2005 – September 2005 (October through March would have been calculated during the 2003 October seasonal firm run). The Historic Ratio is based on the total impacts of the Reciprocal Entity on the Flowgate (Historic Firm Gen-to-Load Flows and historic Firm Transmission Service flows, down to 0%) relative to the total impacts of all other Reciprocal Entities' impacts on the Flowgate. For example, if Reciprocal Entity A had a 30 MW impact on the Flowgate and Reciprocal Entity B had a 70 MW impact on the Flowgate, the Historic Ratios would be 30% and 70%, respectively.
6. The same rules defined in the "Market-Based Operating Entity Congestion Management" Section 5 of this document for use in determining Firm Transmission Service impacts (NNL) shall apply when performing Allocations.
7. Additional rules to be used when considering Firm Transmission Service impacts are defined later within this section.

8. For each firm Allocation run described above, the managing entity will take the following steps to determine Allocations down to 0% for each of the Flowgates, in both the forward and reverse direction, they are assigned to manage:

    a. Retrieve the Flowgate limit
    b. Subtract the current Transmission Reliability Margin (TRM) value (may be zero)
    c. Subtract the sum of all historically determined Firm Flow impacts for all entities based on impacts greater than or equal to 5%
    d. Accommodation of Capacity Benefit Margin (CBM)
        - If no capacity remains after step (c), entities' firm Allocation is limited to this amount (i.e., their Firm Flow impacts from impacts of 5% or greater), and the firm Allocation for the entity with functional control over the Flowgate is increased by the current CBM value (may be zero).
        - If capacity does remain after step (c), and the sum of all Reciprocal Entities' impacts below 5% plus CBM is less than the remaining capacity from step (c), that capacity is allocated to the Reciprocal Entities pro-rata based on their Firm Flow impacts due to impacts less than 5% up to the total amount of their Firm Flow impacts due to impacts less than 5%.
        - If there is not sufficient capacity for all impacts below 5% plus CBM to be accommodated, the current CBM value is subtracted from the remaining capacity from step (c), and granted to the entity with functional control over the Flowgate. Any capacity remaining is allocated to the Reciprocal Entities pro-rata based on their Firm Flow impacts due to impacts less than 5%.
    e. Any remaining capacity, after step (d) will be considered firm and allocated to Reciprocal Entities based on their Historic Ratio (as described in step 5). If the remaining capacity allocated to the entity with functional control over the Flowgate meets or exceeds the current CBM value, no further effort is needed. If the remaining capacity is less than the CBM, capacity will first be reduced by the CBM, and the entity with functional control over the Flowgate will be granted the capacity needed to support the CBM. In addition each Reciprocal Entity (including the entity with functional control over the Flowgate) will receive allocations determined as a pro-rata share of the remaining capacity (as described in Step 5).
    f. Upon completion of the Allocation process, the managing entity will compare the current preliminary Allocation to the previous Allocations. For any given Flowgate, the larger of the Allocations will be considered the Allocation (i.e., an Allocation cannot decrease). Once all preliminary Allocations have been compared and the final Allocation determined, the managing entity will distribute the Allocations to the appropriate Reciprocal Entities. This Allocation will consist of the firm Gen-to-Load limit and a portion of capability that can be used either for Firm Transmission Service or additional firm Gen-to-Load service.

9. For the non-firm Allocation run described above, the managing entity will take the following steps to determine Allocations down to 0% for each of the Flowgates, in both the forward and reverse direction, they are assigned to manage. For each hour, the managing entity shall:

    a. Retrieve the Flowgate limit

b. Subtract the current TRM value (may be zero)
c. Subtract the sum of all hourly historically determined Firm Flow impacts for all entities based on impacts greater than or equal to 5%
d. Subtract the sum of all hourly historically-determined Firm Flow impacts for all Reciprocal Entities based on impacts less than 5%.
e. Any remaining capacity will be allocated to Reciprocal Entities based on their Historic Ratio (as described in step 5).
f. The two-day ahead firm Allocation is subtracted from the total entity Allocation (from steps c, d, and e).
   - If the result is positive, this value will be equivalent to the Priority 6-NN Allocation/limit, and the Firm Flow Limit for 0% Market Flows will be the two-day ahead firm Allocation.
   - If the result is negative or zero, the Priority 6-NN Allocation will be calculated by subtracting the total entity Allocation (from steps c, d and e) from the two-day ahead firm Allocation. The Firm Flow Limit for 0% Market Flows will be the equivalent of the total entity allocation.
g. Upon completion of the Allocation process, the managing entity will distribute the Allocations to the appropriate Reciprocal Entities. These Allocations will be considered non-firm network service.

When a Market-Based Operating Entity is uploading Firm Market Flow contributions to the IDC, they will be responsible for ensuring that any firm Allocations are properly accounted for. If firm Allocations are used to provide additional firm network service, they should be included in the Firm Market Flow contribution. If they are used to provide additional Firm Transmission Service, they should not be included in the Firm Market Flow contribution.

The Market-Based Operating Entities will maintain in real-time their Firm Transmission Service and Network Non-Designated service impacts, including associated Market Flows, within their respective firm and Priority 6 total Allocations. The Firm Transmission Service impacts will be based on schedules. The Operating Entities participating in the Coordinated Process for Reciprocal Flowgates will respect their allocations when granting Firm Transmission Service.

Using the derived firm Allocation value, the Market-Based Operating Entity may choose to enter this value as a Flowgate limit for the respective Flowgate. If entered as a Flowgate limit, the Day-Ahead unit commitment will not permit flows to exceed this value as it selects units for this commitment. Market-Based Operating Entities will use the Flowgate limit to restrict unit outage scheduling for a Coordinated Flowgate when maintenance outage coordination indicates possible congestion and there is recent TLR activity on a Flowgate.

As Reciprocal Entities gain more experience in this process, implement and enhance their systems to perform the Firm Flow calculations and Allocations, they may change the timing requirements for the Forward Coordination Process by mutual agreement.

6.6.1 Determining Firm Transmission Service Impacts

Firm impacts used in the Allocation process incorporate the Firm Transmission Service flows. Similar to the network service calculation described previously, to calculate each Firm Transmission Service transaction's impact on the Flowgate, the following process is utilized:

1. Utilize a base case to determine the Generation Shift Factor for the source Control Area with respect to a specific Flowgate.
2. Utilize the same base case to determine the Generation Shift Factor for the sink Control Area with respect to that Flowgate.
3. Utilize superposition to calculate the TDF for that source to sink pair with respect to that Flowgate.
4. Multiply the transactions energy transfer by the TDF to determine that transactions flow on the Flowgate.

Summing each of these impacts by direction will provide the directional Firm Transmission Service impact on the Flowgate.

Combining the directional Firm Transmission Service impacts with the directional NNL impacts will provide the directional Firm Flows on the Flowgate.

6.6.2 Rules for Considering Firm Transmission Service

1. Firm Transmission Service and Designated Network Resources that have an OASIS reservation are included in the calculation.
2. Reciprocal Entities will utilize a Freeze Date of April 1, 2004. Reciprocal Entities will utilize a reference year of June 1, 2004 through May 31, 2005 for determining the confirmed set of reservations that will be used in the Allocation process. The reference year is used such that reservation impacts in a given month in the reference year are used for each comparable month going forward in the Allocation process. For example, the Allocations for July 2004, July 2005, and July 2006 etc. will always use the July 2004 reservation impacts from the reference year. Confirmed reservations received after the Freeze Date will not be considered.
3. A potential for duplicate reservations exists if a transaction was made on individual CA tariffs (not a regional tariff) and both parties to the transaction (source and sink) are Reciprocal Entities. In this case, each Reciprocal Entity will receive 50% of the transaction impact.
4. To the extent a partial path reservation is known to exist, it will have 100% of its impacts considered on Reciprocal Coordinated Flowgates owned by the party that sold the partial path service, split 50/50 between the Source Reciprocal Entity and the Sink Reciprocal Entity, and 0% of its impacts considered on other Reciprocal Coordinated Flowgates.
5. Because reservations that are totally within the footprint of the regional tariff do not have duplicate reservations, these reservations will have the full impact considered even though

both parties to the transaction (source and sink) are within the boundaries of the regional tariff and will be considered Reciprocal Entities, split 50/50 between the Source Reciprocal Entity and the Sink Reciprocal Entity, which in this case are the same. Similar to the firm network service calculation, the Firm Transmission Service calculation:

a. Will consider all reservations (including those with less than 5% impact)

b. Will base response factors on the topology of the system for the period under consideration.

c. In general, will not make a generation-to-load calculation where a reservation exists.

6.6.3 Limiting Firm Transmission Service

The Flowgate Allocations down to 0% will represent the share of total Flowgate capacity (STFC) that a particular entity has been allocated. This STFC represents the maximum total impact that entity is allowed to have on that Flowgate.

In order to coordinate with the existing AFC process, it is necessary that this number be converted to an available STFC (ASTFC) which represents how much Flowgate capability remains available on that Flowgate for use as Transmission Service. In order to accomplish this, the entity receiving STFC will do the following:

Step	Example
1.) Start with the STFC	100
2.) Add all forward Gen to Load impacts (down to 0%) and all Reverse Gen to Load impacts (down to 0%) to obtain the Net Gen to Load impacts. The Gen to Load impacts should be based on the *best estimate* of firm Gen-to-Load Flow for the time period being evaluated.	42 + (-20) = 22
3.) Subtract the net Gen to Load impacts from the STFC	100 – 22 = 78
4.) Subtract the CBM to produce an interim STFC	78 – 0 = 78
5.) Determine the Transmission Service impacts of service that has been sold. By default, it should be assumed that 100% of forward service and 15% of counterflowing service will be scheduled and used. However, if Flowgate "owner" uses different percentages in their AFC calculation and the Flowgate manager's calculation engine support it, percentages other than	58 + (0.15 (-45)) = 58 + (-6.75) ≈ 58 + (-7) = 51

100% and 15% may be used. Add all forward Transmission Service impacts (down to 0%) and all appropriate reverse Transmission Service impacts (down to 0%) to obtain the weighted net Transmission Service impacts. The Transmission Service impacts should be based on the *current* set of reservations in effect for the time period being evaluated (*not* the historic reservation set)	
6.) Subtract the weighted net Transmission Service impacts from the Interim STFC. The result is the ASTFC	78 – 51 = 27

The ASTFC values for Reciprocal Coordinated Flowgates will be posted on OASIS along with the Allocation results. This ASTFC can then be compared with the AFC calculated through traditional means when evaluating firm requests made on OASIS.

If the AFC value is LOWER than the ASTFC value, the AFC value should be utilized for the purpose of approving/denying service. In this case, while the Allocation process might indicate that the entity has rights to a particular Flowgate through the Allocation process, current conditions on that Flowgate indicate that selling those rights would result in overselling of the Flowgate, introducing a reliability problem.

If the AFC value is HIGHER than the ASTFC value, the ASTFC value should be utilized for the purpose of approving/denying service. In this case, while the AFC process might indicate that the entity can sell more service than the Allocation might indicate, the entity is bound to not sell beyond their Allocation.

If a Reciprocal Entity uses all of its firm Allocation and desires to obtain additional capacity from another Reciprocal Entity who has remaining capacity, that additional capacity may be obtained using the procedures documented below.

6.7 Sharing or Transferring Unused Allocations

Reciprocal Entities shall use the following process for the sharing or transferring of unused Allocations down to 0% between each other.

6.7.1 General Principles

This process includes the following general principles in the treatment of unused Allocations

1. A desire to fully utilize the Reciprocal Entities' Allocations such that in real-time, an unused Allocation by Reciprocal Entities is caused by a lack of commercial need for

the Allocation by Reciprocal Entities and not by restrictions on the use of the Allocation.

2. For short-term requests (less than one year) where the lack of an Allocation could otherwise result in the denial of Transmission Service requests, there should be a mechanism to share or acquire a remaining Allocation on a non-permanent basis for the duration of the short-term transmission service requests. The short-term Allocation transfers would revert back to the Reciprocal Entity with the original Allocation after the short term request expires.
3. For long-term requests (one year or longer) where the lack of an Allocation could otherwise cause the construction of new facilities, there should be a mechanism to acquire a remaining Allocation such that new facilities are built only because they are needed by the system to support the transaction and not because of the Allocation split between Reciprocal Entities. Long-term Allocation transfers would apply to the original time period of the request including any roll-over rights that are granted for such requests.
4. Due to limitations on the frequency of transferring updated Allocation values and AFC's between the Reciprocal Entities, the Reciprocal Entities will utilize buffers to reduce the risk of overselling the same service, and to set aside a portion of the unused Allocation for the owner of the unused Allocation to accommodate any request that they may receive. The buffer will be reduced on a Flowgate based upon factors such as the rating of the Flowgate and operational experience, with the goal to maximize the use of the unused Allocation. The rationale for reducing the buffer is that potentially significant amounts of Transmission Service (up to many times the buffer amount) may be denied otherwise by the non-owner of the unused Allocation.

6.7.2 Provisions for Sharing or Transferring of Unused Allocations:

1. Based upon the proposed infrastructure for Allocation calculations, daily Allocations are available for 7 days into the future and Weekly and Monthly Allocations are available up to 18 months into the future. Sharing and transferring of unused Allocations will be limited to the granularity of the Allocation calculations.
2. The Reciprocal Entities will share or transfer their unused firm Allocations during the time periods up until day ahead with the goal to fully utilize the Allocations.
3. This sharing or transfer of the unused Allocation will occur automatically for short-term Transmission Service requests, and manually for long-term (one year or greater) Transmission Service requests. The Reciprocal Entity that has been requested to transfer unused Allocations to the other Reciprocal Entity for a long-term request shall respond within 5 business days of receipt of the transfer request.
4. The Reciprocal Entities will post information available to the other Reciprocal Entity on all requests granted that shared or acquired the other Reciprocal Entity's Allocation on a daily basis for review.

5. Sharing an Unused Allocation During the Near-Term

The Reciprocal Entities will share their Allocations during the near-term (the first 7 days up until day ahead or a mutually agreed upon timeframe) with the goal to fully utilize the Allocations once in real-time through an automated process.

This sharing of the unused Allocation during the near-term will occur such that an unused Allocation that has not already been committed for use by either Firm Transmission Service or for market service will be made available to the other Reciprocal Entities for their use to accommodate Firm Transmission Service requests submitted on OASIS.

Other firm uses of the transmission system involving generation to load deliveries, which are not evaluated via automated request evaluation tools, will be handled via off-line processes. The core principles to be applied in such cases include:

a. A sharing of Allocation can occur.

b. The sharing shall be done on a comparable basis for the market and non-market entities.

c. The sharing is not related to projected Market Flow absent new DNRs or Transmission Service submitted on OASIS.

d. The details of the process will include such items as which DNRs are covered, time-lines for designations and comparable evaluation of DNRs. If the details of this process can not be agreed upon, there shall be no sharing of the unused Allocations during the near-term.

A buffer will limit the amount of Allocation that can be shared for short-term requests during automated processing of the Allocation sharing process. The owner of the unused Allocation is not restricted by the buffer. The buffer is defined as a percentage of the last updated unused Allocation, provided that the buffer shall not be allowed to be less than a certain MW value. For example, a 25% or 20 MW buffer would mean that the requesting entity can use the other Reciprocal Entity's unused Allocation while making sure that the other entity's unused Allocation does not become smaller than 25% of the reported unused amount or 20 MW. The specific provisions of the buffer shall be mutually agreed to by the Reciprocal Entities prior to implementing a sharing of unused Allocation. The buffer will not be used in manual processing of Allocation sharing requests. For manual processing of requests, the owner of the unused Allocation will share the remaining unused Allocation to the extent they do not need the unused Allocation for pending Transmission Service requests.

For the sharing of unused Allocations in the near-term, the Allocations are not changed and should congestion occur the NERC IDC obligations for the giving Reciprocal Entity will be in accordance with its original Allocation. The receiving Reciprocal Entity will not be required to retract or annul any service previously granted due to the sharing of Allocations.

6. Acquiring an Unused Allocation Beyond the Near Term

When a Reciprocal Entity does not have sufficient Allocation on a Flowgate to approve a firm point-to-point or network service request made on OASIS and evaluated via automated request evaluation tools and the other Reciprocal Entity has a remaining Allocation, the deficient Reciprocal Entity will be able to acquire an Allocation from the Reciprocal Entity with the remaining Allocation. This Allocation must not already be committed for other appropriate uses, as agreed to by the Reciprocal Entities, and sufficient AFC must remain on the Flowgate, or will be created, to accommodate the request. Such cases will be handled via automated processes.

Other firm uses of the transmission system involving generation to load deliveries, which are not evaluated via automated request evaluation tools, will be handled via off-line processes. The core principles to be applied in such cases include:

a. A transfer of Allocation can occur.
b. The transfer shall be done on a comparable basis for the market and non-market entities.
c. The transfer is not related to projected Market Flow absent new DNRs or Firm Transmission Service submitted on OASIS.
d. The details of the process will include such items as which DNRs are covered, time-lines for designations and comparable evaluation of DNRs If the details of this process can not be agreed upon, there shall be no transfer of the Allocation for the time period beyond the near term.

A buffer will limit the amount of Allocation that can be acquired for these requests during automated processing of the Allocation transfer process. The owner of the unused Allocation is not restricted by the buffer. The buffer is defined as a percentage of the last updated unused Allocation, provided that the buffer shall not be allowed to be less than a certain MW value. For example, a 25% or 20 MW buffer would mean that the requesting entity can use the other Reciprocal Entity's unused Allocation while making sure that the other entity's unused Allocation does not become smaller than 25% of the reported unused amount or 20 MW. The specifics of the buffer shall be mutually agreed to by the Reciprocal Entities prior to implementing a transferring of unused Allocation. The buffer will not be used in manual processing of Allocation sharing requests. For manual processing of requests, the owner of the unused Allocation will transfer the remaining unused Allocation to the extent they do not need the unused Allocation for pending Transmission Service requests.

The determination of whether the remaining Allocation has already been committed will be established based on OASIS queue time. All requests received prior to the queue time will be considered prior commitments to the remaining Allocation, while such requests are in a pending state (e.g. study status) or confirmed state. Requests received after the queue time will be ignored when determining whether remaining capacity has already been committed.

In the event that prior-queued requests are still in a pending state (i.e. not yet confirmed), the Reciprocal Entity requesting a transfer of unused Allocations may await the resolution of any prior-queued requests in the other Reciprocal Entity's OASIS queue before relinquishing its ability to request an Allocation transfer.

For the transfer of unused Allocations, the Reciprocal Entity's Allocations will be changed to reflect the Allocation transfer at the time the Allocation transfer request is processed. To the extent the request is not ultimately confirmed, the Allocation will revert back to the original Reciprocal Entity with the remaining Allocation. For yearly requests, the transfer of the Allocation applies to the original time period of the request including any roll-overs that are granted.

6.8 Market-Based Operating Entities Quantify and Provide Data for Market Flow

In addition to the responsibilities described earlier in "Market-Based Operating Entity Congestion Management" Section 5 of this document, Market-Based Operating Entities will have an additional obligation, on Reciprocal Coordinated Flowgates, to further quantify their Non-Firm Flows into two (2) separate priorities: Non-Firm Network (6-NN), and Non-Firm Hourly (2-NH). Priorities will be determined as follows:

1. If the Market Flow exceeds the sum of the Firm Flow Limit and the 6-NN Allocation, then:
   2-NH = Market flow – (Firm Flow Limit + 6-NN Allocation)
   6-NN = 6-NN Allocation
   7-FN = Firm Flow Limit
2. If the Market Flow exceeds the Firm Flow Limit but is less than the 6-NN Allocation, then:
   2-NH = 0
   6-NN = Market Flow – Firm Flow Limit
   7-FN = Firm Flow Limit
3. If the Market Flow does not exceed the Firm Flow Limit, then
   2-NH = 0
   6-NN = 0
   7-FN = Market Flow
4. If the tag associated with EAR is converted to Market Flow and excluded by the IDC, the Market Flow shall have a priority that is no higher than it would have been if the tag was not excluded by IDC.

All other aspects of this data remain identical to those described in "Market-Based Operating Entity Congestion Management" Section 5.

6.9 Real-time Operations Process for Market-Based Operating Entities

6.9.1 Market-Based Operating Entity Capabilities

Capabilities remain as described in "Market-Based Operating Entity Congestion Management" Section 5.

6.9.2 Market-Based Operating Entity Real-time Actions

Procedures remain as described in "Market-Based Operating Entity Congestion Management" Section 5. However, as described above, additional information regarding the firmness of those Non-Firm Market Flows will be communicated as well. A portion will be reported as 6-NN, while the remainder will be reported as 2-NH. This will provide additional ability for the IDC to curtail portions of the Non-Firm Market Flows earlier in the TLR process.

6.10 Requirements to Combine Allocations with Non-Reciprocal Entity

The following requirements must be satisfied for a Combining Party to incorporate a Non-Reciprocal Entity's load and the associated generation serving that load into the Reciprocal Entity's Allocation calculations:

1. The Non-Reciprocal Entity's load and associated generation serving that load participates in the market of the Combining Party pursuant to a FERC-accepted agreement(s).
2. The Non-Reciprocal Entity has not placed its transmission facilities under the Open Access Transmission Tariff of the Combining Party, nor has the Non-Reciprocal Entity executed a transmission owner agreement or membership agreement, or equivalent thereof, of the Combining Party.
3. The Non-Reciprocal Entity is wholly embedded (i.e., the load and associated generation serving that load are included in Allocations and Market Flows) into the Combining Party's Control Area footprint in accordance with the CMP.
4. The Combining Party must treat the Non-Reciprocal Entity's impacts in the IDC, Market Flow, Firm Flow Limit, and Firm Flow Entitlement calculations consistently as the Combining Party does its own impacts in accordance with this CMP. The Non-Reciprocal Entity's load and associated generation serving that load otherwise needs to be eligible for inclusion in firm Allocations, Firm Flow Limit, and Firm Flow Entitlement under the terms of this CMP.
5. Any transmission facilities owned by the Non-Reciprocal Entity must be treated comparably to the transmission facilities of other Reciprocal Entities consistent with the terms of the CMP.
6. The Combining Party must provide notice to the other Reciprocal Entities of its plans to combine allocations within sixty (60) calendar days of making a filing at the FERC that would result in a Non-Reciprocal Entity's load and associated generation serving that load being combined with the Combining Party or upon combining Allocations

(whichever occurs first). Even though a situation in which a Combining Party has proposed to combine Allocations with a Non-Reciprocal Entity may satisfy requirement numbers 1 through 5 of this list, this does not preclude other Reciprocal Entities from raising any objection pursuant to the dispute resolution process of a joint operating agreement or by filing a Section 206 complaint with the FERC if the proposed combination of Allocations would be inconsistent with this CMP or produces a result that is unjust and unreasonable.

Section 7 – Appendices

Appendix A – Glossary

Agreement – Agreement shall mean this Joint Operating Agreement Between the Midcontinent Independent System Operator, Inc. and PJM Interconnection, L.L.C., as amended from time to time, including all attachments, appendices, and schedules.

Allocation – A calculated share of capability on a Reciprocal Coordinated Flowgate to be used by Reciprocal Entities when coordinating AFC, transmission sales, and dispatch of generation resources.

Available Flowgate Capability (AFC) – the applicable 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.

AFC Flowgate – A Flowgate for which an entity calculates AFC's.

Combining Party – Combining Party shall mean a Reciprocal Entity that is incorporating the load and associated generation serving that load from a Non-Reciprocal Entity into the Reciprocal Entity's Allocations pursuant to Section 6.10 of this CMP.

Control Area – Shall mean an electric power system or combination of electric power systems to which a common automatic generation control scheme is applied.

Control Zones – Within an Operating Entity Control Area that is operating with a common economic dispatch, the Operating Entity footprint is divided into Control Zones to provide specific zonal regulation and operating reserve requirements in order to facilitate reliability and overall load balancing. The zones must be bounded by adequate telemetry to balance generation and load within the zone utilizing automatic generation control.

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

Designated Network Resource – A resource that has been identified as a designated network resource pursuant to a transmission provider's Open Access Transmission Tariff.

External Asynchronous Resource[2] (EAR) – A Resource representing an asynchronous DC tie between the synchronous Eastern Interconnection grid and an asynchronous grid that is supported within the Transmission Provider Region through Dynamic Interchange Schedules in the Day-Ahead Energy and Operating Reserve Market and/or Real-Time Energy and Operating Reserve Market. External Asynchronous Resources are located where the asynchronous tie terminates in the synchronous Eastern Interconnection grid.

Firm Flow – The estimated impacts of Firm Transmission Service on a particular Coordinated or Reciprocal Coordinated Flowgate.

Firm Flow Limit – The maximum value of Firm Flows an entity can have on a Coordinated or Reciprocal Coordinated Flowgate, based on procedures defined in Sections 4 and 5 of this document.

Firm Market Flow – The portion of Market Flow on a Coordinated or Reciprocal Coordinated Flowgate related to contributions from the native load serving aspects of the dispatch (constrained as appropriate by the Firm Flow Limit).

Firm Transmission Service – The highest quality (priority) service offered to customers under a filed rate schedule that anticipates no planned interruption or similar quality service offered by transmission providers by contract that do not require the filing of a rate schedule. Firm Transmission Service only includes firm point-to-point service, network designated transmission service and grandfather agreements deemed firm by the transmission provider as posted on OASIS.

Flowgate – A representative modeling of facilities or groups of facilities that may act as significant constraint points on the regional system.

Freeze Date – the cutoff date chosen by Reciprocal Entities to be used in the calculation of Historic Firm Flows.

Gen to Load (GTL) – See Network and Native Load.

Generator Shift Factor – A factor to be applied to a generator's expected change in output to determine the amount of flow contribution that change in output will impose on an identified transmission facility or Flowgate, referenced to a swing bus.

Historic Firm Flow – The estimated total impact an entity has on a Reciprocal Coordinated Flowgate when considering the impacts of (1) its historic Designated Network Resources serving native load, and (2) imports and exports, based on Firm Transmission Service reservations that meet the "Freeze Date" criteria.

[2] External Asynchronous Resource is specific to the MISO tariff , MISO, FERC Electric Tariff, Module A, § 1.E "External Asynchronous Resource" (33.0.0).

Historic Firm Gen-to-Load Flow – The flow associated with the native load serving aspects of dispatch that would have occurred if all Control Areas maintained their current configuration and continued to serve their native load with their generation.

Historic Ratio – The ratio of Historic Firm Flow of one Reciprocal Entity compared to the Historic Firm Flow of all Reciprocal Entities on a specific Reciprocal Coordinated Flowgate.

LMP Based System or Market – An LMP based system or market utilizes a physical, flow-based pricing system to price internal energy purchases and sales.

Load Shift Factor – A factor to be applied to a load's expected change in demand to determine the amount of flow contribution that change in demand will impose on an identified transmission facility or Flowgate, referenced to a swing bus.

Locational Marginal Pricing (LMP) – the processes related to the determination of the LMP, which is the market clearing price for energy at a given location in a Market-Based Operating Entity's market area.

Market Flows – 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.

Market-Based Operating Entity – An Operating Entity that operates a security constrained, bid-based economic dispatch bounded by a clearly defined market area.

Network and Native Load (NNL) – the impact of generation resources serving internal system load, based on generation the network customer designates for Network Integration Transmission Service (NITS). NNL is also referred to as Gen to Load.

Non-Firm Market Flow – That portion of Market Flow related to a Market-Based Operating Entity's market operations in excess of that entity's Firm Market Flow.

Non-Reciprocal Entity – Non-Reciprocal Entity shall mean an Operating Entity that is not a Reciprocal Entity.

Operating Entity – 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.

Party or Parties – Party or Parties refers to each party to this Agreement or both, as applicable.

Reciprocal Coordination Agreement – An agreement between Operating Entities to implement the reciprocal coordination procedures defined in the CMP.

Reciprocal Coordinated Flowgate (RCF) – 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:

1. A CF that is (a) (i) within the operational control of Reciprocal Entity or (ii) may be subject to the supervision of Reciprocal Entity as Reliability Coordinator, and (b) affected by the transmission of energy by two or more Parties; or

2. A CF 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

3. A CF that is designated by agreement of both Parties as an RCF.

Reciprocal Entity – an entity that coordinates the future-looking management of Flowgate capacity in accordance with a Reciprocal Coordination Agreement as developed under Section 6 of this document, or a congestion management process approved by the Federal Energy Regulatory Commission; provided such congestion management process is identical or substantially similar to this CMP.

Security Constrained Economic Dispatch – the utilization of the least cost economic dispatch of generating and demand resources while recognizing and solving transmission constraints over a single Market-Based Operating Entity Market.

Third Party – Third Party refers to any entity other than a Party to this Agreement.

Tie Line – Tie Line shall mean a circuit connecting two Control Areas.

Transfer Distribution Factor – the portion of an interchange transaction, typically expressed in per unit, flowing across a Flowgate.

Transmission Service – services provided to the transmission customer by the transmission service provider to move energy from a point of receipt to a point of delivery.

Appendix B - Determination of Marginal Zone Participation Factors

In order for the IDC to properly account for tagged transactions into and out of the market area, a Market-Based Operating Entity using the Marginal Zone methodology will need to provide participation factors representing the facilities contributing to the tagged transactions. The facility or facilities contributing to each export tagged transaction is the source of the export tagged transaction. The facility or facilities contributing to each import tagged transaction is the sink of the import tagged transaction.

The Market-Based Operating Entity will be required to define a set of zones that can be aggregated into a common distribution factor that is representative of the market area. This information must be shared and coordinated with the IDC. Following this step, the Market-Based Operating Entity must then send to the IDC participation factors for those zones. These participation factors represent the percentages of how these zones are providing marginal megawatts as a result of dispatch of resources in market operations to serve transactions. Data sets for each external source/sink are required, which correspond to:

- An IMPORT data set, which indicates the participation of facilities accommodating the energy imported into the market area, and
- An EXPORT data set, which indicates the participation of facilities accommodating the energy exported out of the market area.

The methodology used by the Market-Based Operating Entity to determine the Marginal Zone participating factors will be determined through collaboration of the Market-Based Operating Entity with the IDC working group.

Participation Factor Calculation

The Market-Based Operating Entity will use the real-time system conditions to calculate the marginal zone participation factors, which reflect the impacts of tagged transactions. These will establish, for imports and exports, a set of participation factors that, when summed, will equal 100 percent.

Appendix C - Flowgate Determination Process

This section is has been added to clarify:

- How initial Flowgates are identified (Figure C-1, Table C-1)
    - Process for Flowgates in the Coordinated Flowgate list
    - Process for Flowgates in the Reciprocal Coordinated Flowgate list
    - Process for Flowgates in the AFC List
- How Flowgates will be added (Figure C-2, Table C-2)
- How often Flowgates are changed (Figure C-2, Table C-2)

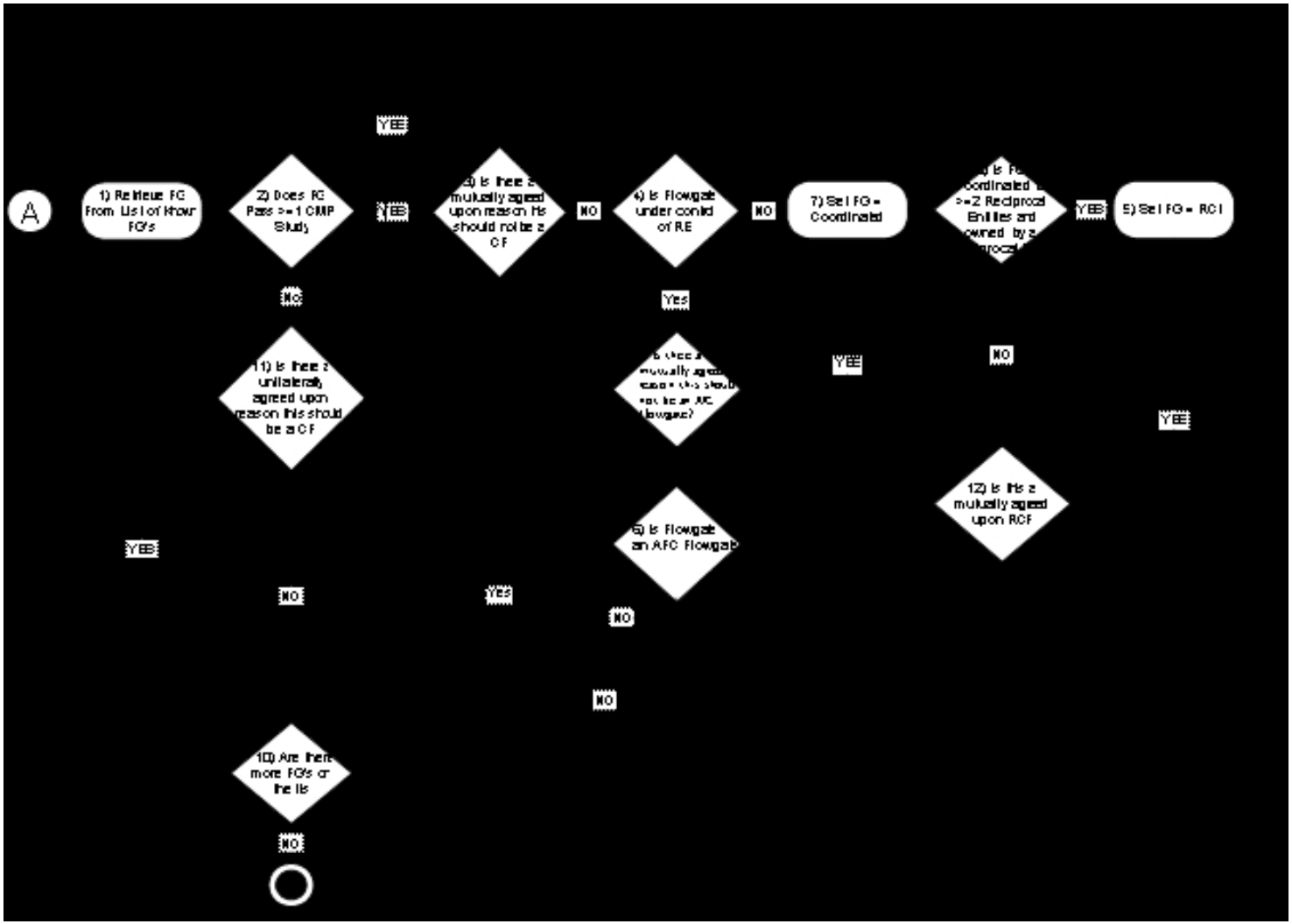

A
1) Retrieve FG From List of Known FG's
2) Does FG Pass >= 1 CMP Study
YES
YES
3) Is there a mutually agreed upon reason this should not be a CF
NO
4) Is Flowgate under contol of RE
NO
7) Set FG = Coordinated
YES
5) Set FG = RCI
NO
Yes
YES
NO
YES
11) Is there a unilaterally agreed upon reason this should be a CF
6) Is Flowgate an AFC Flowgate
12) Is this a mutually agreed upon RCF
YES
YES
NO
NO
NO
10) Are there more FG's or the lis
NO

TABLE C-1

Step	Activity	Requirements	Detailed Description	Additional Documentation
1	Retrieve FG From List Of Known FG's	Retrieve FG from AFC list of FGs, NERC Book of FGs, and any other list of FGs.	Retrieve the FG from the list of FGs. If a Reciprocal Entity wants us to consider a temporary FG it would go through the same process.	
2	Determine if FG passes >= 1 CMP Study	The decision determines if the FG passes at least one of the five CMP studies	• If the FG passes any of the studies, determine if there is mutually agreed upon reason why this should not be a coordinated FG. • If the FG does not pass any of the studies, it will be determined if there is a unilaterally decided reason for inclusion as a CF.	See Impacted Flowgate Determination -Section 3
3	Is There a Mutually Agreed Upon Reason This Should Not Be A Coordinated Flowgate	Determine if there is a mutually agreed reason, despite passing one of the five tests, why this FG should not be considered Coordinated.	• If there is no mutually agreed reason why this FG should not be considered coordinated, test whether FG is under control of a Reciprocal Entity. • If there is a mutually agreed reason why this FG should not be considered coordinated, record the reason proceed to Step 10.	
4	Is the Flowgate under control of a Reciprocal Entity	If the Flowgate is under the control of a non-reciprocal entity and the Flowgate passes one of the five tests it will be treated as a Coordinated Flowgate.	• If the Flowgate is not under control of a Reciprocal Entity proceed to Step 7. • If the Flowgate is under control of a Reciprocal Entity Proceed to Step 5.	

5	Is there a mutually agreed reason this should not be AFC Flowgate?	Determine if there is a mutually agreed reason, despite qualifying as a Coordinated Flowgate, why this Coordinated Flowgate is not included in the AFC process.	• If there is a mutually agreed reason to not include the Coordinated Flowgate in the AFC process proceed to Step 7. • Otherwise proceed to Step 6	
6	Is Flowgate an AFC Flowgate	A check is done to determine if the Flowgate controlled by a Reciprocal Entity is in its AFC process.	• If the Flowgate is in the AFC process or in the process of being added to the AFC process proceed to Step 7. • Otherwise proceed to Step 10	
7	Set FG = Coordinated	The FG would be coordinated for the entity.	• The FG would be considered a CF.	
8	Is FG Coordinated for >= 2 Reciprocal Entities and "owned" by a Reciprocal Entity	Determine whether the FG is coordinated for two or more Reciprocal Entities	• If the FG is coordinated for two or more Reciprocal Entities and it is "owned" by one of the entities, it will be added to the CMP process as a reciprocal coordinated FG. • If it is not coordinated for two or more Reciprocal Entities and "owned" by one of the entities, determine if it is a mutually agreed upon RCF.	CM Process -Section 6
9	Set FG = RCF	Set the Flowgate equal to a Reciprocal Coordinated Flowgate.	• Set the Flowgate equal to a Reciprocal Coordinated Flowgate. • Proceed to Step 10.	
10	Are there more FGs on the list?	Determine if there are any more FGs on the list that need to go through the CMP determination process.	• If there are no more FGs that need to go through the determination process, the process ends. • If there are more FGs that need to go through the determination process, retrieve the next one.	

			• Proceed to Step 1 if another FG requires evaluation. • Otherwise, the process ends.	
11	Is There a Unilateral Decision This Should Be A Coordinated FG	This decision determines if an entity wants to make this a Coordinated FG for a reason other than the five tests.	• If an entity decides to make this a coordinated FG, proceed to Step 4. • Otherwise, proceed to Step 10.	
12	Is This a Mutually Agreed Upon RCF	Determine if there is a mutually agreed reason this should be considered a Reciprocal Coordinated Flowgate.	• If there is no mutually agreed reason this should be considered an RCF, leave it as coordinated and check for more FGs. • If there is a mutually agreed reason this should be considered an RCF, mark it as such. • If Reciprocal Entities decide to make the Flowgate Reciprocal proceed to Step 9. • Otherwise, proceed to Step 10.	

Figure C-2
Flowgate Review and Customer
Flowgate Request

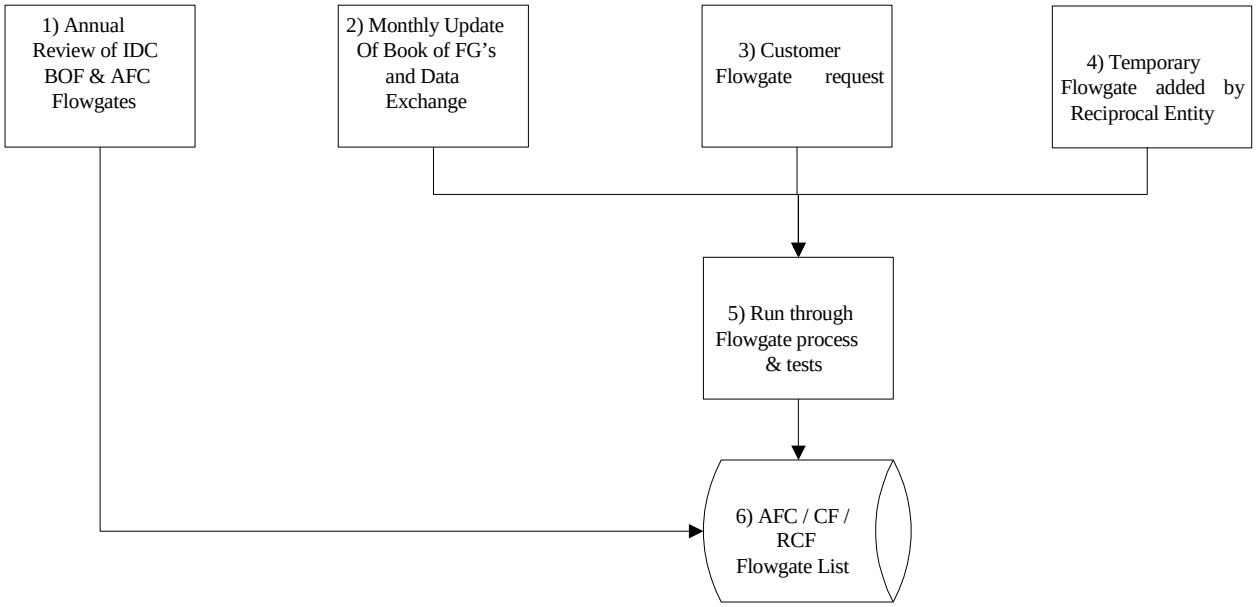


TABLE C-2

Steps	Activity	Requirements	Detailed Description	Additional Documentation
1	Annual Review of the BOFs and AFC FGs	A review will be performed annually or more often as requested by Reciprocal Entities (CMPWG). Retrieve the FG from the list of FGs for the entity running the process. Study 1 in section 3.2.1 of the CMP is not required for this annual review.	• Except for Study 1 in section 3.2.1 of the CMP, the FGs will be run through the process summarized in figure C-1.	
2	Customer FG Requests	Any customer FG requests will also be subject to the tests and process above.	• Any customer FG requests will be run through the process summarized in figure C-1.	
3	Temporary Flowgate added by Reciprocal Entity	Any temporary Flowgate added by a Reciprocal Entity will also be subject to the tests and processes in Step 5.	• Any temporary Flowgates added by a Reciprocal Entity will be run through the process summarized in figure C-1	
4	Run Through FG Process and Tests	Run through FG Determination Process, figure C-1	• Any FGs being reviewed or added will be run through the process summarized in figure C-1.	
5	AFC/CF/RCF List	Any FG additions or modifications would need to be committed to the repository of FGs and their qualifications.	• Any FG additions or modifications would need to be committed to the repository of FGs, along with their qualifications.	

Appendix D – Training

The concepts in these proposals should not have a significant impact upon system operators beyond the operators of the Operating Entity. The reason that this impact rests upon the Operating Entities is that the Operating Entities Operators will need to be trained to monitor and respond to the external Flowgates.

Reliability Coordinator (RC) Operator Training Impacts include:

1. The ability to recognize and respond to Coordinated Flowgates.
   a. IDC outputs will show schedule curtailments and possible redispatch requirements.
   b. Must be able to enter constraint in systems to provide the redispatch relief within 15 minutes.
   c. Must be able to confirm that the required redispatch relief has been provided and data provided to the IDC.
2. Capability to enter Flowgates on the fly.

Other RC System Operators Training Impacts include:

1. The ability to take projected net system flows between an Operating Entity's Control Zones versus only tag data to run day-ahead analysis (data to be provided by the IDC).
2. Need to develop a working knowledge of how relief on a TLR Flowgate can come from both schedule changes and redispatch on a select set of Coordinated Flowgates.
3. Can coordinate with another RC Operator when the RC System Operator has a temporary Flowgate that they believe requires the implementation of the “Flowgate on the Fly” process.

Appendix E –Reserved
Appendix F – FERC Dispute Resolution

RCF Dispute Resolution

If a Party has followed all processes in the disputed Flowgate process outlined in section 3.2 and is dissatisfied with the ORS resolution of the Flowgate dispute, the Party may refer the dispute to FERC's Dispute Resolution Service for mediation, and upon a Party's determination at any point in the mediation that mediation has failed to resolve the dispute, either Party may seek formal resolution by initiating a proceeding before FERC.

Allocation Adjustment for New Transmission Dispute Resolution

If a Party has followed all processes in the Allocation Adjustment Peer Review process outlined in Appendix G and is dissatisfied with the resolution of the CMPC, the Party may refer the dispute to FERC's Dispute Resolution Service for mediation, and upon a Party's determination at any point in the mediation that mediation has failed to resolve the dispute, either Party may seek formal resolution by initiating a proceeding before FERC.

Appendix G – Allocation Adjustment for New Transmission Facilities and/or Designated Network Resources

MISO and PJM utilize the same Guiding Principles as other Reciprocal Entities for Allocation Adjustment for New Transmission Facilities and/or Designated Network Resources. In addition MISO and PJM have established procedures for allocation adjustments based on cross-border cost sharing and for determining the builder for the new transmission service or upgrades. These procedures also apply to facility upgrades that have been funded in whole or in part for the purpose of obtaining Incremental ARRs under one Party's tariff by a market participant in one or both markets.

1. Guiding Principles

The following guiding principles will be used in determining the allocation adjustments for New Transmission Facilities and/or Designated Network Resources.

- Principle 1 (Non-builder held harmless) – To the extent possible, the non-building entity will receive the same overall impacts in its allocations.
- Principle 2 (Builder receives benefits) – To the extent possible, the building entity will receive any benefit to the transmission system that result from the system upgrade.

To the extent these two principles conflict, the Non-Builder Held Harmless Principle will have priority over the Builder Receives Benefit Principle.

2. New Transmission Facilities That Do Not Involve New DNR or New Firm Transmission Service

To the extent a new transmission facility causes a significant decrease in flow on a Reciprocal Coordinated Flowgate, the change in the allocation will be assigned to the Reciprocal Entity with functional control of the new transmission facility. Otherwise, the normal allocation procedures will be followed and no allocation adjustments for new transmission facilities will be made.

Significant impact is defined as a 3% change in flow that occurs to an OTDF Flowgate and a 5% change in flow that occurs to a PTDF Flowgate with the addition of the new facility. The 3% and 5% are measured as a percentage of the Flowgate TTC (sometimes called Total Flowgate Capability (TFC)).

The allocation adjustment will be assigned to the Reciprocal Entity with functional control of the new transmission facility. Both the original allocation and the allocation adjustment are assigned to the Reciprocal Entities. To the extent a group of transmission owners installs a new facility that includes multiple Reciprocal Entities and the new transmission facility results in a change in transfer capability on one or more RCFs, these Reciprocal Entities will work in collaboration to determine appropriate adjustments to each Reciprocal Entity's allocation on all significantly impacted RCFs.

An analysis will be performed both with and without the new facility to determine whether there is a significant impact on one or more RCFs. The analysis and any subsequent allocation adjustments will coincide with the expected in-service date of the new facility. The inclusion of the new transmission facility in such an analysis is dependent on having a commitment that the

new facility has or is expected to receive all of the appropriate approvals and will be installed on the date indicated.

In order to qualify for an allocation adjustment, the new transmission facility must not only create a significant change in flows, it must also be a significant change to the transmission system (i.e. a new line or transformer that creates a significant change to flows on one or more RCFs). The addition of a new generator without transmission additions (other than the generation interconnection) is not covered by this process for new transmission facility additions. A change in the rating of an RCF may qualify as a significant change to the transmission system and be eligible to receive an allocation adjustment even though it does not result in a change in flows.

For stability limited Flowgates, a new generator, reactive device or change to a remedial action scheme may contribute to a change in the transfer limitation of stability limited Flowgates. Where this occurs and the addition is being made for the specific purpose of changing the transfer limitation of stability limited Flowgates, an allocation adjustment will be provided to the Reciprocal Entity responsible for the new generator, reactive device or change to a remedial action scheme. By receiving an allocation adjustment, this new generator, reactive device or change to a remedial action scheme will not also be included in the historical usage calculation to avoid double-counting of the impacts.

Not all new transmission facilities that significantly impact RCFs involve a change in flows. A new facility may be added that changes the rating of an RCF but has minimal impact on the flow (i.e. reconductoring, replacing a wave trap (WT) or current transformer (CT), replacing a transformer). In this case, each Reciprocal Entity's historical usage flow will remain constant but the rating of the Flowgate will either increase or decrease. The Reciprocal Entity responsible for the new facility will receive an allocation adjustment for rating increases. There will be no allocation adjustments for rating decreases.

There is an equity issue involving new transmission facilities that result in an increased rating. Where a new facility involves minimal cost change (such as replacing either a WT or CT, replacing a jumper, replacing a switch, changing a CT setting, etc.), there have already been significant costs incurred on a larger conductor that allows the increased rating to occur. As long as the Reciprocal Entity making the minimal cost change is also responsible for the conductor, it is the appropriate Reciprocal Entity to receive the allocation adjustment. However, if different Reciprocal Entities own the conductor versus are responsible for making the minimal cost change, there is an equity issue if the entire allocation adjustment is given to the Reciprocal Entity responsible for making the minimal cost change. The Reciprocal Entities shall negotiate a mechanism to share in the allocation adjustment.

3. New Transmission Facilities that Involve New DNR or New Firm Transmission Service

Where a new transmission facility is added as part of an approved new usage of the transmission system (either a new DNR or a new Firm Transmission Service), the Reciprocal Entity responsible for the new facility has two choices on the treatment of this combination. First, in recognition that they have addressed transmission concerns associated with the new DNR or new Firm Transmission Service, the combination of the new transmission facility and new DNR/Firm Transmission Service will be added to the base model used in the historic usage impact calculation. The new DNR or new Firm Transmission Service will be treated as if it met the Freeze Date. To

the extent the new transmission facility and its associated new DNR or new Firm Transmission Service will not occur until a future time period, they will not appear in the historic usage impact calculation until after the in-service/start date. The inclusion of the new transmission facility and associated DNR/Firm Transmission Service is dependent on having a commitment that both have been approved and will occur on the date indicated. If no such commitment exists, these additions will not be included in the historic usage impact calculation. By making this choice to include the new transmission facility and DNR/Firm Transmission Service in the historic usage impact calculation, the NNL allocation will consider the impact of both. This may result in increased NNL allocation to all Reciprocal Entities after considering historic usage impacts (down to 0%). However, the Reciprocal Entity that builds the new transmission facility will not receive any special treatment (NNL allocation adjustment) because of the new transmission facility. This inclusion of a new DNR or new Firm Transmission Service only applies where associated new transmission facilities have been added to accommodate the new transmission usage.

Second, the Reciprocal Entity that builds the new transmission facility associated with a new DNR or new Firm Transmission Service can receive an NNL allocation adjustment and must honor that allocation when they apply the new DNR or new Firm Transmission Service in their use of NNL allocations. The Reciprocal Entity determines the impact of the new transmission facility without the new DNR or new Firm Transmission Service to calculate any adjustments to the NNL allocations (the same process documented in the previous section "New Transmission Facilities that Do Not Involve New DNRs or New Firm Transmission Service). The Reciprocal Entity will use the remaining NNL allocation that has not been committed to other uses for the new DNRs or new Firm Transmission Service.

The Reciprocal Entity responsible for the combination of new transmission facility and new DNR/Firm Transmission Service will make a single choice (either one or two) that applies to all RCFs that are significantly impacted by the combination. There is no opportunity to have a different selection on different RCFs that are all impacted by the same combination.

4. Allocation Adjustment Peer Review

When reviewing the allocation adjustments, if an impacted Reciprocal Entity finds a situation where the rule set does not produce a satisfactory outcome, the impacted Reciprocal Entity may request a review by the CMPWG. The impacted Reciprocal Entity will present the unsatisfactory results and a proposed alternative. If the CMPWG agrees to the proposed alternative it will be implemented as an exception, and the CMPC will be notified of the exception prior to implementation. If the CMPWG does not agree, the impacted Reciprocal Entity can seek further review by the CMPC. The impacted Reciprocal Entity will present its proposed alternative and the CMPWG member(s) will present their concerns to the CMPC for the CMPC to take action. All exceptions approved by the CMPWG or CMPC will be documented for future reference.

Depending on the nature of the upgrade, the impact of the new facility will be held in abeyance pending completion of the review. This means for a rating change, the prior rating will continue to be used in the model update process pending completion of the review. This means for a flow change, the new facility will be recognized in the model update process. The impacts will be calculated using the normal (socialized) allocation process and no allocation adjustments will be made pending completion of the review. These reviews should be completed in a timely manner.

5. Allocation Adjustments Based on Cross-Border Cost Sharing

The physical rights to any significantly impacted incremental capacity on existing RCFs, that is a result of the cross-border allocation process ("allocation adjustment"), will be assigned to a Party, for congestion management purposes, in proportion to the share of the costs that such Party must pay under the cost allocation process in Section 9.4.4.2 of the JOA.

An allocation adjustment based on the share of costs that such Party must pay under the cost allocation process in Section 9.4.4.2 of the JOA will apply only where there has been a significant decrease in flows on an existing RCF.

An analysis will be performed both with and without the new facility to determine whether there is a significant impact on one or more RCFs. The analysis and any subsequent allocation adjustments will coincide with the expected in-service date of the new facility. The inclusion of the new transmission facility in such an analysis will be dependent upon having a commitment that the new facility has or is expected to receive all of the appropriate approvals and will be installed on the date indicated.

6. Determination of Builder in the Flowgate Allocation Process

For MISO and PJM, flowgate allocations are used to sell firm transmission service and to prioritize market flows reported to the IDC that are then subject to curtailment during TLR. At the same time, flowgate allocations are also used in the market-to-market settlement process and in the ARR, FTR, and day-ahead market loop flow modeling between MISO and PJM. The firm flow entitlement used in market-to-market settlement and in the ARR, FTR, and day-ahead market loop flow modeling is derived from a combination of flowgate allocations in the forward direction and market flow impacts in the reverse direction. This allocation agreement between MISO and PJM is limited to how to assign allocations and does not extend into ARRs, FTRs, and day-ahead market loop flow assumptions.

In order to implement the allocation process, MISO and PJM have defined the terms builder and non-builder as follows when applying the allocation adjustment rules:

- The term builder refers to a Party that has responsibility (either total or partial) for construction of the transmission facility upgrade and is entitled to receive the increase in capacity of existing flowgates while holding the non-builders harmless. Where a market participant in one or both markets has funded some or all of a transmission facility upgrade for the purpose of obtaining Incremental ARRs under one Party's tariff, the term builder refers to the Party providing Incremental ARRs.

- In determining which Party has total or partial responsibility for construction of the transmission facility upgrade, responsibility is defined as the Party that has cost responsibility for the upgrades. The cost responsibility could be to a single Transmission Owner pricing zone within a market footprint, to multiple Transmission Owner pricing zones within the same market footprint, to multiple Transmission Owner pricing zones within both market footprints as in the case of a cross-border project funded by the two

markets, or to a single market participant as in the case of a transmission upgrade funded by a market participant.

- Where the responsibility for cost is to either a single Transmission Owner pricing zone or to multiple Transmission Owner pricing zones within the same market footprint in which the upgrade is built, the total allocation goes to the builder after holding the non-builder harmless.

- Where the responsibility for cost is shared by multiple Transmission Owner pricing zones within both market footprints, the allocation will be split between the Parties in proportion to the cost responsibility between the Parties.

- Where the responsibility for cost is to a single market participant funder (rather than to an entire pricing zone) that has resources/participates in one market only, the allocation goes to that market, irrespective of the Party that owns the flowgate and in which the upgrade resides.

- Where the responsibility for cost is to a market participant funder that has resources/participates in both markets, the allocation will be split between the two markets subject to the Parties' OATT and business practices.

Appendix H – Application of Market Flow Threshold Field Test Conditions

MISO, PJM and SPP participated in a NERC approved Market Flow threshold field test from June 1, 2007 to October 31, 2009. The purpose of the field test was to determine a Market Flow threshold percentage that allows the three Regional Transmission Organizations (RTOs) to consistently meet their relief obligation during TLR without jeopardizing reliability. Although the field test was able to achieve a success rate close to 100% based on MISO data using a 5% threshold, the following conditions were applied to the field test results:

- Market Flows were evaluated 30 minutes after implementation of the TLR curtailment.
- A 5 MW dead-band (or 10% of the relief obligation for relief obligations greater than 50 MW) was applied to the Target Market Flow such that once actual Market Flows were within the dead-band, it was considered a success meeting the relief obligation.
- There were no instances where MISO was able to meet its relief obligation if more than 30 MW must be removed within 30 minutes. The field test found the amount of Market Flow that must be removed in 30 minutes and not the size of the relief obligation is an indicator whether the market will be successful.

Since the NERC ORS applied the three conditions above to the field test results in order to demonstrate a high success rate, these same conditions will be applied when the Market-Based Operating Entities have relief obligations on external Flowgates during TLR.

The field test results are only applicable to Flowgates that are external to each of the RTOs and does not include internal Flowgates (internal to that specific RTO) or market-to-market Flowgates (internal to one of the three RTOs but subject to market-to-market provisions with another RTO). The reason for excluding internal Flowgates and market-to-market Flowgates is because the three RTOs use market redispatch to control total flow and to maintain reliability. As the Reliability Coordinator for the Flowgate, the three RTOs are responsible for the reliability of their own Flowgate and must manage total flow in order to meet their reliability responsibility. As described in the field test final report, by controlling total flow, the three markets effectively meet their relief obligation.