

# Attachment I

## **35.1 Recitals**

- 35.1.1 PJM is the regional transmission organization that provides operating and reliability functions in portions of the mid-Atlantic and Midwest States. PJM also administers an open access tariff for transmission and related services on its grid, and independently operates markets for day-ahead, real-time energy, capacity, ancillary services and financially firm transmission rights;
- 35.1.2 NYISO is a not-for-profit corporation established pursuant to the ISO Agreement, responsible for providing transmission service, maintaining the reliability of the electric power system and facilitating efficient markets for capacity, energy and ancillary services in the New York Control Area in accordance with its filed Tariffs;
- 35.1.3 In accordance with good utility practice, the Parties seek to establish or confirm other arrangements and protocols in furtherance of the reliability of their systems and efficient market operations, as provided under the terms and conditions of this Agreement;

NOW, THEREFORE, for good and valuable consideration including the Parties' mutual reliance upon the covenants contained herein, the Parties agree as follows:

## **35.2 Abbreviations, Acronyms, Definitions and Rules of Construction**

In this Agreement, the following words and terms shall have the meanings (such meanings to be equally applicable to both the singular and plural forms) ascribed to them in this Section 35.2. Any undefined, capitalized terms used in this Agreement shall have the meaning given under industry custom and, where applicable, in accordance with Good Utility Practices or the meaning given to those terms in the tariffs of PJM and NYISO on file at FERC.

Schedule C to this Agreement contains the Operating Protocol for the Implementation of Con Ed – PJM Transmission Service Agreements. Schedule C was accepted by FERC as a multi-party settlement to a long-running dispute. To the extent Schedule C contains definitions that differ from those set forth below (*see, e.g.*, Appendix 8 to Schedule C), the definitions contained in Schedule C shall supersede the definitions set forth below, for purposes of interpreting Schedule C (including all of the appendices thereto), but shall not be used to interpret any other part of this Agreement.

### **35.2.1 Abbreviations, Acronyms and Definitions**

**“AC”** shall mean alternating current.

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

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

**“Area Control Error”** or **“ACE”** shall mean the instantaneous difference between a Balancing Authority’s net actual and scheduled interchange, taking into account the effects of Frequency Bias and correction for meter error.

**“Available Flowgate Capability”** or **“AFC”** shall mean the rating of the applicable Flowgate less the projected loading across the applicable Flowgate less TRM and CBM. The firm AFC is calculated with only the appropriate Firm Transmission Service reservations (or interchange schedules) in the model, including recognition of all roll-over Transmission Service rights. Non-firm AFC is determined with appropriate firm and non-firm reservations (or interchange schedules) modeled.

**“Available Transfer Capability”** or **“ATC”** shall mean a measure of the transfer capability remaining in the physical transmission network for further commercial activity over and above already committed uses.

**“Balancing Authority”** or **“BA”** shall mean the responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports interconnection frequency in real-time.

**“Balancing Authority Area”** or **“BAA”** shall mean the collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area..

**“Bulk Electric System”** shall have the meaning provided for in the NERC Glossary of Terms used in Reliability Standards, as it may be amended, supplemented, or restated from time to time.

**“Capacity Benefit Margin”** or **“CBM”** shall mean the amount of firm transmission transfer capability preserved by the transmission provider for Load-Serving Entities (“LSEs”), whose loads are located on that Transmission Service Provider’s system, to enable access by the LSEs to generation from interconnected systems to meet generation reliability requirements. Preservation of CBM for an LSE allows that entity to reduce its installed generating capacity below that which may otherwise have been necessary without interconnections to meet its generation reliability requirements. The transmission transfer capability preserved as CBM is intended to be used by the LSE only in times of emergency generation deficiencies.

**“CIM”** shall mean Common Infrastructure Model.

**“Confidential Information”** shall have the meaning stated in Section 35.8.1.

**“Control Area(s)”** shall mean an electric power system or combination of electric power systems to which a common automatic generation control scheme is applied.

**“Control Performance Standard”** or **“CPS”** shall mean the reliability standard that sets the limits of a Balancing Authority’s Area Control Error over a specified time period.

**“Coordination Committee”** shall mean the jointly constituted PJM and NYISO committee established to administer the terms and provisions of this Agreement pursuant to Section 35.3.2.

**“Delivery Point”** shall mean each of the points of direct Interconnection between PJM and the NYISO Balancing Authority Areas. Such Delivery Point(s) shall include the Interconnection Facilities between the PJM and the New York Balancing Authority Areas.

**“DC”** shall mean direct current.

**“Disclosing Party”** shall have the meaning stated in Section 35.8.7.

**“Dispute”** shall have the meaning stated in Section 35.15.

**“Disturbance Control Standard”** or **“DCS”** shall mean the reliability standard that sets the time limit following a disturbance within which a balancing authority must return its Area Control Error to within a specified range.

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

**“Effective Date”** shall have the meaning stated in Section 35.19.1.

**“Emergency”** shall mean any abnormal system condition that requires remedial action to prevent or limit loss of transmission or generation facilities that could adversely affect the reliability of the electricity system.

**“Emergency Energy”** shall mean energy supplied from Operating Reserve or electrical generation available for sale in New York or PJM or available from another Balancing Authority Area. Emergency Energy may be provided in cases of sudden and unforeseen outages of generating units, transmission lines or other equipment, or to meet other sudden and unforeseen circumstances such as forecast errors, or to provide sufficient Operating Reserve. Emergency Energy is provided pursuant to this Agreement and the Inter Control Area Transactions Agreement dated May 1, 2000 and priced according to Section 35.6.4 of this agreement and said Inter Control Area Transactions Agreement.

**“EMS”** shall mean the respective Energy Management Systems utilized by the Parties to manage the flow of energy within their Regions.

**“External Capacity Resource”** shall mean: (1) for NYISO, (a) an entity (e.g., Supplier, Transmission Customer) or facility (e.g., Generator, Interface) located outside the NYCA with the capability to generate or transmit electrical power, or the ability to control demand at the direction of the NYISO, measured in megawatts or (b) a set of Resources owned or controlled by an entity within a Control Area, not the NYCA, that also is the operator of such Control Area; and (2) for PJM, a generation resource located outside the metered boundaries of the PJM Region (as defined in the PJM Tariff) that meets the definition of Capacity Resource in the PJM Tariff or PJM’s governing agreements filed with the Commission.

**“FERC”** or **“Commission”** shall mean the Federal Energy Regulatory Commission or any successor agency thereto.

**“Flowgate”** shall mean a representative modeling of facilities or groups of facilities that may act as potential constraint points.

**“Force Majeure”** shall mean an event of *force majeure* as described in Section 35. 20.1.

**“Generator to Load Distribution Factor”** or **“GLDF”** shall mean a generator’s impact on a Flowgate while serving load in that generator’s Balancing Authority Area.

**“Good Utility Practice”** shall mean any of the practices, methods and acts engaged in or approved by a significant portion of the North American electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result 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 be acceptable practices, methods, or acts generally accepted by NERC.

**“Governmental Authority”** shall mean any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power.

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

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

**“Indemnifying Party”** shall have the meaning stated in Section 35.20.3.

**“Indemnitee”** shall have the meaning stated in Section 35.20.3

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

**“Intentional Wrongdoing”** shall mean an act or omission taken or omitted by a Party with knowledge or intent that injury or damage could reasonably be expected to result.

**“Interconnected Reliability Operating Limit”** or **“IROL”** shall mean the value (such as MW, MVAR, Amperes, Frequency, or Volts) derived from, or a subset of, the System Operating Limits, which if exceeded, could expose a widespread area of the bulk electrical system to instability, uncontrolled separation(s) or cascading outages.

**“Interconnection”** shall mean a connection between two or more individual Transmission Systems that normally operate in synchronism and have interconnecting inertia(s).

**“Interconnection Facilities”** shall mean the Interconnection facilities described in Schedule A.

**“ISO”** shall mean Independent System Operator.

**“kV”** shall mean kilovolt of electric potential.

**“LEC Adjusted Market Flow”** shall mean the real-time Market Flow incorporating the observed operation of the PARs at the Michigan-Ontario border.

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

**“Losses”** shall have the meaning stated in Section 35.20.3.

**“M2M”** shall mean the market-to-market coordination process set forth in Schedule D to this Agreement.

**“M2M Entitlement”** shall mean a Non-Monitoring RTO’s share of a M2M Flowgate’s total capability to be used for settlement purposes that is calculated pursuant to Section 6 of Schedule D to this Agreement.

**“M2M Event”** shall mean the period when both Parties are operating under M2M as defined and set forth in Schedule D to this Agreement.

**“M2M Flowgate”** shall mean Flowgates where constraints are jointly monitored and coordinated as defined and set forth in Schedule D to this Agreement.

**“Market Flows”** shall mean the calculated energy flows on a specified Flowgate as a result of dispatch of generating resources serving load within an RTO’s market.

**“Market Participant”** shall mean an entity that, for its own account, produces, transmits, sells, and/or purchases for its own consumption or resale capacity, energy, energy derivatives and ancillary services in the wholesale power markets. Market Participants include transmission service customers, power exchanges, Transmission Owners, load serving entities, loads, holders of energy derivatives, generators and other power suppliers and their designated agents.

**“Metered Quantity”** shall mean apparent power, reactive power, active power, with associated time tagging and any other quantity that may be measured by a Party’s Metering Equipment and that is reasonably required by either Party for Security reasons or revenue requirements.

**“Metering Equipment”** shall mean the potential transformers, current transformers, meters, interconnecting wiring and recorders used to meter any Metered Quantity.

**“Monitoring RTO”** shall mean the Party that has operational control of a M2M Flowgate.

**“Multiregional Modeling Working Group”** or **“MMWG”** shall mean the NERC working group that is charged with multi-regional modeling.

**“Mutual Benefits”** shall mean the transient and steady-state support that the integrated generation and Transmission Systems in PJM and New York provide to each other inherently by virtue of being interconnected as described in Section 35.4 of this Agreement.

**“MVAR”** shall mean megavolt ampere of reactive power.

**“MW”** shall mean megawatt of capacity.

**“NAESB”** shall mean North American Energy Standards Board or its successor organization.

**“NERC”** shall mean the North American Electricity Reliability Corporation or its successor organization.

**“Network Resource”** shall have the meaning as provided in the NYISO OATT, for such resources located in New York, and the meaning as provided in the PJM OATT, for such resources located in PJM.

**“New Year Market Flow”** shall mean the Market Flow incorporating the transmission topology that includes all pre-existing Transmission Facilities and all new or upgraded Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated, *and* all new or upgraded Transmission Facilities whose impact on M2M Entitlements is being evaluated in the current evaluation step.

**“Non-Monitoring RTO”** shall mean the Party that does not have operational control of a M2M Flowgate.

**“Notice”** shall have the meaning stated in Section 35. 20.22.

**“NPCC”** shall mean the Northeast Power Coordinating Council, Inc., including the NPCC Cross Border Regional Entity (“CBRE”), or their successor organizations.

**“NYISO”** shall have the meaning stated in the preamble of this Agreement.

**“NYISO Code of Conduct”** shall mean the rules, procedures and restrictions concerning the conduct of the ISO directors and employees, contained in Attachment F to the NYISO OATT.

**“NYISO Market Monitoring Plan”** shall refer to Attachment O to the NYISO Services Tariff.

**“NYISO Tariffs”** shall mean the NYISO OATT and the NYISO Market Administration and Control Area Services Tariff (“Services Tariff”), collectively.



**“NYSRC”** shall mean the New York State Reliability Council.

**“NYSRC Reliability Rules”** shall mean the rules applicable to the operation of the New York Transmission System. These rules are based on Reliability Standards adopted by NERC and NPCC, but also include more specific and more stringent rules to reflect the particular requirements of the New York Transmission System.

**“OASIS”** shall mean the Open Access Same-Time Information System required by FERC for the posting of market and transmission data on the Internet websites of PJM and NYISO.

**“OATT”** shall mean the applicable Open Access Transmission Tariffs on file with FERC for PJM and NYISO.

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

**“Operating Instructions”** shall mean the operating procedures, steps, and instructions for the operation of the Interconnection Facilities established from time to time by the Coordination Committee or the PJM and NYISO individual procedures and processes and includes changes from time to time by the Coordination Committee to such established procedures, steps and instructions exclusive of the individual procedures.

**“Operating Reserve”** shall mean generation capacity or load reduction capacity which can be called upon on short notice by either Party to replace scheduled energy supply which is unavailable as a result of an unexpected outage or to augment scheduled energy as a result of unexpected demand or other contingencies.

**“Operational Control”** shall mean Security monitoring, adjustment of generation and transmission resources, coordinating and approval of changes in transmission status for maintenance, determination of changes in transmission status for reliability, coordination with other Balancing Authority Areas and Reliability Coordinators, voltage reductions and load shedding, except that each legal owner of generation and transmission resources continues to physically operate and maintain its own facilities.

**“OTDF”** shall mean the electric PTDF with one or more system facilities removed from service (*i.e.*, outaged) in the post-contingency configuration of a system under study.

**“Outages”** shall mean the planned unavailability of transmission and/or generation facilities dispatched by PJM or the NYISO, as described in Section 35.9 of this Agreement.

**“PAR”** shall mean phase angle regulator.

**“PAR Shift Factor” or “PSF”**, shall mean the PAR’s impact on a Flowgate measured as the ratio of Flowgate flow change in MW to PAR schedule change in MW.

**“Party”** or **“Parties”** refers to each party to this Agreement or both, as applicable.

**“PJM”** has the meaning stated in the preamble of this Agreement.

**“PJM Code of Conduct”** shall mean the code of ethical standards, guidelines and expectations for PJM’s employees, officers and Board Members in their transactions and business dealings on behalf of PJM as posted on the PJM website and as may be amended from time to time.

**“PJM Tariffs”** shall mean the PJM OATT and the PJM Amended and Restated Operating Agreement, collectively.

**“Power Transfer Distribution Factor”** or **“PTDF”** shall mean a measure of the responsiveness or change in electrical loadings on Transmission Facilities due to a change in electric power transfer from one area to another, expressed in percent (up to 100%) of the change in power transfer in the pre-contingency configuration of a system under study.

**“Reference Year Market Flow”** shall mean the Market Flow based on a transmission topology that includes all pre-existing Transmission Facilities and all new or upgraded Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated.

**“Region”** shall mean the Control Areas and Transmission Facilities with respect to which a Party serves as RTO or Reliability Coordinator under NERC policies and procedures.

**“Regulatory Body”** shall have the meaning stated in Section 35.20.21.

**“Reliability Coordinator”** or **“RC”** shall mean the entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the wide area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator’s vision.

**“Reliability Coordinator Area”** shall mean that portion of the Bulk Electric System under the purview of the Reliability Coordinator.

**“Reliability Standards”** shall mean the criteria, standards, rules and requirements relating to reliability established by a Standards Authority.

**“RFC”** shall mean ReliabilityFirst Corporation.

**“RTO”** shall mean Regional Transmission Organization. For ease of reference, the New York Independent System Operator, Inc., may be referred to as an RTO in this Agreement and the NYISO and PJM may be referred to collectively as the “RTOs” or the “participating RTOs.”

**“Schedule”** shall mean a schedule attached to this Agreement and all amendments, supplements, replacements and additions hereto.

**“SDX System”** shall mean the system used by NERC to exchange system data.

**“Security”** shall mean the ability of the electric system to withstand sudden disturbances including, without limitation, electric short circuits or unanticipated loss of system elements.

**“Security Limits”** shall mean operating electricity system voltage limits, stability limits and thermal ratings.

**“SERC”** shall mean SERC Reliability Corporation or its successor organization.

**“Shadow Price”** shall mean the marginal value of relieving a particular constraint which is determined by the reduction in system cost that would result from an incremental relaxation of that constraint.

**“Standards Authority”** shall mean NERC, and the NERC regional entities with governance over PJM and NYISO, any successor thereof, or any other agency with authority over the Parties regarding standards or criteria to either Party relating to the reliability of Transmission Systems.

**“Standards Authority Standards”** shall have the meaning stated in Section 35.5.2.

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

**“Supplying Party”** shall have the meaning stated in Section 35.8.2.

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

**“Target Value”** shall have the meaning stated in Section 7.2 of Schedule D to this Agreement.

**“Third Party”** refers to any entity other than a Party to this Agreement.

**“TLR”** shall mean the NERC Transmission Loading Relief Procedures used in the Eastern Interconnection as specified in NERC Operating Policies.

**“Transmission Adjusted Market Flow”** shall mean the result of applying the M2M Entitlement Transmission Adjusted Market Flow Calculation to the New Year Market Flow. The resulting

Transmission Adjusted Market Flow is then used as the Reference Year Market Flow in all subsequent, iterative, evaluations.

**“Transmission Operator”** shall mean the entity responsible for the reliability of its “local” Transmission System, and that operates or directs the operations of the Transmission Facilities.

**“Transmission Owner”** shall mean an entity that owns Transmission Facilities.

**“Transmission System”** shall mean the facilities controlled or operated by PJM or NYISO as designated by each in their respective OATTs.

**“Transmission Facility”** shall mean a facility for transmitting electricity, and includes any structures, equipment or other facilities used for that purpose as defined in the Parties respective OATTs.

**“Transmission Reliability Margin”** or **“TRM”** shall mean the amount of transmission transfer capability necessary to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.

**“Total Transfer Capability”** or **“TTC”** shall mean the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected Transmission Systems by way of all transmission lines (or paths) between those areas under specified system conditions.

**“Voltage and Reactive Power Coordination Procedures”** are the procedures under Section 35.11 for coordination of voltage control and reactive power requirements.

## **35.2. 2 Rules of Construction.**

### **35.2. 2.1 No Interpretation Against Drafter.**

In addition to their roles as RTOs/ISOs and Reliability Coordinators, and the functions and responsibilities associated therewith, the Parties agree that each Party participated in the drafting of this Agreement and was represented therein by competent legal counsel. No rule of construction or interpretation against the drafter shall be applied to the construction or in the interpretation of this Agreement.

### **35.2. 2.2 Incorporation of Preamble and Recitals.**

The Preamble and Recitals of this Agreement are incorporated into the terms and conditions of this Agreement and made a part thereof.

**35.2. 2.3 Meanings of Certain Common Words.**

The word “including” shall be understood to mean “including, but not limited to.” The word “Section” refers to the applicable section of this Agreement and, unless otherwise stated, includes all subsections thereof. The word “Article” refers to articles of this Agreement.

**35.2. 2.4 Standards Authority Standards, Policies, and Procedures.**

All activities under this Agreement will meet or exceed the applicable Standards Authority standards, policies, or procedures as revised from time to time.

**35.2. 2.5 Scope of Application.**

Each Party will perform this Agreement in accordance with its terms and conditions with respect to each Control Area for which it serves as ISO or RTO and, in addition, each Control Area for which it serves as Reliability Coordinator.

### **35.3 Overview, Administration, and Relationship With Other Agreements**

#### **35.3.1 Purpose of This Agreement**

This Agreement provides for the reliable operation of the interconnected PJM and NYISO Transmission Systems in accordance with the requirements of the Standards Authority and efficient market operations through M2M coordination. This Agreement establishes a structure and framework for the following functions related to the reliability of interconnected operations between the Parties and efficient joint market operations:

- 35.3.1.1 Developing and issuing Operating Instructions and Security Limits;
- 35.3.1.2 Coordinating operation of their respective Transmission Systems;
- 35.3.1.3 Developing and adopting operating criteria and standards;
- 35.3.1.4 Conducting operating performance reviews of the Interconnection Facilities;
- 35.3.1.5 Implementing each Party's respective Standards Authority requirements with regard to the PJM and NYISO Transmission Systems;
- 35.3.1.6 Exchanging information and coordination regarding system planning;
- 35.3.1.7 Providing mutual assistance in an Emergency and during system restoration;
- 35.3.1.9 Performance of certain other arrangements among the Parties for coordination of their systems, including, but not limited to performance consistent with the arrangements set forth in the existing agreements listed in Section 35.21 and the M2M transmission congestion coordination process that is set forth in the attached Market-to-Market Coordination Schedule and Section 35.12 below;  
and
- 35.3.1.9 Performance of certain other arrangements among the Parties for administration of this Agreement.

The Parties shall, consistent with Standards Authority requirements and the Parties' respective tariffs, rules and standards, including with respect to the NYISO, the NYSRC Reliability Rules, to the maximum extent consistent with the safe and proper operation of their respective Reliability Coordinator Area and Balancing Authority Area and necessary coordination with other interconnected systems, operate their systems in accordance with the procedures and principles set forth in this Agreement.

**35.3.2 Establishment and Functions of Coordination Committee**

To administer the arrangements under this Agreement, the Parties shall establish a Coordination Committee. The Coordination Committee shall undertake to jointly develop and authorize Operating Instructions to implement the intent of this Agreement with respect to reliable Transmission System operations.

**35.3.2.1 The Coordination Committee shall have the following duties and responsibilities:**

35.3.2.1.1 Determine the date(s) for implementing the various parts of this Agreement and undertake to jointly develop and authorize Operating Instructions to implement the intent of this Agreement;

35.3.2.1.2 Meet periodically to address any issues associated with this Agreement that a Party may raise and to determine whether any changes to this Agreement, or procedures employed under this Agreement, would enhance reliability, efficiency or economy;

35.3.2.1.3 The matters to be addressed at all meetings shall be specified in an agenda, which shall contain items specified by either Party in advance of the meeting

and sent to the representatives of the other Party. All decisions of the Coordination Committee must be unanimous;

35.3.2.1.4 Conduct additional meetings upon Notice given by any Party, provided that the Notice specifies the reason(s) for requesting the meeting;

35.3.2.1.5 Initiate process reviews at the request of any Party for activities undertaken in the performance of this Agreement; and

35.3.2.1.6 In its discretion, take other actions, including the establishment of subcommittees and/or task forces, to address any issues that the Coordination Committee deems necessary consistent with this Agreement.

**35.3.2.2 Coordination Committee Representatives**

Within 30 days of the Effective Date, each Party shall designate a primary and alternate representative to the Coordination Committee and shall inform the other Parties of its designated representatives by Notice. A Party may change its designated Coordination Committee representatives at any time, provided that timely Notice is given to the other Parties. Each designated Coordination Committee representative shall have the authority to make decisions on issues that arise during the performance of this Agreement. The costs and expenses associated with each Party's designated Coordination Committee representatives shall be the responsibility of the designating Party.

**35.3.2.3 Limitations Upon Authority of Coordination Committee**

The Coordination Committee is not authorized to modify or amend any of the terms of this Agreement. The Coordination Committee is also not authorized to excuse any obligations under this Agreement or waive any rights pertaining to this Agreement. The Coordination



Committee has no authority to commit either Party to any expenditure that is beyond those expenses described in this Agreement.

### **35.3.3 Ongoing Review and Revisions**

As set forth in Section 35.7, the Parties have agreed to the coordination and exchange of data and information under this Agreement to enhance system reliability and efficient market operations as systems exist and are contemplated as of the Effective Date. The Parties expect that these systems and the technology applicable to these systems and to the collection and exchange of data will change from time to time throughout the term of this Agreement. The Parties agree that the objectives of this Agreement can be fulfilled efficiently and economically only if the Parties, from time to time, review and, as appropriate, revise the requirements stated herein in response to such changes, including deleting, adding, or revising requirements and protocols. Each Party will negotiate in good faith in response to such revisions the other Party may propose from time to time. Nothing in this Agreement, however, shall require any Party to reach agreement with respect to any such changes, or to purchase, install, or otherwise implement new equipment, software, or devices, or functions, except as required to perform this Agreement.

## **35.5 Interconnected Operation**

### **35.5.1 Obligation to Remain Interconnected**

The Parties shall at all times during the term of this Agreement operate or direct the operation of their respective Transmission Systems so that they remain interconnected except:

35.5.1.1 During the occurrence of an event of Force Majeure which renders a Party unable to remain interconnected;

35.5.1.2 When an Interconnection is opened in accordance with the terms of an Operating Instruction or, if the Operating Instruction does not anticipate a particular circumstance where there is an imminent risk of equipment failure, or of danger to personnel or the public, or a risk to the environment, or a risk to system Security or reliability of a Transmission System, which cannot be avoided through Good Utility Practice; or

35.5.1.3 During planned maintenance where notice has been given in accordance with outage procedures as implemented by the Coordination Committee.

### **35.5.2 Adherence to Standards Authority Standards, Policies and Procedures**

The Parties are participants in multiple Standards Authorities and are required to comply with specified standards, criteria, guides and procedures (“Standards Authority Standards”).

Such Standards Authority Standards detail the many coordinating functions carried out by the parties, and this Agreement is intended to enhance those arrangements. Such Standards

Authority Standards include, and the Parties agree to, the provision of “maximum reasonable assistance” to a neighboring Balancing Authority Area. Such maximum reasonable assistance will not normally require the shedding of firm load.

### **35.5.3 Notification of Circumstances**

In the event that an Interconnection Facility is opened or if the Interconnection Facility transfer capability is changed, or if a Party plans to initiate the opening of an Interconnection Facility, or to change the transfer capability of the Interconnection Facilities, such Party shall immediately provide the other Party with notification indicating the circumstances of the opening or transfer capability change and expected restoration time, in accordance with procedures implemented by the Coordination Committee.

### **35.5.4 Compliance with Decisions of the Coordination Committee Direction**

PJM shall direct the operation of the PJM Transmission System and the NYISO shall direct the operation of the NYISO Transmission System in accordance with the obligations of their respective tariffs, rules and standards and applicable directions of the Coordination Committee that conform with their respective tariffs, rules and standards, except where prevented by Force Majeure. The Coordination Committee's scope includes making decisions and jointly developing and approving Operating Instructions for many expected circumstances within the provisions of the Parties' respective tariffs, rules and standards. If decisions of the Coordination Committee do not anticipate a particular circumstance, the Parties shall act in accordance with Good Utility Practice.

### **35.5.5 Control and Monitoring**

Each Party shall provide or arrange for 24-hour control and monitoring of their portion of the Interconnection Facilities.

### **35.5.6 Reactive Transfer and Voltage Control**

The Parties agree to determine reactive transfers and control voltages in accordance with the provisions of their respective Standards Authority Standards. Real and reactive power will be transferred over the Interconnection Facilities as described in Section 35.11.

### **35.5.7 Inadvertent Exchanges**

Inadvertent power transfers on all Interconnection Facilities shall be controlled and accounted for in accordance with the standards and procedures developed by the Standards Authorities and the system operators of each Party to this Agreement.

### **35.5.8 Adoption of Standards**

The Parties hereby agree to adopt, enforce and comply with all applicable requirements and standards that will safeguard the reliability of the interconnected Transmission Systems.

Such reliability requirements and Reliability Standards shall be:

- 35.5.8.1 Adopted and enforced for the purpose of providing reliable service;
- 35.5.8.2 Not unduly discriminatory in substance or application;
- 35.5.8.3 Applied consistently to both Parties with the exception of subsection 35.5.8.5 below;
- 35.5.8.4 Consistent with the Parties' respective obligations to applicable Standards Authorities including, without limitation, any relevant requirements or guidelines from each of NERC, or its Regional Councils' or any other Standards Authority or regional transmission group to which either of the Parties is required to adhere; and
- 35.5.8.5 With respect to the NYISO, consistent with the NYSRC Reliability Rules.

### **35.5.9 New York - PJM IROL Interface**

The Parties share a joint IROL related to transfers related to the interconnecting transmission lines between their respective Reliability Coordinator Areas and Balancing Authority Areas. This IROL is adhered to in order to maintain acceptable steady-state and transient performance of the NYISO and PJM Transmission Systems. Both Parties will monitor this limit in accordance with this Agreement and independently determine the applicable import and export transfer limits. Both Parties agree to operate the interface to the most conservative limits developed in real-time and the day-ahead planning process. These operating limits shall be determined in accordance with Standards Authority Standards. Both Parties will take coordinated corrective actions to avoid a violation of the IROL. If a violation occurs, actions will be taken to clear the violation as soon as possible, and in accordance with Standards Authority Standards.

### **35.5.10 Coordination and Exchange of Information Regarding System Planning**

The Parties shall exchange information and coordinate regarding system planning and inter-regional planning activities in a manner consistent with Standards Authority Standards and consistent with the requirements of confidentiality agreements or rules binding upon either of the Parties.

## **35.6 Emergency Assistance**

### **35.6.1 Emergency Assistance**

Both Parties shall exercise due diligence to avoid or mitigate an Emergency to the extent practical in accordance with applicable requirements imposed by the Standards Authority or contained in the PJM Tariffs and NYISO Tariffs. In avoiding or mitigating an Emergency, both Parties shall strive to allow for commercial remedies, but if commercial remedies are not successful or practical, the Parties agree to be the suppliers of last resort to maintain reliability on the system. For each hour during which Emergency conditions exist in a Party's Balancing Authority Area, that Party (while still ensuring operations within applicable Reliability Standards) shall determine what commercial remedies are available and make use of those that are practical and needed to avoid or mitigate the Emergency before any Emergency Energy is scheduled in that hour.

### **35.6.2 Emergency Operating Guides**

The Parties agree to jointly develop, maintain, and share operating guides to address credible Emergency conditions.

### **35.6.3 Emergency Energy**

Each Party shall, to the maximum extent it deems consistent with the safe and proper operation of its respective Transmission System, provide Emergency Energy to the other Party in accordance with the provisions of the Inter Control Area Transactions Agreement.

### **35.6.4 Costs of Compliance**

Each Party shall bear its own costs of compliance with this Article except that the cost of Emergency Energy purchased by one Party at the request of the other Party shall be reimbursed

in accordance with the Inter Control Area Transaction Agreement. Nothing in this Agreement shall require a Party to purchase Emergency Energy if the Party cannot recover the costs under an OATT or other agreement or lawful arrangement.

## **35.7 Exchange of Information**

### **35.7.1 Exchange of Operating Data**

PJM and NYISO agree to exchange and share such information as may be required from time to time for the Parties to perform their duties and fulfill their obligations under this Agreement, subject to the requirements of existing confidentiality agreements or rules binding upon either of the Parties, including the NYISO Code of Conduct as set forth in Attachment F to the NYISO OATT, Article 6 of the NYISO Services Tariff, the PJM Code of Conduct and PJM Data Confidentiality Regional Stakeholder Group. Such information may consist of the following:

- 35.7.1.1 Information required to develop Operating Instructions;
- 35.7.1.2 Transmission System facility specifications and modeling data required to perform Security analysis;
  - 35.7.1.2.1 The Parties will exchange their detailed EMS models in CIM format or another mutually agreed upon electronic format, and include the ICCP/ISN mapping files, identification of individual bus loads, seasonal equipment ratings and one-line drawings to expedite the model conversion process, upon request. The Parties will also exchange updates that represent the incremental changes that have occurred to the EMS model since the most recent update in an agreed upon electronic format;
- 35.7.1.3 Functional descriptions and schematic diagrams of Transmission System protective devices and communication facilities;
- 35.7.1.4 Ratings data and associated ratings methodologies for the Interconnection Facilities;



- 35.7.1.5 Telemetry points, equipment alarms and status points required for real-time monitoring of Security dispatch;
- 35.7.1.6 Data required to reconcile accounts for inadvertent energy, and for Emergency Energy transactions;
- 35.7.1.7 Transmission System information that is consistent with the information sharing requirements imposed by the Standards Authority;
- 35.7.1.8 Such other information as may be required for the Parties to maintain the reliable operation of their interconnected Transmission Systems and fulfill their obligations under this Agreement and to any Standards Authority of which either Party is a member, provided, however, that this other information will be exchanged only if that can be done in accordance with applicable restrictions on the disclosure of information to any Market Participant; and
- 35.7.1.9 Additional information required for the Parties to administer the M2M coordination process set forth in Schedule D to this Agreement, including:
  - a. actual flows on M2M Flowgates;
  - b. actual limits for M2M Flowgates;
  - c. *ex ante* Shadow Prices on constrained M2M Flowgates;
  - d. requested relief during a M2M Event;
  - e. Market Flow calculation data (generator shift factors, load shift factors, interchange PTDFs, phase angle regulator OTDFs, generator output, load, net interchange);
  - f. Market Flows on M2M Flowgates; and

- g. binding constraint thresholds (the shift factor thresholds used to identify the resource(s) available to relieve a transmission constraint).

#### **35.7.2 Confidentiality**

The Party receiving information pursuant to this Section 35.7 shall treat such information as confidential subject to the terms and conditions of set forth in Section 35.8 of this Agreement. The obligation of each Party under this Section 35.7.2 continues and survives the termination of this Agreement by seven (7) years.

#### **35.7.3 Data Exchange Contact**

To facilitate the exchange of all such data, each Party will designate to the other Party's Vice President of Operations a contact to be available twenty-four (24) hours each day, seven (7) days per week, and an alternate contact to act in the absence or unavailability of the primary contact, to respond to any inquiries. With respect to each contact and alternate, each Party shall provide the name, telephone number, e-mail address, and fax number. Each Party may change a designee from time to time by Notice to the other Party's Vice President of Operations.

The Parties agree to exchange data in a timely manner consistent with existing defined formats or such other formats to which the Parties may agree. Each Party shall provide notification to the other Party thirty (30) days prior to modifying an established data exchange format.

#### **35.7.4 Cost of Data and Information Exchange**

Each Party shall bear its own cost of providing information to the other Party.

**35.7.5 Other Data**

The Parties may share other data not listed in this Section 35.7 as mutually agreed upon by the Parties.

## **35.8 Confidential Information**

### **35.8.1 Definition**

The term “Confidential Information” shall mean: (a) all information, whether furnished before or after the mutual execution of this Agreement, whether oral, written or recorded/electronic, and regardless of the manner in which it is furnished, that is marked “confidential” or “proprietary” or which under all of the circumstances should be treated as confidential or proprietary; (b) any data or information deemed confidential under some other form of confidentiality agreement or tariff provided to a Party by a generator; (c) all reports, summaries, compilations, analyses, notes or other information of a Party hereto which are based on, contain or reflect any Confidential Information; (d) applicable material deemed Confidential Information pursuant to the PJM Data Confidentiality Regional Stakeholder Group, the PJM Code of Conduct, the NYISO Code of Conduct, or Article 6 of the NYISO’s Services Tariff; (e) Protected Information under the NYISO Market Monitoring Plan; and (f) any information which, if disclosed by a transmission function employee of a utility regulated by the FERC to a market function employee of the same utility system, other than by public posting, would violate the FERC’s Standards of Conduct set forth in 18 C.F.R. § 37 et. seq. and the Parties’ Standards of Conduct on file with the FERC.

### **35.8.2 Protection**

During the course of the Parties’ performance under this Agreement, a Party may receive or become exposed to Confidential Information. Except as set forth herein, the Parties agree to keep in confidence and not to copy, disclose, or distribute any Confidential Information or any part thereof, without the prior written permission of the Party supplying such Confidential Information (“Supplying Party”). In addition, each Party shall require that its employees, its

subcontractors and its subcontractors' employees and agents to whom Confidential Information is exposed agree to be bound by the terms and conditions contained herein. Each Party shall be responsible for any breach of this section by its employees, its subcontractors and its subcontractors' employees and agents.

### **35.8.3 Treatment of Confidential Information**

The Party receiving the Confidential Information shall treat the information in the same confidential manner as its governing documents require it to treat the confidential information of its own members and Market Participants.

### **35.8.4 Statute of Limitations**

The receiving Party shall not release the Supplying Party's Confidential Information until expiration of the time period controlling the Supplying Party's disclosure of the same information, as such period is described in the Supplying Party's governing documents from time to time. As of the Effective Date, this period is three (3) months with respect to bid or pricing data and seven (7) calendar days for transmission data after the event ends. The obligation of each Party under this Section 35.8 continues and survives the termination of this Agreement by seven (7) years.

### **35.8.5 Scope**

This obligation of confidentiality shall not extend to data and information that, at no fault of a recipient Party, is or was: (a) in the public domain or generally available or known to the public; (b) disclosed to a recipient by a non-Party who had a legal right to do so; (c) independently developed by a Party or known to such Party prior to its disclosure hereunder; and

(d) which is required to be disclosed by subpoena, law, or other directive of a Governmental Authority.

#### **35.8.6 Standard of Care**

Each Party shall protect Confidential Information from disclosure, dissemination, or publication. Each Party agrees to restrict access to all Confidential Information to only those persons authorized to view such information: (a) by the FERC's Standards of Conduct, (b) OASIS posting requirements in 18 C.F.R. § § 37.1-37.8 and, (c) if more restrictive, by such Party's board resolutions, tariff provisions, or other internal policies governing access to, and the sharing of, energy market or Transmission System information.

#### **35.8.7 Required Disclosure**

If a Governmental Authority requests or requires a Party to disclose any Confidential Information ("Disclosing Party"), such Disclosing Party shall provide the Supplying Party with prompt written notice of such request or requirement and will assist any efforts by the Supplying Party to contest disclosure, or seek an appropriate protective order or other appropriate remedy. The Supplying Party may also choose to waive compliance with the provisions of this Agreement. Notwithstanding the presence or absence of a protective order or a waiver, a Disclosing Party shall disclose only such Confidential Information as it is legally required to disclose. Each Party shall use reasonable efforts to obtain reliable assurances that confidential treatment will be accorded to Confidential Information required to be disclosed.

If a Disclosing Party is required to disclose any Confidential Information under this section, a Supplying Party shall have the right to immediately suspend supplying such Confidential Information to the Disclosing Party. In that event, the Parties shall meet as soon as practicable in an effort to resolve any and all issues associated with the required disclosure of

such Confidential Information, and the likelihood of additional disclosures of such Confidential Information.

#### **35.8.8 Return of Confidential Information**

All Confidential Information provided by the Supplying Party shall be returned by the receiving Party to the Supplying Party promptly upon request. Upon termination or expiration of this Agreement, a Party shall use reasonable efforts to destroy, erase, delete or return to the Supplying Party any and all written or electronic Confidential Information. In no event shall a receiving Party retain copies of any Confidential Information provided by a Supplying Party.

#### **35.8.9 Equitable Relief**

Each Party acknowledges that remedies at law are inadequate to protect against breach of the covenants and agreements in this Article, and hereby in advance agrees, without prejudice to any rights to judicial relief that it may otherwise have, to the granting of equitable relief, including injunction, in the Supplying Party's favor without proof of actual damages. In addition to the equitable relief referred to in this section, a Supplying Party shall only be entitled to recover from a receiving Party any and all gains wrongfully acquired, directly or indirectly, from a receiving Party's unauthorized disclosure of Confidential Information.

#### **35.8.10 Existing Confidential Information Obligations**

Notwithstanding anything to the contrary in this Agreement, the parties shall have no obligation to disclose Confidential Information or data to the extent such disclosure of information or data would be a violation of or inconsistent with the terms and conditions of the PJM or NYISO Amended and Restated Operating Agreement, either Party's OATT, any other

agreement, or applicable state or federal regulation or law. The obligation of each Party under this section continues and survives the termination of this Agreement by seven (7) years.



## **35.9 Coordination of Scheduled Outages**

### **35.9.1 Coordinating Outages Operating Protocols**

The Parties will jointly develop protocols for coordinating transmission and generation Outages to maintain reliability. The Parties agree to the following with respect to transmission and generation Outage coordination.

#### **35.9.1.1 Exchange of Transmission and Generation Outage Schedule Data**

Upon a Party's request, the projected status of generation and transmission availability will be communicated between the Parties, subject to data confidentiality agreements. The Parties shall exchange the most current information on proposed Outage information and provide a timely response on potential impacts of proposed Outages. The Parties shall select a mutually agreeable common format for the exchange of this information.

#### **35.9.1.2 Evaluation and Coordination of Transmission and Generation Outages**

The Parties analyze planned critical facility maintenance to determine its effects on the reliability of the Transmission System. The Parties will work together to resolve Outage conflicts and work with the facility owner(s), as necessary, to provide remedial steps.

The Parties will notify each other of emergency maintenance and forced outages as soon as possible after these conditions are known. The Parties will evaluate the impact of emergency and forced outages on the Parties' systems to develop remedial steps as necessary.

Unforeseen changes in scheduled outages may require additional review. Each Party will consider the impact of these changes on the other Party's system reliability in addition to its own. The Parties will contact each other as soon as possible if these changes result in unacceptable system conditions to develop remedial steps as necessary.

## **35.11 Voltage Control and Reactive Power Coordination**

### **35.11.1 Specific Voltage and Reactive Power Coordination Procedures**

The Parties will utilize the following procedures to coordinate the use of voltage control equipment to maintain a reliable bulk power Transmission System voltage profile on their respective systems.

35.11.1.1 Under normal conditions, each Party shall provide for the supply and control of the reactive regulation requirements in its own area, including reactive reserve, so that applicable emergency voltage levels can be maintained following any of the set of contingencies that are observed under normal conditions.

35.11.1.2 Under normal conditions, each Party will anticipate voltage trends and initiate corrective action in advance of critical periods of heavy and light loads.

35.11.1.3 Under an abnormal condition, either Party experiencing rapid voltage decay will immediately implement all possible actions, including the shedding of firm load, to correct the problem until such time that the decay has been corrected.

### **35.12 M2M Coordination Process**

The fundamental philosophy of the M2M transmission congestion coordination process that is set forth in the attached Market-to-Market Coordination Schedule is to allow any transmission constraints that are significantly impacted by generation dispatch changes in both the NYISO and PJM markets or by the operation of the Ramapo PARs to be jointly managed in the real-time security-constrained economic dispatch models of both Parties. This joint real-time management of transmission constraints near the market borders will provide a more efficient and lower cost transmission congestion management solution and coordinated pricing at the market boundaries.

Under normal system operating conditions, the Parties utilize the M2M coordination process on defined M2M Flowgates that experience congestion. The Party that is responsible for monitoring a M2M Flowgate will initiate and terminate the redispatch component of the M2M coordination process. The Party that is responsible for monitoring a M2M Flowgate is expected to bind that Flowgate when it becomes congested, and to initiate market-to-market redispatch to utilize the more cost effective generation between the two markets to manage the congestion in accordance with Section 7.1.2 of the attached Market-to-Market Coordination Schedule. Ramapo PAR coordination need not be formally invoked by either Party. It is ordinarily in effect.

The Market-to-Market coordination process includes a settlement process that applies when M2M coordination is occurring.

### **35.13 Joint Checkout Procedures**

#### **35.13.1 Scheduling Checkout Protocols**

35.13.1.1 Both Parties shall require all transaction schedules to be tagged in accord with the NERC tagging standard. For reserve sharing and other emergency schedules that are not tagged, the Parties will enter manual schedules after the fact into their respective scheduling systems.

35.13.1.2 When there is a transaction scheduling conflict, the Parties will work to modify the schedule as soon as practical.

35.13.1.3 The Parties will perform the following types of checkouts. Checkouts will be consistent with 35.13.1.1 and 35.13.1.2.

- (a) Day-ahead checkout shall be performed daily on the day before the transaction is to flow. Day-ahead checkout includes the verification of import and export totals and individual transaction schedules.
- (b) Real-time checkout shall be performed hourly during the hour before the transaction is to flow. Real-time checkout includes the verification of import and export totals and individual transaction schedules.
- (c) After-the-fact checkout of transactions shall be performed the next business day following the day of the transactions.
- (d) After-the-fact reporting of hourly scheduled energy interchanged and hourly actual energy interchanged shall be updated by each Party each day and exchanged with the other Party. Each day, month to date data shall be exchanged. Parties shall resolve discrepancies within ten (10) business days of the end of each month.

## **35.14 TTC/ATC/AFC Calculations**

### **35.14.1 TTC/ATC/AFC Protocols**

In accordance with Section 35.9, the Parties will exchange scheduled Outages of all interconnections and other Transmission Facilities.

#### **35.14.1.1 Scheduled Outages of Transmission Resources**

Each Party will provide the projected status of scheduled Outages of Transmission Facilities for a minimum of eighteen (18) months or more if available.

#### **35.14.1.2 Transmission Interchange Schedules**

Each Party will make available its interchange schedules to permit accurate calculation of TTC and ATC/AFC values.

### **35.14.2 Configuration/Facility Changes**

Transmission configuration changes and generation additions (or retirements) shall be communicated via the NERC MMWG process.

### **35.14.3 Transmission System Impacts**

35.14.3.1 The Parties shall coordinate with each other as needed and with other Reliability Coordinators, Balancing Authorities, and Generator Operators as needed to develop and implement action plans to mitigate potential or actual SOL, IROL, CPS, or DCS violations.

35.14.3.2 Each Party shall operate to prevent the likelihood that a disturbance, action, or non-action in its area will result in a SOL or IROL violation for the other Party. In instances where there is a difference in derived limits, Parties shall respect the most limiting parameter.

35.14.3.3 A Party who foresees a transmission problem (such as an SOL or IROL violation, loss of reactive reserves, etc.) that impacts the other Party shall issue an alert to the other Party without unreasonable delay.

35.14.3.4 Each Party shall confirm reliability assessment results and determine the effects within its own and the other Party's areas. The Parties shall discuss options to mitigate potential or actual SOL or IROL violations and take actions as necessary to always act in the best interests of the Interconnection at all times.

## **35.15 Dispute Resolution Procedures**

### **35.15.1 Good Faith Negotiation**

The Parties shall attempt in good faith to achieve consensus with respect to all matters arising under this Agreement and to use reasonable efforts through good faith discussion and negotiation to avoid and resolve disputes that could delay or impede a Party from receiving the benefits of this Agreement. These dispute resolution procedures apply to any dispute that arises from either Party's performance of, or failure to perform, in compliance with this Agreement and which the Parties are unable to resolve prior to invocation of these procedures.

### **35.15.2 Dispute Resolution**

In the event of a Dispute arising out of or relating to this Agreement that is not resolved by the representatives of the Parties who have been designated under Section 35.3.2.2 of this Agreement within 7 days of the reference to such representatives of such Dispute, each Party shall, within 14 days' written notice by either Party to the other, designate a senior officer with authority and responsibility to resolve the Dispute and refer the Dispute to them. The senior officer designated by each Party shall have authority to make decisions on its behalf with respect to that Party's rights and obligations under this Agreement. The senior officers, once designated, shall promptly begin discussions in a good faith effort to agree upon a resolution of the Dispute. If the senior officers do not agree upon a resolution of the Dispute within 14 days of its referral to them, or within such longer period as the senior officers mutually agree to in writing, or do not within the same 14 day period agree to refer the matter to some individual or organization for alternate Dispute resolution, then the Parties shall request that FERC's Dispute Resolution Service mediate their efforts to resolve the Dispute. Upon a Party's determination, at any point in the mediation process, that mediation has failed to resolve the Dispute, either Party may seek

formal resolution by initiating a proceeding before the FERC. If the FERC is not willing or able to consider or resolve a Dispute, then either Party shall have the right to pursue any and all remedies available to it at law or in equity.

Neither the giving of notice of a Dispute, nor the pendency of any Dispute resolution process as described in this section shall relieve a Party of its obligations under this Agreement, extend any notice period described in this Agreement or extend any period in which a Party must act as described in this Agreement. Notwithstanding the requirements of this section, either Party may terminate this Agreement in accordance with its provisions, or pursuant to an action at equity. The issue of whether such a termination is proper shall not be considered a Dispute hereunder.



## **35.16 Interconnection Revenue Metering**

### **35.16.1 Obligation to Provide Inadvertent Energy Accounting Metering**

The Parties shall require appropriate electric metering devices to be installed as required to measure electric power quantities for determining Interconnection Facilities inadvertent energy accounting.

### **35.16.2 Standards for Metering Equipment**

The parties shall cause any Metering Equipment used to meter Metered Quantities for inadvertent energy accounting to be designed, verified, sealed and maintained in accordance with the Party's respective metering standards or as otherwise agreed upon by the Coordination Committee.

### **35.16.3 Meter Compensation to the Point of Interconnection**

The metering compensation for transmission line losses to the Interconnection Facilities Delivery Point shall be determined by the Party's respective standards or otherwise agreed to by the Coordination Committee.

### **35.16.4 Metering Readings**

The Parties shall require that integrated meter readings are provided at least once each hour for Interconnection Facilities accounting purposes and meter registers are read at least monthly, as close as practical to the last hour of the month. An appropriate adjustment shall be made to register readings not taken on the last hour of the month.

### **35.17 Retained Rights of Parties**

#### **35.17.1 Parties Entitled to Act Separately**

This Agreement does not create or establish, and shall not be construed to create or establish, any partnership or joint venture between or among any of the Parties. This Agreement establishes terms and conditions solely of a contractual relationship, among independent entities, to facilitate the achievement of the joint objectives described in the Agreement. The contractual relationship established hereunder implies no duties or obligations among the Parties except as specified expressly herein.

## **35.18 Representations**

### **35.18.1 Good Standing**

Each Party represents and warrants that it is duly organized, validly existing and in good standing under the laws of the state or province in which it is organized, formed, or incorporated, as applicable.

### **35.18.2 Authority to enter Into Agreement**

Each Party represents and warrants that it has the right, power, and authority to enter into this Agreement, to become a Party hereto and to perform its obligations hereunder. This Agreement is a legal, valid and binding obligation of such Party, enforceable against such Party in accordance with its terms.

### **35.18.3 Organizational Formation Documents**

Each Party represents and warrants that the execution, delivery and performance of this Agreement does not violate or conflict with its organizational or formation documents.

### **35.18.4 Regulatory Authorizations**

Each Party represents and warrants that it has, or applied for, all regulatory authorizations necessary for it to perform its obligations under this Agreement.

## **35.19 Effective Date, Implementation, Term and Termination**

### **35.19.1 Effective Date; Implementation**

This Agreement shall become effective as of the date that all of the following have occurred: (i) upon the execution hereof by both Parties, and (ii) acceptance or approval by the Federal Energy Regulatory Commission. Commencing with the Effective Date, the Parties shall commence and continue efforts to implement other provisions of this Agreement on dates determined by the Coordination Committee, which dates shall be the earliest dates reasonably feasible for both Parties.

### **35.19.2 Term**

This Agreement shall continue in full force and effect unless terminated in accordance with the provisions of this Agreement.

### **35.19.3 Right of a Party to Terminate**

35.19.3.1 NYISO may terminate this Agreement at any time upon not less than twelve (12) months' Notice to PJM.

35.19.3.2 PJM may terminate this Agreement at any time upon not less than twelve (12) months' Notice to NYISO.

35.19.3.3 This Agreement may be terminated at anytime by mutual agreement in writing.

### **35.19.4 Survival**

The applicable provisions of this Agreement shall continue in effect after any termination of this Agreement to provide for adjustments and payments under Section 35.15, dispute resolution, determination and enforcement of liability, and indemnification, arising from acts or

events that occurred during the period this Agreement was in effect. In addition, Sections 35.8.4 and 35.8.10 of this Agreement provides that the obligation to safeguard Confidential Information continues in effect for a period of seven years after any termination of this Agreement.

**35.19.5 Post-Termination Cooperation**

Following any termination of this Agreement, all Parties shall thereafter cooperate fully and work diligently in good faith to achieve an orderly resolution of all matters resulting from such termination.

## **35.20 Additional Provisions**

### **35.20.1 Force Majeure**

A Party shall not be considered to be in default or breach of this Agreement, and shall be excused from performance or liability for damages to any other party, if and to the extent it shall be delayed in or prevented from performing or carrying out any of the provisions of this Agreement, arising out of or from any act, omission, or circumstance by or in consequence of any act of God, labor disturbance, sabotage, failure of suppliers of materials, act of the public enemy, war, invasion, insurrection, riot, fire, storm, flood, ice, earthquake, explosion, epidemic, breakage or accident to machinery or equipment or any other cause or causes beyond such Party's reasonable control, including any curtailment, order, regulation, or restriction imposed by governmental, military or lawfully established civilian authorities, or by making of repairs necessitated by an emergency circumstance not limited to those listed above upon the property or equipment of the Party or property or equipment of others which is deemed under the Operational Control of the Party. A Force Majeure event does not include an act of negligence or Intentional Wrongdoing by a Party. Any Party claiming a Force Majeure event shall use reasonable diligence to remove the condition that prevents performance and shall not be entitled to suspend performance of its obligations in any greater scope or for any longer duration than is required by the Force Majeure event. Each Party shall use its best efforts to mitigate the effects of such Force Majeure event, remedy its inability to perform, and resume full performance of its obligations hereunder.

### **35.20.2 Force Majeure Notification**

A Party suffering a Force Majeure event ("Affected Party") shall notify the other Party ("Non-Affected Party") in writing ("Notice of Force Majeure Event") as soon as reasonably

practicable specifying the cause of the event, the scope of commitments under the Agreement affected by the event, and a good faith estimate of the time required to restore full performance. Except for those commitments identified in the Notice of Force Majeure Event, the Affected Party shall not be relieved of its responsibility to fully perform as to all other commitments in the Agreement. If the Force Majeure Event continues for a period of more than 90 days from the date of the Notice of Force Majeure Event, the Non-Affected Party shall be entitled, at its sole discretion, to terminate the Agreement.

### **35.20.3 Indemnification**

“Indemnifying Party” means a Party who holds an indemnification obligation hereunder. An “Indemnitee” means a Party entitled to receive indemnification under this Agreement as to any Third Party claim. Each Party will defend, indemnify, and hold the other Party harmless from all actual losses, damages, liabilities, claims, expenses, causes of action, and judgments (collectively, “Losses”), brought or obtained by any Third Party against such other Party, only to the extent that such Losses arise directly from:

(a) Gross negligence, recklessness, or willful misconduct of the Indemnifying Party or any of its agents or employees, in the performance of this Agreement, except to the extent the Losses arise (i) from gross negligence, recklessness, willful misconduct or breach of contract or law by the Indemnitee or such Indemnitee’s agents or employees, or (ii) as a consequence of strict liability imposed as a matter of law upon the Indemnitee, or such Indemnitee’s agents or employees;

(b) Any claim arising from the transfer of Intellectual Property in violation of Section 35.20.8; or

- (c) Any claim that such Indemnitee caused bodily injury to an employee of Third Party due to gross negligence, recklessness, or willful conduct of the Indemnifying Party.
- (d) The Indemnitee shall give Notice to the Indemnifying Party as soon as reasonably practicable after the Indemnitee becomes aware of the Indemnifiable Loss or any claim, action or proceeding that may give rise to an indemnification. Such notice shall describe the nature of the loss or proceeding in reasonable detail and shall indicate, if practicable, the estimated amount of the loss that has been sustained by the Indemnitee. A delay or failure of the Indemnitee to provide the required notice shall release the Indemnifying Party (a) from any indemnification obligation to the extent that such delay or failure materially and adversely affects the Indemnifying Party's ability to defend such claim or materially and adversely increases the amount of the Indemnifiable Loss, and (b) from any responsibility for any costs or expenses of the Indemnitee in the defense of the claim during such period of delay or failure.
- (e) The indemnification by either Party shall be limited to the extent that the liability of a Party seeking indemnification would be limited by any applicable law and arises from a claim by a Party acting within the scope of this Agreement as to obligations of the other Party under this Agreement.

#### **35.20.4 Headings**

The headings used for the Articles and Sections of this Agreement are for convenience and reference purposes only, and shall not be construed to modify, expand, limit, or restrict the provisions of this Agreement.



#### **35.20.5 Liability to Non-Parties**

Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person or entity that is not a Party or a permitted successor or assign.

#### **35.20.6 Liability Between Parties**

The Parties' duties and standard of care with respect to each other, and the benefits and rights conferred on each other shall be no greater than as expressly stated herein. Neither Party, its directors, officers, trustees, employees or agents, shall be liable to the other Party for any loss, damage, claim, cost, charge or expense, whether direct, indirect, incidental, punitive, special, exemplary or consequential, arising from the other Party's performance or nonperformance under this Agreement, except to the extent that a Party, is found liable for gross negligence or willful misconduct, in which case the Party responsible shall be liable only for direct and ordinary damages and not for any lost goodwill, incidental, consequential, punitive, special, exemplary or indirect damage.

This section shall not limit amounts required to be paid under this Agreement, including any of the appendices, schedules or attachments to this Agreement. This section shall not apply to adjustments or corrections for errors in invoiced amounts due under this Agreement, including any of the appendices, schedules or attachments to this Agreement.

#### **35.20.7 Limitation on Claims**

No claim seeking an adjustment in the billing for any service, transaction, or charge under this Agreement, including any of the appendices, schedules or attachments to this Agreement, may be asserted with respect to a week or month, if more than one year has elapsed (a) since the first date upon which an invoice was rendered for that week or month, or (b) since

the date upon which a changed or modified invoice was rendered for that week or month. The Party responsible for issuing an invoice may not, of its own initiative, issue a changed or modified invoice if more than one year has elapsed since the first date upon which an invoice was rendered for a week or month. A changed or modified invoice may be issued more than one year after the first date upon which an invoice was rendered for a week or month in order to correct for or address a timely-raised claim seeking an adjustment in the billing for any service, transaction, or charge under this Agreement.

#### **35.20.8 Unauthorized Transfer of Third-Party Intellectual Property**

In the performance of this Agreement, no party shall transfer to another party any Intellectual Property, the use of which by another Party would constitute an infringement of the rights of any Third Party. In the event such transfer occurs, whether or not inadvertent, the transferring Party shall, promptly upon learning of the transfer, provide Notice to the receiving Party and upon receipt of such Notice the receiving Party shall take reasonable steps to avoid claims and mitigate losses.

#### **35.20.9 Intellectual Property Developed Under This Agreement**

If during the term of this Agreement, the Parties mutually develop any new Intellectual Property that is reduced to writing or any tangible form, the Parties shall negotiate in good faith concerning the ownership and licensing of such Intellectual Property.

#### **35.20.10 Governing Law**

This Agreement shall be governed by and construed in accordance with the laws of the State of Delaware without giving effect to the State of Delaware's conflict of law principles.

### **35.20.11 License and Authorization**

The agreements and obligations expressed herein are subject to such initial and continuing governmental permission and authorization as may be required. Each Party shall be responsible for securing and paying for any approvals required by it from any regulatory agency of competent jurisdiction relating to its participation in this Agreement and will reasonably cooperate with the other Party in seeking such approvals.

### **35.20.12 Assignment**

This Agreement shall inure to the benefit of, and be binding upon and may be performed by, the successors and assigns of the Parties hereto respectively, but shall not be assignable by either Party without the written consent of the other.

### **35.20.13 Amendment**

#### **35.20.13.1 Authorized Representatives**

No amendment of this Agreement shall be effective unless by written instrument duly executed by the Parties' authorized representatives. For the purposes of this section, an authorized person refers to individuals designated as such by Parties in their respective corporate by-laws.

#### **35.20.13.2 Review of Agreement**

The terms of this Agreement are subject to review for potential amendment at the request of either Party. If, after such review, the Parties agree that any of the provisions hereof, or the practices or conduct of either Party impose an inequity, hardship or undue burden upon the other Party, or if the Parties agree that any of the provisions of this Agreement have become obsolete or inconsistent with changes related to the Interconnection Facilities, the Parties shall endeavor

in good faith to amend or supplement this Agreement in such a manner as will remove such inequity, hardship or undue burden, or otherwise appropriately address the cause for such change.

#### **35.20.13.3 Mutual Agreement**

The Parties may amend this Agreement at any time by mutual agreement in accordance with Section 35.20.13.1 above.

#### **35.20.14 Performance**

The failure of a Party to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any right held by such Party. Any waiver on any specific occasion by either Party shall not be deemed a continuing waiver of such right, nor shall it be deemed a waiver of any other right under this Agreement.

#### **35.20.15 Rights, Remedies or Benefits**

This Agreement is not intended to and does not create any rights, remedies, or benefits of any kind whatsoever in favor of any entities other than the Parties, their principals and, where permitted, their assigns.

#### **35.20.16 Agreement**

This Agreement, including all Attachments attached hereto, is the entire agreement between the Parties with respect to the subject matter hereof, and supersedes all prior or contemporaneous understandings or agreements, oral or written, with respect to the subject matter of this Agreement.

### **35.20.17 Governmental Authorizations**

This Agreement, including its future amendments is subject to the initial and continuing governmental authorizations, including approval of the FERC, required to establish, operate and maintain the Interconnection Facilities as herein specified. Each Party shall take all actions necessary and reasonably within its control to maintain all governmental rights and approvals required to perform its respective obligations under this Agreement.

### **35.20.18 Unenforceable Provisions**

If any provision of this Agreement is deemed unenforceable, the rest of the Agreement shall remain in effect and the Parties shall negotiate in good faith and seek to agree upon a substitute provision that will achieve the original intent of the Parties.

### **35.20.19 Execution**

This Agreement may be executed in multiple counterparts, each of which shall be considered an original instrument, but all of which shall be considered one and the same Agreement, and shall become binding when all counterparts have been signed by each of the Parties and delivered to each Party hereto. Delivery of an executed signature page counterpart by telecopier or e-mail shall be as effective as delivery of a manually executed counterpart.

### **35.20.20 Billing and Payment**

#### **35.20.20.1 General Billing and Payment Rules**

This Section 35.20.20.1 of the Agreement sets forth the billing and payment rules that apply to all charges arising under this Agreement except for charges resulting from the M2M coordination process set forth in Schedule D to this Agreement.

**35.20.20.1.1 Invoicing.** When charges arise under this Agreement, the billing RTO shall submit an invoice to the other RTO within five (5) business days after the first day of the month indicating the net amount owed by that RTO for the previous month.

**35.20.20.1.2 Payments.** Payments under this Agreement will be effected in immediately available funds of the United States of America.

The RTO owing payments on net in the invoice shall make those payments within five (5) business days after the receipt of the invoice.

In the event of a billing and payment dispute between the Parties, the dispute resolution procedures and limitation of the claims section contained in this Agreement shall apply to the review, challenge, and correction of invoices.

**35.20.20.1.3 Interest on Unpaid Balances.** Interest on any unpaid amount (including amounts placed in escrow) shall be calculated in accordance with the method specified for interest on refunds in the Commission's regulations at 18 C.F.R. § 35.19a (a)(2)(iii). Interest on unpaid amounts shall be calculated from the due date of the bill to the date of payment. Invoices shall be considered as having been paid on the date of receipt of payment.

**35.20.20.1.4 RTO Bills and Payments to their Respective Customers.** Bills or payments that either RTO is authorized to issue directly to its customer shall be invoiced, paid and/or processed in accordance with the relevant RTO's billing and payment tariff rules.

**35.20.20.2 Billing and Payment for the M2M Coordination Process set forth in Schedule D to this Agreement**

For the limited purposes of these billing and payment rules that apply to the M2M coordination process, PJM shall be considered a “Customer” as that term is used in Section 7 of the NYISO Services Tariff where the NYISO Services Tariff applies and NYISO shall be considered a “Transmission Customer” as that term is used in Section 7 of the PJM OATT where the PJM OATT applies.

**35.20.20.2.1 Invoicing and Settlement Information.** NYISO shall provide invoice and settlement information to PJM consistent with Section 7.2.1 (*Invoices and Settlement Information*), 7.2.3.1 (*Weekly Invoice*), and 7.2.3.2 (*Monthly Invoice*) of the NYISO Services Tariff or any successor NYISO Services Tariff provision(s).

NYISO may use estimates for invoicing consistent with Section 7.2.4 (*Use of Estimated Data and Meter Data*) of the NYISO Services Tariff or any successor NYISO Services Tariff provision(s).

**35.20.20.2.2 Payments.** Unless otherwise indicated in writing by the Parties, all payments due under this Agreement will be effected in immediately available funds of the United States of America.

Payments shall be due and payable in accordance with the terms and conditions set herein and notwithstanding any invoicing disputes. In the event of a billing and payment dispute between the Parties under this Agreement, the dispute resolution procedures and limitation of the claims section contained in this Agreement shall apply to the review, challenge, and correction of invoices.

PJM shall make payments to the NYISO's Clearing Account consistent with Sections 7.2.3.3 (*Payment by the Customer*) and 7.2.5 (*Method of Payment*) of the NYISO Services Tariff or any successor NYISO Services Tariff provision(s).

NYISO shall make payments, from the NYISO's Clearing Account, to PJM consistent with Section 7.1A(a) (*Payments: Monthly Bills*), 7.1A(b) (*Payments: Weekly Bills*), 7.1A(c) (*Payments: Form of Payments*), and 7.1A(e) (*Payments: Payment Calendar*) of the PJM OATT or any successor PJM OATT provision(s).

**35.20.20.2.3 Interest on Unpaid Balances.** Interest on any unpaid amount whether owed to PJM or to NYISO (including amounts placed in escrow) shall be calculated in accordance with the methodology specified for interest on refunds in the Commission's regulations at 18 C.F.R. § 35.19a (a)(2)(iii). Interest on unpaid amounts shall be calculated from the due date of the bill to the date of payment. Invoices shall be considered as having been paid on the date of receipt of payment.

**35.20.20.2.4 Payment Obligation.** The RTOs each assume responsibility for ensuring that their respective payment obligations resulting from the M2M coordination process set forth in Schedule D to this Agreement are satisfied without regard for their ability to collect such payments from their respective customers.

**35.20.21 Regulatory Authority**

If any regulatory authority having jurisdiction (or any successor boards or agencies), a court of competent jurisdiction or other Governmental Authority with the appropriate jurisdiction (collectively, the "Regulatory Body") issues a rule, regulation, law or order that has the effect of cancelling, changing or superseding any term or provision of this Agreement (the "Regulatory



Requirement"), then this Agreement will be deemed modified to the extent necessary to comply with the Regulatory Requirement. Notwithstanding the foregoing, if a Regulatory Body materially modifies the terms and conditions of this Agreement and such modification(s) materially affect the benefits flowing to one or both of the Parties, as determined by either of the Parties within twenty (20) business days of the receipt of the Agreement as materially modified, the Parties agree to attempt in good faith to negotiate an amendment or amendments to this Agreement or take other appropriate action(s) so as to put each Party in effectively the same position in which the Parties would have been had such modification not been made. In the event that, within sixty (60) days or some other time period mutually agreed upon by the Parties after such modification has been made, the Parties are unable to reach agreement as to what, if any, amendments are necessary and fail to take other appropriate action to put each Party in effectively the same position in which the Parties would have been had such modification not been made, then either Party shall have the right to unilaterally terminate this Agreement forthwith.

#### **35.20.22 Notices**

Except as otherwise agreed from time to time, any Notice, invoice or other communication which is required by this Agreement to be given in writing, shall be sufficiently given at the earlier of the time of receipt or deemed time of receipt if delivered personally to a senior official of the Party for whom it is intended or electronically transferred or sent by registered mail, addressed as follows:

PJM: Terry Boston  
President & CEO  
PJM Interconnection L.L.C.  
955 Jefferson Avenue  
Valley Forge Corporate Center  
Norristown, PA 19403-4501  
Tel: (610) 666-8263

NYISO: New York System Operator  
10 Krey Boulevard  
Rensselaer, New York 12144  
Attention: Vice President Operations & Reliability

or delivered to such other person or electronically transferred or sent by registered mail to such other address as either Party may designate for itself by Notice given in accordance with this section or delivered by any other means agreed to by the Parties hereto.

Any Notice, or communication so mailed shall be deemed to have been received on the third business day following the day of mailing, or if electronically transferred shall be deemed to have been received on the same business day as the date of the electronic transfer, or if delivered personally shall be deemed to have been received on the date of delivery or if delivered by some other means shall be deemed to have been received as agreed to by the Parties hereto.

The use of a signed facsimile of future Notices and correspondence between the Parties related to this Agreement shall be accepted as proof of the matters therein set out. Follow-up with hard copy by mail will not be required unless agreed to by the Coordination Committee.

A Party may change its designated recipient of Notices, or its address, from time to time by giving Notice of such change.

**IN WITNESS WHEREOF**, the signatories hereto have caused this Agreement to be executed by their duly authorized officers.

PJM INTERCONNECTION, L.L.C.

By: Michael J. Kormos, Senior VP – Reliability Services

\_\_\_\_\_  
Date: \_\_\_\_\_

NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

By: Stephen G. Whitley, President and CEO

\_\_\_\_\_  
Date: \_\_\_\_\_

## 35.21 Schedules A and B

### Schedule A - Description Of Interconnection Facilities

The NYISO – PJM Coordination Agreement covers the PJM – NYISO *Interconnection Facilities* under the *Operational Control* of the NYISO and PJM. For *Operational Control* purposes, the point of demarcation for each of the *Interconnection Facilities* listed below is the point at which each *Interconnection Facility* crosses the PJM-New York State boundary, except as noted below.

The PJM-NYISO *Interconnection* contains twenty-three (23) alternating current (“AC”) *Interconnection Facilities*, seven (7) of which form one (1) AC pseudo-tie<sup>1</sup>; and further contains one (1) HVDC *Interconnection Facility* as well as one (1) *Variable Frequency Transformer (VFT)*. These are tabulated below:

NY/PJM AC *Interconnection Facilities*:

| <b>PJM</b>      | <b>NYISO</b> | <b>Designated</b> | <b>(kV)</b> | <b>Common Meter Point</b> |
|-----------------|--------------|-------------------|-------------|---------------------------|
| Branchburg      | Ramapo       | 5018              | 500         | Ramapo                    |
| Cresskill       | Sparkill     | 751               | 69          | Cresskill                 |
| E. Sayre        | N. Waverly   | 956               | 115         | E. Sayre                  |
| E. Towanda      | Hillside     | 70                | 230         | Hillside                  |
| Erie East       | South Ripley | 69                | 230         | South Ripley              |
| Harings Corners | Burns        | 702               | 138         | Harings                   |
| Harings Corners | Pearl River  | 45                | 34          | Harings                   |
| Harings Corners | W. Nyack     | 701               | 69          | Harings                   |
| Homer City      | Watercure    | 30                | 345         | Homer                     |
| Homer City      | Stolle Road  | 37                | 345         | Homer                     |
| Hudson          | Farragut     | C3403             | 345         | Farragut                  |
| Hudson          | Farragut     | B3402             | 345         | Farragut                  |
| Linden          | Goethals     | A2253             | 230         | Goethals                  |
| Linden VFT      | Linden Cogen | VFT               | 345         | Linden VFT                |
| Montvale        | Pearl River  | 491               | 69          | Montvale                  |
| Montvale        | Blue Hill    | 44                | 69          | Montvale                  |
| Montvale        | Blue Hill    | 43                | 69          | Montvale                  |
| S. Mahwah       | Hilburn      | 65                | 69          | S. Mahwah                 |
| S. Mahwah       | S. Mahwah    | BK 258            | 138/345     | S. Mahwah                 |
| S. Mahwah       | Ramapo       | 51                | 138         | S. Mahwah                 |
| Waldwick        | S. Mahwah    | J3410             | 345         | Waldwick                  |
| Waldwick        | S. Mahwah    | K3411             | 345         | Waldwick                  |
| Tiffany         | Goudey       | 952               | 115         | Goudey                    |
| Warren          | Falconer     | 171               | 115         | Warren                    |
| RECO            | NYISO        | AC Pseudo-Tie     | Various     | O&R EMS                   |

<sup>1</sup> WEQ-007 “Inadvertent Interchange Payback Standards,” North American Energy Standards Board (NAESB), on-line at [www.naesb.org](http://www.naesb.org).

**Schedule B - Other Existing Agreements:**

- 1.0 Lake Erie Emergency Redispatch (LEER)
- 2.0 RAMAPO PHASE ANGLE REGULATOR OPERATING PROCEDURE prepared by the NYPP/PJM Circulation Study Operating Committee.
- 3.0 Operating Protocol for the Implementation of Commission Opinion No. 476, Docket No. EL02-23-000 (Phase II), New York Independent System Operator, Inc., FERC Electric Tariff, Original Vol. No. 2, Attachment M-1.
- 4.0 Northeastern ISO/RTO Coordination of Planning Protocol
- 5.0 Inter Control Area Transaction Agreement.
- 6.0 Procedures to Protect for Loss of Phase II Imports (effective January 16, 2007, pursuant to Order issued January 12, 2007, in FERC Docket No. ER07-231-000).
- 7.0 Joint Emergency Operating Protocol dated September 10, 2009, among PJM Interconnection, L.L.C., New York Independent System Operator, Inc., and Linden VFT, LLC (Filed by PJM on October 1, 2009, in FERC Docket No. ER09-996-000).

## **35.22 Schedule C - Operating Protocol for the Implementation Of Con Ed – PJM Transmission Service Agreements**

- 1.1 This “Operating Protocol” establishes procedures for the planning, operation, control, and scheduling of energy between the New York Independent System Operator, Inc. (“NYISO”) and PJM Interconnection, L.L.C. (“PJM”) (collectively, the “Parties”), associated with two Long-term Firm Point-to-Point Transmission Service Agreements (“TSAs”) entered into by Consolidated Edison Company of New York (“ConEd”) and PJM, dated April 18, 2008, executed in connection with the rollover of contracts dated May 22, 1975 (as amended May 9, 1978) and May 8, 1978 between ConEd and Public Service Electric and Gas Company (“PSE&G”). The TSA designated Original Service Agreement No. 1874 is referred to herein as the 400 MW transaction and the TSA designated Original Service Agreement No. 1873 is referred to as the 600 MW transaction. The two contracts are referred to collectively as the “600/400 MW transactions.”
- 1.1.1 The 400 MW transaction. The 400 MW transaction has the same level of firmness as other firm transactions, except as provided in section 1.3 of this Operating Protocol.
- 1.1.2 The 600 MW transaction. The 600 MW transaction shall have the same level of firmness as other firm transactions.
- 1.2 This Operating Protocol shall be used by the NYISO and PJM in preparing to operate, and operating in real-time, to the hourly flow of energy between them pursuant to the 600/400 MW transactions as established by this Operating Protocol.
- 1.3 During system emergencies, the appropriate emergency procedures of the NYISO and PJM, if necessary, shall take priority over the provisions of this Operating Protocol. The NYISO and PJM shall have the authority to implement their respective emergency procedures in whatever order is required to ensure overall system reliability. Without limiting the foregoing, the order of load relief measures and transaction reductions when there is an emergency in the PJM Mid-Atlantic Area will be:
- Calling of Emergency Load Response
  - Voltage reduction
  - Reduction of the 400 MW transaction

- Pro-rata load shed and reduction of the 600/400 MW transactions<sup>1</sup>

In addition, if PJM declares an emergency condition that arises from outages on the PSE&G system, the NYISO and PJM may agree to deliver up to 400 MW to Goethals for re-delivery to Hudson via the NYISO's system. Such emergency re-deliveries shall not be considered in the calculation of the Real-Time Market Desired Flow under Appendices 1 and 3 of this Operating Protocol.

- 1.4 All aspects of this Operating Protocol are subject to the dispute resolution procedures set forth in the Joint Operating Agreement Among and Between New York Independent System Operator, Inc., and PJM Interconnection, L.L.C.
- 1.5 The Parties will review all aspects of this Operating Protocol annually.
- 1.6 Attached and included as part of this Operating Protocol are the following appendices: Appendix 1 – Process Flow, Appendix 2 – Transmission Constraints and Outages Associated with the Contracts, Appendix 3 – The Day-Ahead Market and Real-Time Market Desired Flow Calculation, Appendix 4 – Planning Procedures, Appendix 5 – Operation of the PARs, Appendix 6 – Distribution of Flows Associated with Implementation of Day-Ahead and Real Time Market Desired Flows, Appendix 7 – References, and Appendix 8 – Definitions.

<sup>1</sup> In a maximum generation emergency in the PJM Mid-Atlantic Area where PSE&G load needs to be curtailed, the PSE&G load would be curtailed pro-rata with curtailment of the ConEd requested service (and other firm service on the system). But, if NYISO is not also in a capacity emergency, the desired flow on ABC will be reduced by up to 400 MW to the extent necessary to avoid a PSEG load curtailment. ConEd may upgrade the transmission service for the 400 MW transaction to eliminate the reduction of the 400 MW transaction prior to load shed as described above by requesting such upgraded service and funding all necessary transmission upgrades as required by Part II and Part VI of the PJM OATT. The 600 MW transaction shall be reduced in the same manner as all other firm transactions in PJM.

## **Schedule C Appendices**

### **Appendix 1- Process Flow**

#### **Two Day-ahead Actions:**

1. PJM shall post constraint forecast information on its OASIS, or a comparable website, indicating if there is the potential for off-cost operations, two days prior to the operating day by 9 pm (sample at Figure 1 in Appendix 7).
2. PJM shall analyze transmission and generation outages in accordance with Appendix 2B to determine if the 600/400 MW transaction flow is expected to be feasible under a security constrained dispatch in PJM. If any portion of the flow is not expected to be feasible under a security-constrained dispatch, PJM will determine what portion of the flow is expected to be feasible and post that information on the PJM OASIS. This advance notification is not binding on any party.
3. The NYISO shall post transmission outages on its OASIS, or a comparable website, to identify outages that impact the transfer capability of the ISO Secured Transmission System.<sup>2</sup>

#### **Day Ahead Scheduling:**

4. ConEd shall submit a contract election (NY-DAE) in the NYISO's Day-Ahead Market for the 600/400 MW transactions prior to the NYISO Day Ahead Market (DAM) deadline (currently 5:00 a.m.).
5. The NYISO shall establish New York (aggregate ABC interface and aggregate JK interface) Desired Flow (NYDF) schedules for NYISO Day Ahead Market using the NY-DAE identified in (4).
6. The NYISO shall establish the distribution of flows for the NYISO DAM in accordance with Appendix 7.
7. The NYISO shall run the New York Day Ahead Market with NYDF schedules determined in (5 and 6).

<sup>2</sup> The ISO Secured Transmission System is defined in the NYISO's Transmission and Dispatching Operations Manual.



8. The NYISO shall post DAM results by the deadline established in its market rules (currently prior to 11:00 a.m.). The NYISO shall provide NYDF schedules and post nodal prices for the JK (Ramapo), BC (Farragut) and A (Goethals) pricing points on the NYISO OASIS, or a comparable website (sample at Figure 2 in Appendix 7).
9. ConEd shall submit a transaction election (PJM-DAE) in the PJM Day Ahead Market prior to the PJM Day Ahead Market deadline (currently 12 noon):
  - a) ConEd shall submit a transaction election for the 600 MW transaction.
  - b) ConEd shall submit a transaction election for the 400 MW transaction.
10. PJM shall establish the PJM (aggregate ABC interface and aggregate JK interface) Desired Flow (PJ MDF) schedules for PJM Day Ahead Market using PJM-DAE identified in Appendix 8.
11. PJM shall establish the distribution of flows for the PJM DAM in accordance with Appendix 8.
12. PJM shall run the PJM Day Ahead Market with the PJ MDF schedules determined in (11). The amount of the PJM-DAE which clears will become the PJM Day Ahead Schedule amount (PJM-DAS).
13. PJM Day Ahead results shall be posted by the deadline established in PJM's market rules (currently at 4:00 p.m.), and shall identify the PJM-DAS. The PJM posting will include nodal prices for the JK (Waldwick), BC (Hudson) and A (Linden) pricing points on <https://esuite.pjm.com/mui/index.htm> or a comparable website (sample at Figure 3 in Appendix 7).

**If there is congestion in the PJM Day Ahead Market:**

14. If there is congestion in PJM that affects the 600/400 MW transaction, PJM shall re-dispatch.

**In Day Operations:**

15. Aggregate ABC and aggregate JK Real-Time Market Desired Flow (RT MDF) calculations shall be made in real time, continuous throughout the operating day, by the NYISO and PJM.
16. The desired distribution of flows on the A, B, C, J, and K lines for the in-day markets shall be established by PJM and the NYISO in accordance with Appendix 6.

17. Aggregate actual ABC interface flows shall be within +/- 100 MW of the aggregate RTMDF for the ABC interface and aggregate actual JK interface flows shall be within +/- 100 MW of the aggregate RTMDF for the JK interface.<sup>3</sup>
18. ConEd shall have the option to request a modification in the Real-Time Market from its Day Ahead Market election (NY\_DAE and PJM\_DAE) for each hour.<sup>4</sup>
  - a) ConEd must request a Real-Time election (RTE) modification through NYISO at least 75 minutes prior to the dispatch hour (or a shorter notice period that is agreed upon by the NYISO and PJM.).
  - b) The NYISO shall notify PJM of the RTE.
  - c) ConEd shall settle with PJM for the balancing market costs for deviations between PJM-DAS and RTE pursuant to the TSAs described in Section 35.1 of this Operating Protocol. ConEd shall settle with the NYISO for balancing market costs for deviations between NY-DAE and RTE. ConEd shall not be responsible for NYISO balancing market costs resulting from NYISO-directed deviations between NY DAE and RTE.

Note - Actions identified in steps 17 and 18 that are taken will be logged, and PSE&G and ConEd will be notified of PAR moves related to these steps.

<sup>3</sup> PJM and NYISO will operate in accordance with the bandwidth requirements of Step 17 to the extent practicable (utilizing PARs, curtailment of third party transactions, and re-dispatch, consistent with the other provisions of the Operating Protocol) recognizing relevant operating conditions that are beyond the control of PJM and NYISO or that are not anticipated by this Operating Protocol. Deviations will be accounted for with in-kind payback using the Auto Correction Factor described in Appendix 3 to this Operating Protocol. The Auto Correction Factor shall be the sole and exclusive remedy available to any person or entity for any under- or over-delivery of power pursuant to the 600/400 MW transactions, unless such under- or over-delivery is the result of gross negligence or intentional misconduct.

<sup>4</sup> At all times, however, the ConEd election under the 600/400 MW transactions must be the same in PJM and NYISO in In-Day Operations. Absent an in-day change in the election by ConEd, the ConEd Real-Time election shall be the PJM-DAS.

## Appendix 2 - Transmission Constraints and Outages - Associated with the Contracts

### A. Constraints

A list of constraints identified as potential constraints that may result in off-cost operation due to transfers associated with the 600/400 MW transactions will be posted on the PJM and NYISO OASIS or web page. The constraints included in the listing should be considered representative of the kinds of constraints that may exist within PJM or the NYISO. If such transmission constraints are limiting, then the affected ISO/RTO may be subject to off-cost operation due to transfers associated with the 600/400 MW transactions. Other constraints, not listed on the web site, may arise that could cause either ISO/RTO to operate off-cost. The list may be revised by NYISO/PJM to reflect system changes or security monitoring technique changes in their respective Control Areas.

### B. Outages

The NYISO and PJM will identify critical outages that may impact redispatch costs incurred for the delivery of energy, under the 600/400 MW transactions. Identified outages may have the following consequences:

The outage of any A, B, C, J, or K facility will result in the NY-DAE, PJM-DAE, and/or RTE (as appropriate) being limited to a value no greater than the remaining thermal capability of the most limiting of the ABC interface or the JK interface. The remaining thermal capability of either the ABC interface or the JK interface may be limited by other facilities directly in series with the A, B, C, J, or K lines.

1. It is not anticipated that one primary facility outage will preclude PJM from providing redispatch for the 600 MW or 400 MW transaction. However, combinations of two or more outages of the facilities, listed on the PJM OASIS or web page, could preclude PJM from accommodating all or part of the delivery, even with redispatch. In this case, PJM will provide notification to NYISO.

PJM will provide notification<sup>5</sup> of all outages by posting these outages (transmission only) on the PJM OASIS or web site.

NYISO will provide notification of all outages by posting these outages (transmission only) on the NYISO OASIS or web site.

PJM and the NYISO will review and revise, as necessary, the list of primary and secondary facilities on an annual basis.

<sup>5</sup> PJM can also provide the option of automated email outage notification through the PJM eDart tool.

### Appendix 3 - The Day-Ahead Market and Real-Time Market - Desired Flow Calculation

The following shall be the formula for calculating Day-Ahead Market (DAM) and Real-Time Market (RTM) desired flows:

$$NYDF_{ABC} = [NY-DAE] + [A]*[PJM-NYISO \text{ DAM Schedule}] + [B] * [OH-NYISO \text{ DAM Schedule}] + [C] * [West-PJM \text{ DAM Schedule}] + [D]*[DAM \text{ Lake Erie Circulation}]$$

$$NYDF_{JK} = [NY-DAE] - [A]*[PJM-NYISO \text{ DAM Schedule}] - [B] * [OH-NYISO \text{ DAM Schedule}] - [C] * [West-PJM \text{ DAM Schedule}] - [D]*[DAM \text{ Lake Erie Circulation}]$$

$$PJ MDF_{ABC} = [PJM-DAE] + [A]*[PJM-NYISO \text{ DAM Schedule}] + [B] * [OH-NYISO \text{ DAM Schedule}] + [C] * [West-PJM \text{ DAM Schedule}] + [D]*[DAM \text{ Lake Erie Circulation}]$$

$$PJ MDF_{JK} = [PJM-DAE] - [A]*[PJM-NYISO \text{ DAM Schedule}] - [B] * [OH-NYISO \text{ DAM Schedule}] - [C] * [West-PJM \text{ DAM Schedule}] - [D]*[DAM \text{ Lake Erie Circulation}]$$

$$RTMDF_{ABC} = [RTE] + [A]*[PJM-NYISO \text{ RTM Schedule}] + [B] * [OH-NYISO \text{ RTM Schedule}] + [C] * [West-PJM \text{ RTM Schedule}] + [D]*[RTM \text{ Lake Erie Circulation}] + \text{Auto Correction Factor}$$

$$RTMDF_{JK} = [RTE] - [A]*[PJM-NYISO \text{ RTM Schedule}] - [B] * [OH-NYISO \text{ RTM Schedule}] - [C] * [West-PJM \text{ RTM Schedule}] - [D]*[RTM \text{ Lake Erie Circulation}] + \text{Auto Correction Factor}$$

- The DAM and RTM desired flows will be limited to the facility rating.
- The Auto Correction Factor component of the desired flow is the on-peak and off-peak aggregations of MW deviation in a calendar day to be included in a subsequent day's on-peak or off-peak period as applicable and agreed upon by PJM and NYISO. The Auto Correction Factor "pays-back" MW in kind during a subsequent day on-peak or off-peak period as agreed upon by NYISO and PJM. On-peak aggregation shall be paid back in a subsequent day on-peak period. Off-peak aggregation shall be paid back in a subsequent day off-peak period.
- The Auto Correction Factor shall not apply to under-deliveries over the A, B, and C Feeders that occur during the first hour following a thunderstorm alert.
- The Auto Correction Factor shall be the sole and exclusive remedy available to any person or entity for any under- or over-delivery of power pursuant to the 600/400 MW transactions, unless such under- or over-delivery is the result of gross negligence or intentional misconduct.

|   |            |                                   |
|---|------------|-----------------------------------|
| A | Up to 13 % | Adjustment for NYISO-PJM Schedule |
| B | 0 %        | Adjustment for OH-NYISO Schedule  |

|   |     |                                      |
|---|-----|--------------------------------------|
| C | 0 % | Adjustment for West-PJM Schedules    |
| D | 0 % | Adjustment for Lake Erie Circulation |

Other impacts will be part of the real time bandwidth operation – not the desired flow calculation. These impacts will be reviewed by PJM and the NYISO on an annual basis.

Except as provided in the last sentence of this paragraph with regard to distribution factor A, the above distribution factors (A, B, C, D) will be used in the calculation unless otherwise agreed by PJM and the NYISO based upon operating analysis conducted in response to major topology changes or outages referenced in Appendix 2. Such modifications will be posted by PJM and the NYISO on the PJM and NY OASIS sites or web sites. Distribution factor A will apply only when steps taken by PJM and NYISO to coordinate tap changes on the PARs to control power flow on transmission lines between New York and New Jersey are unable to maintain the desired flow. If necessary, in order to maintain the desired flow after applying distribution factor A, PJM and NYISO may issue TLRs concerning third-party non-firm transmission service.

## **Appendix 4 - Planning Procedures**

The procedures for identifying and remedying impairments shall be handled on a planning basis. The impairment process is not directly applicable to DAM or RT operations under the 600/400 MW transactions.

### **EXISTING IMPAIRMENTS**

- PJM and the NYISO are not aware of any existing impairments that would preclude provision of transmission service under the 600 MW / 400 MW transaction.

### **NOTIFICATION PROCEDURES**

- ConEd and PSE&G shall notify the NYISO and PJM respectively under their existing ISO/RTO interconnection procedures when interconnecting new generation facilities to their transmission systems.

### **PROCEDURES FOR DETERMINATION OF FUTURE IMPAIRMENTS**

- The procedures to be used by the NYISO and PJM for the determination of future impairments shall be in accordance with:
  - The PJM Regional Transmission Expansion Planning Process, as revised from time to time;
  - The NYISO Comprehensive Reliability Planning Process, as revised from time to time; and
  - The Northeast ISO/RTO Planning Coordination Protocol executed by PJM, the NYISO and ISO-New England Inc., as revised from time to time.
- The Northeast ISO/RTO Planning Coordination Protocol contains provisions for the coordination of interconnection requests received by one ISO/RTO that have the potential to cause impacts on an adjacent ISO/RTO to include the handling of firm transmission service.
- The Northeast ISO/RTO Planning Coordination Protocol has provisions for notification, development of screening procedures, and coordination of the study process between the ISO/RTOs.
- The Northeast ISO/RTO Planning Coordination Protocol also provides that all analyses performed to evaluate cross-border impacts on the system facilities of one of the ISOs/RTOs will be based on the criteria, guidelines, procedures or standards applicable to those facilities.

- Future planning studies by the ISOs/RTOs shall include 1,000 MW<sup>6</sup> of firm delivery from the NYISO at Waldwick and 1,000 MW of re-delivery from PJM at the Hudson and Linden interface independent of the amount of off-cost operation that is required to meet reliability criteria. For PJM load deliverability planning studies, which simulate a capacity emergency situation, the system shall be planned to include 1,000 MW of firm delivery from the NYISO at Waldwick and 600 MW of re-delivery from PJM at the Hudson and Linden interface.

<sup>6</sup> 1,000 MW will also be included in the FTR simultaneous feasibility analysis.

## **Appendix 5 – Operation of the PARs**

### **General**

This procedure outlines the steps taken to coordinate tap changes on the PARs in order to control power flow on selected transmission lines between New York and New Jersey. The facilities are used to provide transmission service and to satisfy the 600/400 MW transactions, other third party uses, and to provide emergency assistance as required. These tie-lines are part of the interconnection between the PJM and NYISO. These PAR operations will be coordinated with the operation of other PAR facilities including the 5018 PARs. The 5018 PAR will be operated taking into account this Operating Protocol. The ties are controlled by PARs at the following locations:

- Waldwick (F-2258, E-2257, O-2267)
- Goethals (A-2253)
- Farragut (C-3403, B-3402)

This appendix addresses the operation of the PARs at Waldwick, Goethals, and Farragut as these primarily impact the delivery associated with the 600/400 MW transactions .

PJM and the NYISO will work together to maintain reliable system operation, and to implement the RTMDF within the bandwidths established by this Operating Protocol while endeavoring to minimize the tap changes necessary to implement these contracts.

RTMDF calculations will be made for the ‘ABC Interface’, and the ‘JK Interface’. Desired line flow calculations will be made for A, B, and C lines (initial assumption is balanced each 1/3 of the ABC Interface), and for the J and K lines (initial assumption is balanced each ½ of the JK Interface).

### **Normal Operations**

The desired flow calculation process is a coordinated effort between PJM and the NYISO. PJM and the NYISO have the responsibility to direct the operation of the PARs to ensure compliance with the requirements of the Operating Protocol. However, one of the objectives of this procedure is to minimize the movement of PARs while implementing the 600/400 MW transactions. PJM and the NYISO will employ a +/- 100 MW bandwidth at each of the ABC and JK Interfaces to ensure that actual flows are maintained at acceptable levels.

PJM and the NYISO have operational control of the PARs and direct the operation of the PARs, while PSE&G and ConEd have physical control of the PARs. The ConEd dispatcher sets the PAR taps at Goethals and Farragut at the direction of the NYISO. The PSE&G dispatchers set the PAR taps at Waldwick at the direction of PJM.



Tap movements shall be limited to 400 per month based on 20 operations (per PAR) in a 24-hour period. If, in attempting to maintain the desired bandwidth, tap movements exceed these limits, then the bandwidth shall be increased in 50 MW increments until the tap movements no longer exceed 20 per day, unless PJM and the NYISO agree otherwise.

### **Emergency Operations**

If an emergency condition exists in either the NYISO or PJM, the NYISO dispatcher or PJM dispatcher may request that the ties between New York and New Jersey be adjusted to assist directing power flows in the respective areas to alleviate the emergency situation. The taps on the PARs at Waldwick, Goethals, and Farragut may be moved either in tandem or individually as needed to mitigate the emergency condition. Responding to emergency conditions in either the NYISO or PJM overrides any requirements of this Operating Protocol and the appendices hereto.

### **PAR Movement Scenarios**

*Case 1* — Aggregate actual flow on the JK interface (at Waldwick) or the ABC interface (at Farragut and Goethals) is higher or lower than RTMDF, but within the bandwidth.

No action taken. Flows will continue to be monitored, but action will only be taken if the flows get above or below the bandwidth.

*Case 2* — Aggregate actual flow on the JK interface (at Waldwick) or the ABC interface (at Farragut and Goethals) is higher or lower than the RTMDF, and outside the bandwidth.

PJM and the NYISO will coordinate the following procedures:

- PJM shall determine the Waldwick PAR tap change(s) that change the aggregate actual flow to be within the bandwidth, considering the impact that the proposed tap changes have on the NYISO. If the PJM analysis indicates that the tap changes can be made without causing an actual or contingency constraint in the NYISO that would result in NYISO off-cost operation, PJM will inform the NYISO of the proposed PAR moves, obtain the NYISO's concurrence, and direct PSE&G to implement the PAR tap changes.
- The NYISO shall determine the Farragut and Goethals PAR tap change(s) that change the aggregate actual flow to be within the bandwidth, considering the impact that the proposed tap changes have on PJM. If the NYISO analysis indicates that the tap changes can be made without an actual or contingency constraint in PJM that would result in PJM off-cost operation, the NYISO will inform PJM of the proposed PAR moves, obtain PJM concurrence, and direct ConEd to implement the PAR tap changes.

- If the ABC actual interface flows cannot be maintained within the interface desired flow range due to the following system conditions: (1) insufficient PAR angle capability resulting from any of the A, B, C, J, or K PARs being at their maximum tap setting, and (2) PJM's inability to redispatch in response to transmission constraints to support ABC deliveries to New York, then PJM and the NYISO shall consider using other available facilities, including the other PARs, to create flow capability to permit the necessary tap changes to bring the actual flow within the tolerances of the desired flow calculation, provided that this can be done without creating additional redispatch costs in either the NYISO or PJM. If after such actions have been taken, including the use of other facilities, and ABC/JK actual interface flows still cannot be maintained within the interface desired flow range, then an adjustment to the desired flow calculation (a desired flow offset, with the amount agreed to by PJM and the NYISO) shall be made such that both the ABC and JK actual interface flows are within +/- 100 MW of the ABC and JK interface RTMDF respectively.
- If the JK actual interface flows cannot be maintained within the interface desired flow range due to the following system conditions: (1) insufficient PAR angle capability resulting from any of the A, B, C, J, or K PARs being at their maximum tap setting, and (2) the NYISO's inability to re-dispatch in response to transmission constraints to support JK deliveries to PJM then PJM and NYISO shall consider using other available facilities, including the other PARs to create flow capability to permit the necessary tap changes to bring the actual flow within the tolerances of the desired flow calculation, provided that this can be done without creating additional redispatch costs in either the NYISO or PJM. If after such actions have been taken, including the use of other facilities, and ABC/JK actual interface flows still cannot be maintained within the interface desired flow range, then an adjustment to the desired flow calculation (a desired flow offset, with the amount agreed to by PJM and NYISO) shall be made such that both the ABC and JK actual interface flows are within +/- 100 MW of the ABC and JK interface RTMDF respectively.

**Case 3** — If PJM or NYISO analysis reveals that future system conditions (within the next several hours) may reasonably be expected to require that a PAR will need to change by more than 3 taps in order to remain within the bandwidth, then PJM and NYISO shall consider pre-positioning the system to address these future conditions. Both PJM and the NYISO must agree to any decision to re-position the taps to address expected future conditions.

PJM and the NYISO will coordinate with each other and may mutually agree to position the respective PARs on each system to be within two tap changes in anticipation of changes to

RTMDF for the next several hours to ensure that the PARs are positioned such that they are able to meet the anticipated RTMDF.

## **Appendix 6 – Distribution of Flows Associated with Implementation of Day-Ahead and Real Time Market Desired Flows**

In general, the ability to maintain the ABC / JK actual interface flows at their corresponding ABC/JK Day-Ahead and Real Time Market Desired Flow (RTMDF) values should not be impacted by individual line flow constraints. The Operating Protocol will ordinarily be considered satisfied if the ABC/JK actual interface flows are each equal to the desired flow values plus or minus the 100 MW bandwidth.

The initial estimate of individual line flow distribution for the ABC / JK interfaces shall be based on an equal flow assumption among the lines comprising the interface. Under outage conditions of the A, B, C, J, or K lines, the initial estimate of individual line flow distribution shall be based on an assumption that flows should be equalized among those remaining lines comprising the interface. Further, the ISOs shall adjust (from RTMDF) the flow distribution for ABC (move flow from the A line to the B and C lines) upon the NYISO's request, provided that the adjustment shall not exceed 125 MW if PJM is off-cost or is expected to be off-cost. Con Ed shall not be responsible for balancing charges resulting from changes in the individual line flow distribution between the PJM Day-Ahead and Real-Time Markets.

For example:

If the ABC interface RTMDF is 900 MW, then the initial estimate of line flow on A is  $1/3 * 900=300$  MW, B is  $1/3 * 900=300$  MW, and C is  $1/3 * 900=300$  MW.

If the J, K interface RTMDF is 900 MW, then the initial estimate of line flow on J is  $1/2 * 900=450$  MW, K is  $1/2 * 900=450$  MW.

However, if the ABC/JK actual interface flows cannot be maintained within the 100 MW bandwidth of desired flows due to the following system conditions: 1) insufficient PAR angle capability and an inability to redispatch in response to transmission constraints in PJM; or 2) upon implementing a NYISO request to adjust the distribution of flow on the A line (move flow from the A line to the B and C lines) in excess of 125 MW as described above, then the actual ABC and/or JK interface flow shall be adjusted to be as close as feasible to the interface desired flow values for each of the JK and ABC interfaces.

For example:

Assume the ABC interface RTMDF = 900 MW, then the initial estimate of line flow on A is  $1/3 * 900=300$  MW, B is  $1/3 * 900=300$  MW, and C is  $1/3 * 900=300$  MW. Further assume that the NYISO requests that the distribution of flow over the A line be limited to 100 MW, then the resulting system conditions are an actual ABC interface flow of 825 MW with individual PAR flows of A=100 MW, B=362.5 MW, C=362.5 MW.

In this example, the actual ABC interface flow is as close as feasible to the ABC RTMDF assuming off-cost operation in the PJM area and the NYISO request that the distribution of flow over the A line be limited to 100 MW, which is in excess of the 125 MW distribution adjustment (300 MW-100 MW = 200 MW). PJM and the NYISO's obligations under this Operating Protocol will be deemed to be satisfied even though the ABC/JK actual interface flows are not equal to the RTMDF plus or minus the 100 MW bandwidth.

## Appendix 7 – References

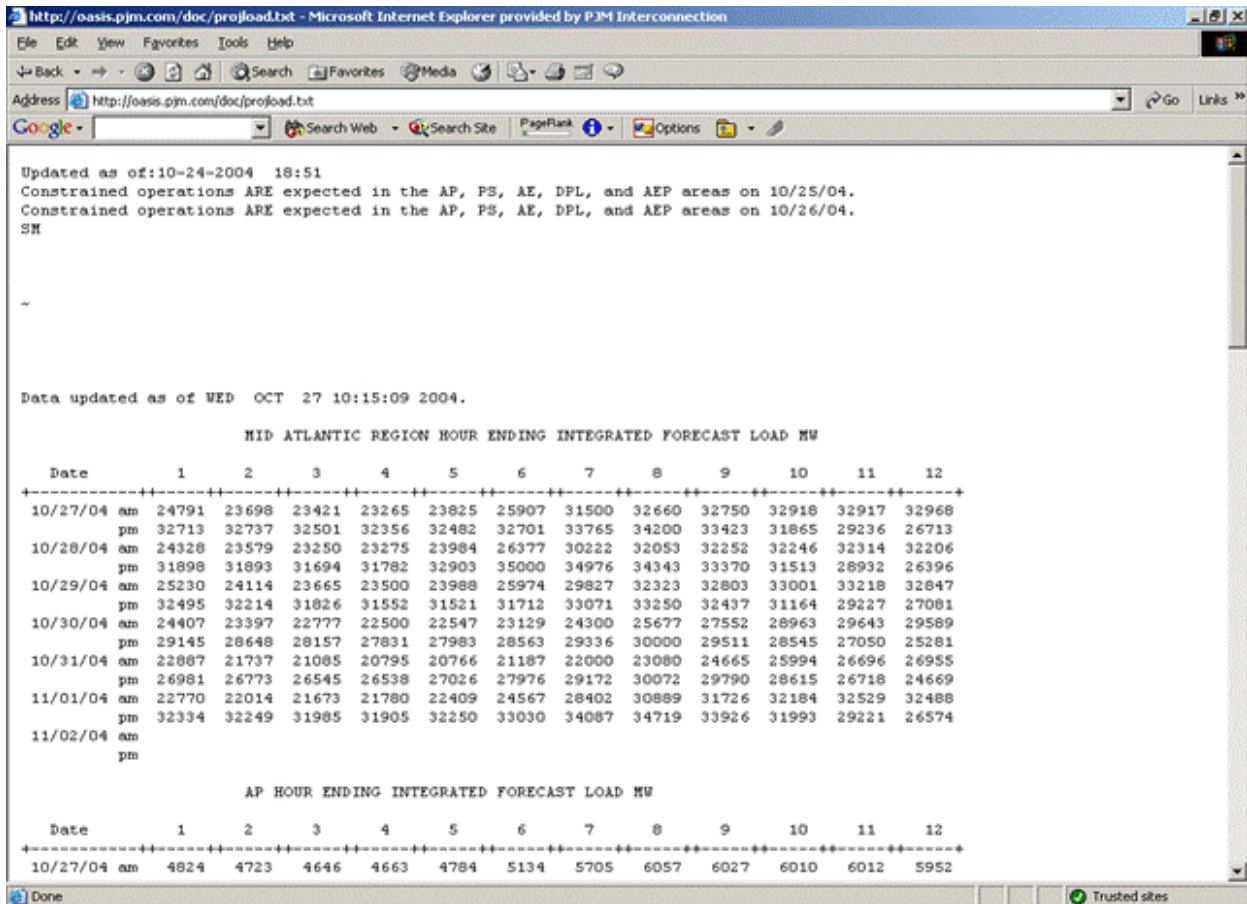


Figure 1 - PJM Constraints

**NYISO**  
New York Independent System Operator

NEWSROOM SERVICES **OASIS** THE MARKETS

**OASIS** (Open Access Same-Time Information System)

**Pricing Data** Power Grid Data Load Data Reports & Information Zone Maps Graphs Market Applications SMD2

**Day-Ahead Market LBMP**

- > [Zonal](#)
- > [Generator](#)

**Real-Time Market LBMP**

- > [Zonal](#)
- > [Generator](#)

**Time Weighted Integrated Real-Time LBMP**

- > [Zonal](#)
- > [Generator](#)

**Balancing Market (Hour-Ahead) Advisory Prices**

- > [Zonal](#)
- > [Generator](#)

**Ancillary Services**

- > [Day-Ahead Market](#)
- > [Hour-Ahead Market](#)
- > [Reference BUS LBMP](#)
- > [Price Correction Logs](#)
- > [TO, TSC and NTAC Rates \(revised 10/15/2004\)](#)
- > [RT LBMP Prices on e-Data Services](#)
- > [TSC Calculator](#)

**Day Ahead Market LBMP - Zonal**

**Note 1:** Dates with corrected prices are displayed with **green links**. Updates for both missing data and presentation are displayed with an **orange link**.

**Note 2:** Updated historical LBMPs have been posted in the archived files section. An [explanation of the issues involved](#) and a [list of the intervals](#) that have been updated are available for download.

| CSV Files                  | HTML Files                 | PDF Files                  | Last Updated       |
|----------------------------|----------------------------|----------------------------|--------------------|
| <a href="#">10-28-2004</a> | <a href="#">10-28-2004</a> | <a href="#">10-28-2004</a> | 10/27/04 10:17 EDT |
| <a href="#">10-27-2004</a> | <a href="#">10-27-2004</a> | <a href="#">10-27-2004</a> | 10/26/04 10:21 EDT |
| <a href="#">10-26-2004</a> | <a href="#">10-26-2004</a> | <a href="#">10-26-2004</a> | 10/25/04 10:04 EDT |
| <a href="#">10-25-2004</a> | <a href="#">10-25-2004</a> | <a href="#">10-25-2004</a> | 10/24/04 10:55 EDT |
| <a href="#">10-24-2004</a> | <a href="#">10-24-2004</a> | <a href="#">10-24-2004</a> | 10/23/04 10:05 EDT |
| <a href="#">10-23-2004</a> | <a href="#">10-23-2004</a> | <a href="#">10-23-2004</a> | 10/22/04 10:06 EDT |
| <a href="#">10-22-2004</a> | <a href="#">10-22-2004</a> | <a href="#">10-22-2004</a> | 10/21/04 10:09 EDT |

Figure 2 - NYISO Day Ahead Results

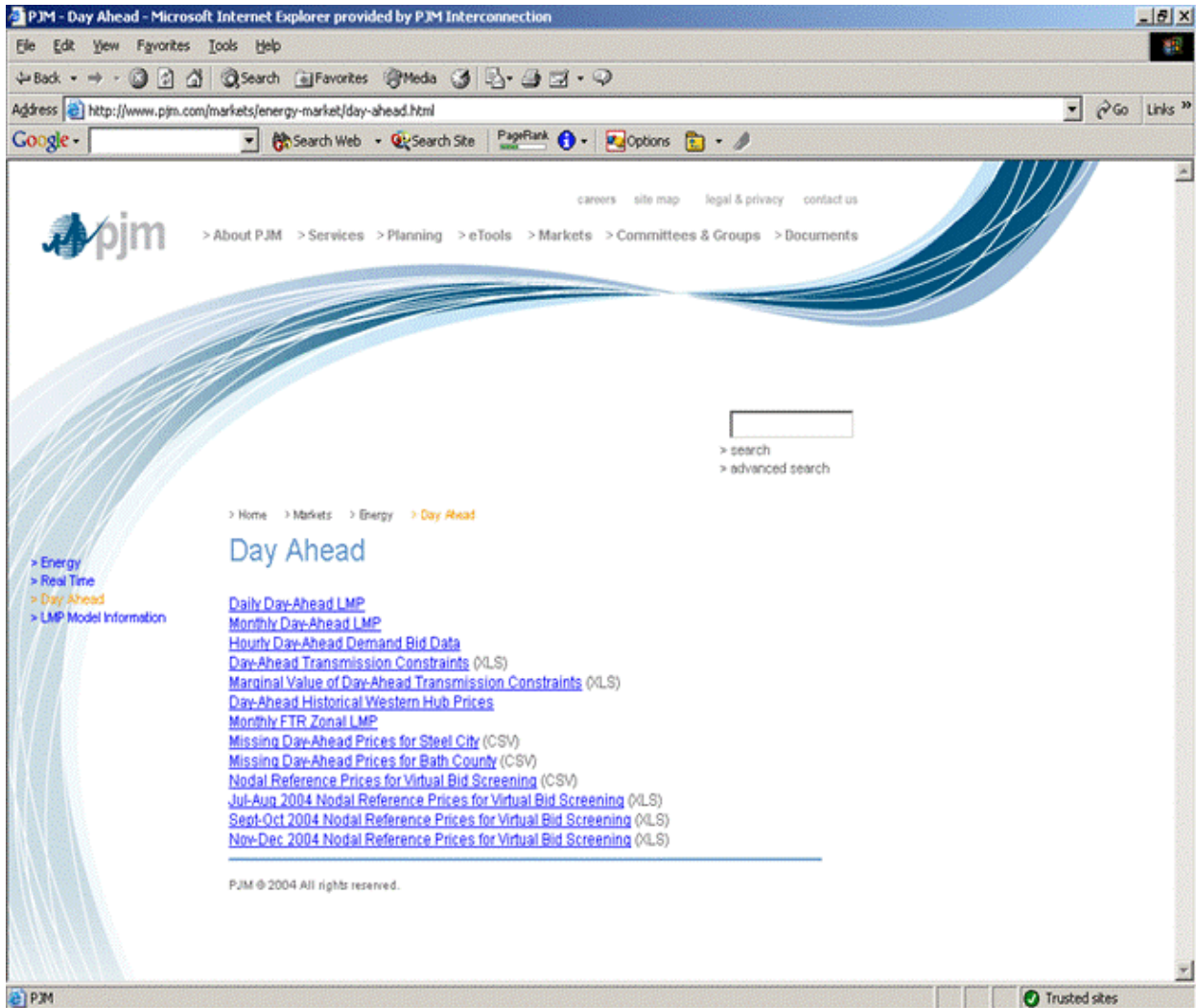


Figure 3 - PJM Day Ahead Market Results



## **Appendix 8 – Definitions**

**Off-cost:** the weighted LMP of JK is less than the weighted LMP of ABC by more than \$5 and/or the weighted nodal pricing of Ramapo is less than the weighted nodal pricing of the aggregate of Farragut and Goethals by more than \$5 (with a reasonable expectation of the appropriate cost differential continuing for at least two consecutive hours).

**Mid-Atlantic Area:** Atlantic City Electric Company, Baltimore Gas and Electric Company, Delmarva Power and Light Company, Jersey Central Power and Light Company, Metropolitan Edison Company, PECO Energy Company, PPL Electric Utilities Corporation, Pennsylvania Electric Company, Potomac Electric Power Company, Public Service Electric and Gas Company, and Rockland Electric Company.

**New York ISO Day Ahead Election (NY-DAE):** election by ConEd – submitted in the NYISO Day-Ahead Market prior to 5 a.m..

**NY Desired Flow (NYDF):** desired flow calculation by NYISO based on NY-DAE for input to NYISO Day Ahead Market.

**PJM Day Ahead Market Election (PJM-DAE):** election by the ConEd – submitted in the PJM Day Ahead Market prior to 12 noon.

**PJM Desired Flow (PJMDF):** desired flow calculation by PJM based on PJM-DAE for input to PJM Day Ahead Market.

**ConEd Real-Time election (RTE):** option by ConEd to request Real-Time Market modification from its Day Ahead Market election.

**Real Time Market Desired Flow (RTMDF):** Desired flow for real time operations.

**Impairments:** Conditions determined during the NYISO's and PJM's respective planning analyses that will cause implementation of the 600/400 MW transactions to result in violations of established reliability criteria.

**Emergency Load Response:** Emergency Load Response is the reduction of a load by participants in the PJM Emergency Load Response Program in response to a request by PJM for load reduction following the declaration of Maximum Emergency Generation.

**Pricing points:** aggregate nodal points for the ABC interface and JK interface at the respective locations in both PJM and NYISO regions. These points will be defined and posted.

**35.23      Schedule D – Market-to-Market Coordination Process – Version 1.0**

**NYISO & PJM**  
**Market-to-Market Coordination Schedule**  
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- 3 M2M Flowgate Studies
- 4 Removal of M2M Flowgates
- 5 Market Flow Determination
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  - 5.2 Compute RTO Load Served by RTO Generation
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## **1 Overview of the Market-to-Market Coordination Process**

The purpose of the M2M coordination process is to set forth the rules that apply to M2M coordination between PJM and NYISO and the associated settlements processes.

The fundamental philosophy of the PJM/NYISO M2M coordination process is to set up procedures to allow any transmission constraints that are significantly impacted by generation dispatch changes and/or Phase Angle Regulator (“PAR”) control actions in both markets to be jointly managed in the security-constrained economic dispatch models of both RTOs. This joint management of transmission constraints near the market borders will provide the more efficient and lower cost transmission congestion management solution, while providing coordinated pricing at the market boundaries.

The M2M coordination process focuses on real-time market coordination to manage transmission limitations that occur on the M2M Flowgates in a more cost effective manner. Coordination between NYISO and PJM will include not only joint redispatch, but will also incorporate coordinated operation of the Ramapo PARs that are located at the NYISO – PJM interface. This real-time coordination will result in a more efficient economic dispatch solution across both markets to manage the real-time transmission constraints that impact both markets, focusing on the actual flows in real-time to manage constraints. Under this approach, the flow entitlements on the M2M Flowgates do not impact the physical dispatch; the flow entitlements are used in market settlements to ensure appropriate compensation based on comparison of the actual Market Flows to the flow entitlements.

## **2 M2M Flowgates**

Only a subset of all transmission constraints that exist in either market will require coordinated congestion management. This subset of transmission constraints will be identified as M2M Flowgates. Flowgates eligible for the M2M coordination process are called M2M Flowgates. For the purposes of the M2M coordination process (in addition to the studies described in section 3 below) the following will be used in determining M2M Flowgates.

- 2.1 NYISO and PJM will only be performing the M2M coordination process on M2M Flowgates that are under the operational control of NYISO or PJM. NYISO and PJM will not be performing the M2M coordination process on Flowgates that are owned and controlled by third party entities.
- 2.2 The Parties will make reasonable efforts to lower their generator binding threshold to match the lower generator binding threshold utilized by the other Party. The generator and Ramapo PAR binding thresholds (the shift factor thresholds used to identify the resource(s) available to relieve a transmission constraint), will not be set below 3%, except by mutual consent. This requirement applies to M2M Flowgates. It is not an additional criterion for determination of M2M Flowgates.

- 2.3 For the purpose of determining whether a monitored element Flowgate is eligible for the M2M coordination process, a threshold for determining a significant GLDF or Ramapo PSF will take into account the number of monitored elements. Implementation of M2M Flowgates will ordinarily occur through mutual agreement.
- 2.4 All Flowgates eligible for M2M coordination will be included in the coordinated operations of the Ramapo PARs. Flowgates with significant GLDF will also be included in joint redispatch.
- 2.5 M2M Flowgates that are eligible for redispatch coordination are also eligible for coordinated operation of the Ramapo PARs. M2M Flowgates that are eligible for coordinated operation of the Ramapo PARs are not necessarily also eligible for redispatch coordination.
- 2.6 The NYISO shall post a list of all of the M2M Flowgates located in the NYCA on its web site. PJM shall post a list of all of the M2M Flowgates located in its Control Area on its web site.

### **3 M2M Flowgate Studies**

To identify M2M Flowgates the Parties will perform an off-line study to determine if the significant GLDF for at least one generator within the Non-Monitoring RTO, or significant PSF for at least one Ramapo PAR, on a potential M2M Flowgate within the Monitoring RTO is greater than or equal to the thresholds as described below. The study shall be based on an up-to-date power flow model representation of the Eastern Interconnection, with all normally closed Transmission Facilities in-service. The transmission modeling assumptions used in the M2M Flowgate studies will be based on the same assumptions used for determining M2M Entitlements in Section 6 below.

- 3.1 Either Party may propose that a new M2M Flowgate be added at any time. The Parties will work together to perform the necessary studies within a reasonable timeframe.
- 3.2 The GLDF or Ramapo PSF thresholds for M2M Flowgates with one or more monitored elements are defined as:
  - i. Single monitored element, 5% GLDF/Ramapo PSF;
  - ii. Two monitored elements, 7.5% GLDF/Ramapo PSF; and
  - iii. Three or more monitored elements, 10% GLDF/Ramapo PSF.

3.3 For potential M2M Flowgates that pass the above Ramapo PSF criteria, the Parties must still mutually agree to add each Flowgate as an M2M Flowgate for coordinated operation of the Ramapo PARs.

3.4 For potential M2M Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate as an M2M Flowgate for redispatch coordination.

3.5 The Parties can also mutually agree to add a M2M Flowgate that does not satisfy the above criteria.

#### **4 Removal of M2M Flowgates**

Removal of M2M Flowgates from the systems may be necessary under certain conditions including the following:

4.1 A M2M Flowgate is no longer valid when (a) a change is implemented that effects either Party's generation impacts causing the Flowgate to no longer pass the M2M Flowgate Studies, or (b) a change is implemented that affects the impacts from coordinated operation of the Ramapo PARs causing the Flowgate to no longer pass the M2M Flowgate Studies. The Parties must still mutually agree to remove a M2M Flowgate, such agreement not to be unreasonably withheld. Once a M2M Flowgate has been removed, it will no longer be eligible for M2M settlement.

4.2 A M2M Flowgate that does not satisfy the criteria set forth in Section 3.2 above, but that is created based on the mutual agreement of the Parties pursuant to Section 3.5 above, shall be removed two weeks after either Party provides a formal notice to the other Party that it withdraws its agreement to the M2M Flowgate, or at a later or earlier date that the Parties mutually agree upon. The formal notice must include an explanation of the reason(s) why the agreement to the M2M Flowgate was withdrawn.

4.3 The Parties can mutually agree to remove a M2M Flowgate from the M2M coordination process whether or not it passes the coordination tests. A M2M Flowgate should be removed when the Parties agree that the M2M coordination process is not, or will not be, an effective mechanism to manage congestion on that Flowgate.

#### **5 Market Flow Determination**

Each RTO will independently calculate its Market Flow for all M2M Flowgates using the equations set forth in this section. The Market Flow calculation is broken down into the following steps:

- Determine Shift Factors for M2M Flowgates

- Compute RTO Load and Losses (less imports)
- Compute RTO Generation (less exports)
- Compute RTO Generation to Load impacts on the Market Flow
- Compute RTO interchange scheduling impacts on the Market Flow
- Compute PAR impacts on the Market Flow
- Compute Market Flow

### 5.1 Determine Shift Factors for M2M Flowgates

The first step to determining the Market Flow on a M2M Flowgate is to calculate generator, load and PAR shift factors for the each of the M2M Flowgates. For real-time M2M coordination, the shift factors will be based on the real-time transmission system topology.

### 5.2 Compute RTO Load Served by RTO Generation

Using area load and losses for each load zone, compute the RTO Load, in MWs, by summing the load and losses for each load zone to determine the total zonal load for each RTO load zone. Twenty percent of RECo load shall be included in the Market Flow calculation as PJM load. *See* Section 6.2, below.

$$Zonal\_Total\_Load_{zone} = Load_{zone} + Losses_{zone}, \text{ for each RTO load zone}$$

Where:

zone = the relevant RTO load zone;

Zonal\_Total\_Load<sub>zone</sub> = the sum of the RTO's load and transmission losses for the zone;

Load<sub>zone</sub> = the load within the zone; and

Losses<sub>zone</sub> = the transmission losses for transfers through the zone.

Next, reduce the Zonal Loads by the scheduled line real-time import transaction schedules that sink in that particular load zone:



$$\begin{aligned}
Zonal\_Reduced\_Load_{zone} &= Zonal\_Total\_Load_{zone} \\
&- \sum_{\substack{all \\ scheduled\_lines=1}} Import\_Schedules_{scheduled\_line,zone}
\end{aligned}$$

Where:

- zone = the relevant RTO load zone;
- scheduled\_line = each of the Transmission Facilities identified in Table 1 below;
- Zonal\_Reduced\_Load<sub>zone</sub> = the sum of the RTO's load and transmission losses in a zone reduced by the sum of import schedules over scheduled lines to the zone;
- Zonal\_Total\_Load<sub>zone</sub> = the sum of the RTO's load and transmission losses for the zone; and
- Import\_Schedules<sub>Scheduled\_line,zone</sub> = import schedules over a scheduled line to a zone.

The real-time import schedules over scheduled lines will only reduce the load in the sink load zones identified in Table 1 below:

**Table 1. List of Scheduled Lines**

| Scheduled Line                     | NYISO Load Zone | PJM Load Zone             |
|------------------------------------|-----------------|---------------------------|
| Dennison Scheduled Line            | North           | Not Applicable            |
| Cross-Sound Scheduled Line         | Long Island     | Not Applicable            |
| Linden VFT Scheduled Line          | New York City   | Mid-Atlantic Control Zone |
| Neptune Scheduled Line             | Long Island     | Mid-Atlantic Control Zone |
| Northport – Norwalk Scheduled Line | Long Island     | Not Applicable            |

Once import schedules over scheduled lines have been accounted for, it is then appropriate to reduce the net RTO Load by the remaining real-time import schedules at the proxies identified in Table 2 below:

**Table 2. List of Proxies\***

| <b>Proxy</b>  | <b>Balancing Authorities Responsible</b> |
|---|--|
| PJM shall post and maintain a list of its proxies on its OASIS website. PJM shall provide to NYISO notice of any new or deleted proxies prior to implementing such changes in its M2M software.   | PJM                                      |
| NYISO proxies are the Proxy Generator Buses that are not identified as Scheduled Lines in the table that is set forth in Section 4.4.4 of the NYISO’s Market Services Tariff. The NYISO shall provide to PJM notice of any new of deleted proxies prior to implementing such changes in its M2M software. | NYISO                                    |

\*Scheduled lines and proxies are mutually exclusive. Transmission Facilities that are components of a scheduled line are not also components of a proxy (and vice-versa).

$$RTO\_Net\_Load = \sum_{zone=1}^{all} Zonal\_Reduced\_Load_{zone}$$

Where:

zone = the relevant RTO load zone;

RTO\_Net\_Load = the sum of load and transmission losses for the entire RTO footprint reduced by the sum of import schedules over all scheduled lines; and

Zonal\_Reduced\_Load<sub>zone</sub> = the sum of the RTO’s load and transmission losses in a zone reduced by the sum of import schedules over scheduled lines to the zone.

$$RTO\_Final\_Load = RTO\_Net\_Load - \sum_{proxy=1}^{all} Import\_Schedules_{proxy}$$

Where:

proxy = representations of defined sets of Transmission Facilities that (i) interconnect neighboring Balancing Authorities, (ii) are collectively scheduled, and (iii) are identified in Table 2 above;

RTO\_Final\_Load = the sum of the RTO's load and transmission losses for the entire RTO footprint, sequentially reduced by (i) the sum of import schedules over all scheduled lines, and (ii) the sum of all proxy import schedules;

RTO\_Net\_Load = the sum of load and transmission losses for the entire RTO footprint reduced by the sum of import schedules over all scheduled lines; and

Import\_Schedules<sub>proxy</sub> = the sum of import schedules at a given proxy.

Next, calculate the Zonal Load weighting factor for each RTO load zone:

$$Zonal\_Weighting_{zone} = \left( \frac{Zonal\_Reduced\_Load_{zone}}{RTO\_Net\_Load} \right)$$

Where:

zone = the relevant RTO load zone;

Zonal\_Weighting<sub>zone</sub> = the percentage of the RTO's load contained within the zone;

RTO\_Net\_Load = the sum of load and transmission losses for the entire RTO footprint reduced by the sum of import schedules over all scheduled lines; and

Zonal\_Reduced\_Load<sub>zone</sub> = the sum of the RTO's load and transmission losses in a zone reduced by the sum of import schedules over scheduled lines to the zone.

Using the Zonal Weighting Factor compute the zonal load reduced by RTO imports for each load zone:

$$Zonal\_Final\_Load_{zone} = Zonal\_Weighting_{zone} \times RTO\_Final\_Load$$

Where:

zone = the relevant RTO load zone;

Zonal\_Final\_Load<sub>zone</sub> = the final RTO load served by internal RTO generation in the zone;

Zonal\_Weighting<sub>zone</sub> = the percentage of the RTO’s load contained within the zone; and

RTO\_Final\_Load = the sum of the RTO’s load and transmission losses for the entire RTO footprint, sequentially reduced by (i) the sum of import schedules over all scheduled lines, and (ii) the sum of all proxy import schedules.

Using the Load Shift Factors (“LSFs”) calculated above, compute the weighted RTOLSF for each M2M Flowgate as:

$$RTO\_LSF_{M2M\_Flowgate-m} = \sum_{zone=1}^{all} \left( LSF_{(zone,M2M\_Flowgate-m)} \times \left( \frac{Zonal\_Final\_Load_{zone}}{RTO\_Final\_Load} \right) \right)$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

zone = the relevant RTO load zone;

RTO\_LSF<sub>M2M\_Flowgate-m</sub> = the load shift factor for the entire RTO footprint on M2M Flowgate m;

LSF<sub>(zone,M2M\_Flowgate-m)</sub> = the load shift factor for the RTO zone on M2M Flowgate m;

Zonal\_Final\_Load<sub>zone</sub> = the final RTO load served by internal RTO generation in the zone; and

RTO\_Final\_Load = the sum of the RTO’s load and transmission losses for the entire RTO footprint, sequentially reduced by (i) the sum of import schedules over all scheduled lines, and (ii) the sum of all proxy import schedules.

### 5.3 Compute RTO Generation Serving RTO Load

Using the real-time generation output in MWs, compute the Generation serving RTO Load. Sum the output of RTO generation within each load zone:

$$RTO\_Gen_{zone} = \sum_{unit=1}^{all} Gen_{unit,zone}, \text{ for each RTO load zone}$$

Where:

zone = the relevant RTO load zone;

unit = the relevant generator;

$RTO\_Gen_{zone}$  = the sum of the RTO's generation in a zone; and

$Gen_{unit,zone}$  = the real-time output of the unit in a given zone.

Next, reduce the RTO generation located within a load zone by the scheduled line real-time export transaction schedules that source from that particular load zone:

$$RTO\_Reduced\_Gen_{zone} = RTO\_Gen_{zone} - \sum_{scheduled\_line=1}^{all} Export\_Schedules_{scheduled\_line,zone}$$

Where:

zone = the relevant RTO load zone;

scheduled\_line = each of the Transmission Facilities identified in Table 1 above;

$RTO\_Reduced\_Gen_{zone}$  = the sum of the RTO's generation in a zone reduced by the sum of export schedules over scheduled lines from the zone;

$RTO\_Gen_{zone}$  = the sum of the RTO's generation in a zone; and

$Export\_Schedules_{scheduled\_line,zone}$  = export schedules from a zone over a scheduled line.

The real-time export schedules over scheduled lines will only reduce the generation in the source zones identified in Table 1 above. The resulting generator output based on this reduction is defined below.

$$Reduced\ Gen_{unit} = Gen_{unit,zone} \left( \frac{RTO\_Reduced\_Gen_{zone}}{RTO\_Gen_{zone}} \right)$$

Where:

unit = the relevant generator;

zone = the relevant RTO load zone;

$Gen_{unit,zone}$  = the real-time output of the unit in a given zone;

Reduced  $Gen_{unit}$  = each unit's real-time output after reducing the  $RTO\_Net\_Gen$  by the real-time export schedules over scheduled lines;

$RTO\_Reduced\_Gen_{zone} =$  the sum of the RTO's generation in a zone reduced by the sum of export schedules over scheduled lines from the zone; and

$RTO\_Gen_{zone} =$  the sum of the RTO's generation in a zone.

Once export schedules over scheduled lines are accounted for, it is then appropriate to reduce the net RTO generation by the remaining real-time export schedules at the proxies identified in Table 2 above.

$$RTO\_Net\_Gen = \sum_{zone=1}^{all} RTO\_Reduced\_Gen_{zone}$$

Where:

$zone =$  the relevant RTO load zone;

$RTO\_Net\_Gen =$  the sum of the RTO's generation reduced by the sum of export schedules over all scheduled lines; and

$RTO\_Reduced\_Gen_{zone} =$  the sum of the RTO's generation in a zone reduced by the sum of export schedules over scheduled lines from the zone.

$$RTO\_Final\_Gen = RTO\_Net\_Gen - \sum_{proxy=1}^{all} Export\_Schedules_{proxy}$$

Where:

$proxy =$  representation of defined sets of Transmission Facilities that (i) interconnect neighboring Balancing Authorities, (ii) are collectively scheduled, and (iii) are identified in Table 2 above;

$RTO\_Final\_Gen =$  the sum of the RTO's generation output for the entire RTO footprint, sequentially reduced by (i) the sum of export schedules over all scheduled lines, and (ii) the sum of all proxy export schedules;

RTO\_Net\_Gen = the sum of the RTO's generation reduced by the sum of export schedules over all scheduled lines; and

Export\_Schedules<sub>proxy</sub> = the sum of export schedules at a given proxy.

Finally, weight each generator's output by the reduced RTO generation:

$$Gen\_Final_{unit} = Reduced\ Gen_{unit} \times \frac{RTO\_Final\_Gen}{RTO\_Net\_Gen}$$

Where:

unit = the relevant generator;

Gen\_Final<sub>unit</sub> = the portion of each unit's output that is serving the RTO Net Load;

Reduced Gen<sub>unit</sub> = each unit's real-time output after reducing the RTO\_Net\_Gen by the real-time export schedules over scheduled lines;

RTO\_Final\_Gen = the sum of the RTO's generation output for the entire RTO footprint, sequentially reduced by (i) the sum of export schedules over all scheduled lines, and (ii) the sum of all proxy export schedules; and

RTO\_Net\_Gen = the sum of the RTO's generation reduced by the sum of export schedules over all scheduled lines.

#### **5.4 Compute the RTO GTL for all M2M Flowgates**

The generation-to-load flow for a particular M2M Flowgate, in MWs, will be determined as:

$$RTO\_GTL_{M2M\_Flowgate-m} = \sum_{unit=1}^{all} (GSF_{(unit,M2M\_Flowgate-m)} - RTO\_LSF_{M2M\_Flowgate-m}) \times Gen\_Final_{unit}$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

unit = the relevant generator;

$RTO\_GTL_{M2M\_Flowgate-m}$  = the generation to load flow for the entire RTO footprint on M2M Flowgate m;

$Gen\_Final_{unit}$  = the portion of each unit’s output that is serving RTO Net Load;

$GSF_{(unit,M2M\_Flowgate-m)}$  = the generator shift factor for each unit on M2M Flowgate m; and

$RTO\_LSF_{M2M\_Flowgate-m}$  = the load shift factor for the entire RTO footprint on M2M Flowgate m.

**5.5 Compute the RTO Interchange Scheduling Impacts for all M2M Flowgates**

For each scheduling point that the participating RTO is responsible for, determine the net interchange schedule in MWs. Table 3 below identifies both the participating RTO that is responsible for each listed scheduling point, and the “type” assigned to each listed scheduling point.

**Table 3. List of Scheduling Points**

| Scheduling Point  | Scheduling Point Type | Participating RTO(s) Responsible |
|---|-----------------------|----------------------------------|
| NYISO-PJM   | common                | NYISO and PJM                    |
| Linden VFT Scheduled Line   | common                | NYISO and PJM                    |
| Neptune Scheduled Line  | common                | NYISO and PJM                    |
| PJM shall post and maintain a list of its non-common scheduling points on its OASIS website. PJM shall provide to NYISO notice of any new or deleted non-common scheduling points prior to implementing such changes in its M2M software.   | non-common            | PJM                              |
| NYISO non-common scheduling points include all Proxy Generator Buses and Scheduled Lines listed in the table that is set forth in Section 4.4.4 of the NYISO’s Market Services Tariff that are not identified in this Table 3 as common scheduling points. The NYISO shall provide to PJM notice of any new or deleted non-common scheduling points prior to implementing such changes in its M2M software. | non-common            | NYISO                            |



$$\begin{aligned}
RTO\_Transfers_{sched\_pt} &= Imports_{sched\_pt} + WheelsIn_{sched\_pt} - Exports_{sched\_pt} \\
&\quad - WheelsOut_{sched\_pt}
\end{aligned}$$

Where:

$sched\_pt$  = the relevant scheduling point. A scheduling point can be either a proxy or a scheduled line;

$RTO\_Transfers_{sched\_pt}$  = the net interchange schedule at a scheduling point;

$Imports_{sched\_pt}$  = the import component of the interchange schedule at a scheduling point;

$WheelsIn_{sched\_pt}$  = the injection of wheels-through component of the interchange schedule at a scheduling point;

$Exports_{sched\_pt}$  = the export component of the interchange schedule at a scheduling point; and

$WheelsOut_{sched\_pt}$  = the withdrawal of wheels-through component of the interchange schedule at a scheduling point.

The equation below applies to all non-common scheduling points that only one of the participating RTOs is responsible for. *Parallel\_Transfers* are applied to the Market Flow of the responsible participating RTO. For example, the *Parallel\_Transfers* computed for the IESO-NYISO non-common scheduling point are applied to the NYISO Market Flow.

$$\begin{aligned}
Parallel\_Transfers_{M2M\_Flowgate-m} &= \sum_{nc\_sched\_pt=1}^{all} RTO\_Transfers_{nc\_sched\_pt} \times PTDF_{(nc\_sched\_pt, M2M\_Flowgate-m)}
\end{aligned}$$

Where:

$M2M\_Flowgate-m$  = the relevant flowgate;

$nc\_sched\_pt$  = the relevant non-common scheduling point. A non-common scheduling point can be either a proxy or a scheduled line. Non-common scheduling points are identified in Table 3, above;

$Parallel\_Transfers_{M2M\_Flowgate-m} =$  the flow on M2M Flowgate m due to the net interchange schedule at the non-common scheduling point;

$RTO\_Transfers_{nc\_sched\_pt} =$  the net interchange schedule at the non-common scheduling point, where a positive number indicates the import direction; and

$PTDF_{(nc\_sched\_pt, M2M\_Flowgate-m)} =$  the power transfer distribution factor of the non-common scheduling point on M2M Flowgate m. For NYISO, the PTDF will equal the generator shift factor of the non-common scheduling point.

The equation below applies to common scheduling points that directly interconnect the participating RTOs. *Shared\_Transfers* are applied to the Monitoring RTO's Market Flow only. NYISO to PJM transfers would be considered part of NYISO's Market Flow for NYISO-monitored Flowgates and part of PJM's Market Flow for PJM-monitored Flowgates.

$$Shared\_Transfers_{M2M\_Flowgate-m} = \sum_{cmn\_sched\_pt=1}^{all} RTO\_Transfers_{cmn\_sched\_pt} \times PTDF_{(cmn\_sched\_pt, M2M\_Flowgate-m)}$$

Where:

$M2M\_Flowgate-m =$  the relevant flowgate;

$cmn\_sched\_pt =$  the relevant common scheduling point. A common scheduling point can be either a proxy or a scheduled line. Common scheduling points are identified in Table 3, above;

$Shared\_Transfers_{M2M\_Flowgate-m} =$  the flow on M2M Flowgate m due to interchange schedules on the common scheduling point;

$RTO\_Transfers_{cmn\_sched\_pt} =$  the net interchange schedule at a common scheduling point, where a positive number indicates the import direction; and

$PTDF_{(cmn\_sched\_pt, M2M\_Flowgate-m)} =$  the generation shift factor of the common scheduling point on M2M Flowgate m. For NYISO, the PTDF will equal the generator shift factor of the common scheduling point.

## 5.6 Compute the PAR Effects for all M2M Flowgates

For the PARs listed in Table 4 below, the RTOs will determine the generation-to-load flows and interchange schedules, in MWs, that each PAR is impacting.

**Table 4. List of Phase Angle Regulators**

| PAR | Description    | PAR Type   | Actual Schedule | Target Schedule             | Responsible Participating RTO(s) |
|-----|----------------|------------|-----------------|-----------------------------|----------------------------------|
| 1   | RAMAPO PAR3500 | common     | From telemetry  | From telemetry*             | NYISO and PJM                    |
| 2   | RAMAPO PAR4500 | common     | From telemetry  | From telemetry*             | NYISO and PJM                    |
| 3   | FARRAGUT TR11  | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 4   | FARRAGUT TR12  | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 5   | GOETHSLN BK_1N | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 6   | WALDWICK O2267 | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 7   | WALDWICK F2258 | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 8   | WALDWICK E2257 | common     | From telemetry  | From telemetry <sup>†</sup> | NYISO and PJM                    |
| 9   | STLAWRNC PS_33 | non-common | From telemetry  | 0                           | NYISO                            |
| 10  | STLAWRNC PS_34 | non-common | From telemetry  | 0                           | NYISO                            |

\*Pursuant to the rules for implementing the M2M coordination process over the Ramapo PARs that are set forth in this M2M Schedule.

<sup>†</sup>Consistent with Schedule C to the Joint Operating Agreement between the Parties.

Compute the PAR control as the actual flow less the target flow across each PAR:

$$PAR\_Control_{par} = Actual\_MW_{par} - Target\_MW_{par}$$

Where:

par = each of the phase angle regulators listed in Table 4, above;

PAR\_Control<sub>par</sub> = the flow deviation on each of the PARs;

Actual\_MW<sub>par</sub> = the actual flow on each of the PARs, determined consistent with Table 4 above; and

Target\_MW<sub>par</sub> = the target flow that each of the PARs should be achieving, determined in accordance with Table 4 above.

When the Actual\_MW and Target\_MW are both set to “From telemetry” in Table 4 above, the *PAR\_Control* will equal zero.

### **Common PARs**

In the equations below, the Non-Monitoring RTO is credited for or responsible for *PAR\_Impact* resulting from the common PAR effect on the Monitoring RTO’s M2M Flowgates. The common PAR impact calculation only applies to the common PARs identified in Table 4 above.

Compute control deviation for all common PARs on M2M Flowgate m based on the  $PAR\_Control_{par}$  MWs calculated above:

$$Cmn\_PAR\_Control_{M2M\_Flowgate-m} = \sum_{cmn\_par=1}^{all} (PSF_{(cmn\_par,M2M\_Flowgate-m)} \times PAR\_Control_{cmn\_par})$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

cmn\_par = each of the common phase angle regulators, modeled as Flowgates, identified in Table 4, above;

Cmn\_PAR\_Control<sub>M2M\_Flowgate-m</sub> = the sum of flow on M2M Flowgate m after accounting for the operation of common PARs;

PSF<sub>(cmn\_par,M2M\_Flowgate-m)</sub> = the PSF of each of the common PARs on M2M Flowgate m; and

PAR\_Control<sub>cmn\_par</sub> = the flow deviation on each of the common PARs.

Compute the impact of generation-to-load and interchange schedules across all common PARs on M2M Flowgate m as the Market Flow across each common PAR multiplied by that PAR’s shift factor on M2M Flowgate m:

$$Cmn\_PAR\_MF_{M2M\_Flowgate-m} = \sum_{cmn\_par=1}^{all} \left( (PSF_{(cmn\_par,M2M\_Flowgate-m)}) \times (RTO\_GTL_{cmn\_par} + Parallel\_Transfers_{cmn\_par}) \right)$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

|                                      |   |
|--------------------------------------|---|
| $cmn\_par =$                         | the set of common phase angle regulators, modeled as Flowgates, identified in Table 4 above;  |
| $Cmn\_PAR\_MF_{M2M\_Flowgate-m} =$   | the sum of flow on M2M Flowgate m due to the generation to load flows and interchange schedules on the common PARs;   |
| $PSF_{(cmn\_par,M2M\_Flowgate-m)} =$ | the PSF of each of the common PARs on M2M Flowgate m;   |
| $RTO\_GTL_{cmn\_par} =$              | the generation to load flow for each common par, computed in the same manner as the generation to load flow is computed for M2M Flowgates in Section 5.4 above; and |
| $Parallel\_Transfers_{cmn\_par} =$   | the flow on each of the common PARs caused by interchange schedules at non-common scheduling points.  |

Next, compute the impact of the common PAR effect for M2M Flowgate m as:

$$Cmn\_PAR\_Impact_{M2M\_Flowgate-m} = Cmn\_PAR\_MF_{M2M\_Flowgate-m} - Cmn\_PAR\_Control_{M2M\_Flowgate-m}$$

Where:

|   |   |
|---|---|
| $M2M\_Flowgate-m =$                     | the relevant flowgate;  |
| $Cmn\_PAR\_Impact_{M2M\_Flowgate-m} =$  | potential flow on M2M Flowgate m that is affected by the operation of the common PARs;                            |
| $Cmn\_PAR\_MF_{M2M\_Flowgate-m} =$      | the sum of flow on M2M Flowgate m due to the generation to load and interchange schedules on the common PARs; and |
| $Cmn\_PAR\_Control_{M2M\_Flowgate-m} =$ | the flow deviation on each of the common PARs.  |

### **Non-Common PARs**

For the equations below, the NYISO will be credited or responsible for *PAR\_Impact* on all M2M Flowgates because the NYISO is the participating RTO that has input into the operation of these devices. The non-common PAR impact calculation only applies to the non-common PARs identified in Table 4 above.

Compute control deviation for all non-common PARs on M2M Flowgate m based on the PAR control MW above:

$$NC\_PAR\_Control_{M2M\_Flowgate-m} = \sum_{nc\_par=1}^{all} PSF_{(nc\_par,M2M\_Flowgate-m)} \times PAR\_Control_{nc\_par}$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

nc\_par = each of the non-common phase angle regulators, modeled as Flowgates, identified in Table 4 above;

NC\_PAR\_Control<sub>M2M\_Flowgate-m</sub> = the sum of flow on M2M Flowgate m after accounting for the operation of non-common PARs;

PSF<sub>(nc\_par,M2M\_Flowgate-m)</sub> = the PSF of each of the non-common PARs on M2M Flowgate m; and

PAR\_Control<sub>nc\_par</sub> = the flow deviation on each of the non-common PARs.

Compute the impact of generation-to-load and interchange schedules across all non-common PARs on M2M Flowgate m as the Market Flow across each PAR multiplied by that PAR's shift factor on M2M Flowgate m:

$$NC\_PAR\_MF_{M2M\_Flowgate-m} = \sum_{nc\_par=1}^{all} \left( \frac{(PSF_{nc\_par,M2M\_Flowgate-m}) \times (RTO\_GTL_{nc\_par} + Parallel\_Transfers_{nc\_par})}{(RTO\_GTL_{nc\_par} + Parallel\_Transfers_{nc\_par})} \right)$$

Where:

M2M\_Flowgate-m = the relevant flowgate;

nc\_par = the set of non-common phase angle regulators, modeled as Flowgates, identified in Table 4 above;

NC\_PAR\_MF<sub>M2M\_Flowgate-m</sub> = the sum of flow on M2M Flowgate m due to the generation to load flows and interchange schedules on the non-common PARs;

PSF<sub>(nc\_par,M2M\_Flowgate-m)</sub> = the outage transfer distribution factor of each of the non-common PARs on M2M Flowgate m;

RTO\_GTL<sub>nc\_par</sub> = the generation to load flow for each non-common par, computed in the same manner as the generation to load flow is computed for M2M Flowgates in Section 5.4 above; and

$Parallel\_Transfers_{nc\_par} =$  the flow, as computed above where the M2M Flowgate  $m$  is one of the non-common PARs, on each of the non-common PARs caused by interchange schedules at non-common scheduling points.

Next, compute the non-common PAR impact for M2M Flowgate  $m$  as:

$$NC\_PAR\_Impact_{M2M\_Flowgate-m} = NC\_PAR\_MF_{M2M\_Flowgate-m} - NC\_PAR\_Control_{M2M\_Flowgate-m}$$

Where:

$M2M\_Flowgate-m =$  the relevant flowgate;

$NC\_PAR\_Impact_{M2M\_Flowgate-m} =$  the potential flow on M2M Flowgate  $m$  that is affected by the operation of non-common PARs;

$NC\_PAR\_MF_{M2M\_Flowgate-m} =$  the sum of flow on M2M Flowgate  $m$  due to the generation to load and interchange schedules on the non-common PARs; and

$NC\_PAR\_Control_{M2M\_Flowgate-m} =$  the sum of flow on M2M Flowgate  $m$  after accounting for the operation of non-common PARs.

### **Aggregate all PAR Effects for Each M2M Flowgate**

The total impacts from the PAR effects for M2M Flowgate  $m$  is:

$$PAR\_Impact_{M2M\_Flowgate-m} = Cmn\_PAR\_Impact_{M2M\_Flowgate-m} + NC\_PAR\_Impact_{M2M\_Flowgate-m}$$

Where:

$M2M\_Flowgate-m =$  the relevant flowgate;

$PAR\_Impact_{M2M\_Flowgate-m} =$  the flow on M2M Flowgate  $m$  that is affected after accounting for the operation of both common and non-common PARs;

$Cmn\_PAR\_Impact_{M2M\_Flowgate-m} =$  potential flow on M2M Flowgate  $m$  that is affected by the operation of the common PARs; and

$NC\_PAR\_Impact_{M2M\_Flowgate-m} =$  the potential flow on M2M Flowgate  $m$  that is affected by the operation of non-common PARs.

## 5.7 Compute the RTO Aggregate Market Flow for all M2M Flowgates

With the *RTO\_GTL* and *PAR\_IMPACT* known, we can now compute the *RTO\_MF* for all M2M Flowgates as:

$$\begin{aligned} RTO\_MF_{M2M\_Flowgate-m} &= RTO\_GTL_{M2M\_Flowgate-m} + Parallel\_Transfers_{M2M\_Flowgate-m} \\ &+ Shared\_Transfers_{M2M\_Flowgate-m} - PAR\_Impact_{M2M\_Flowgate-m} \end{aligned}$$

Where:

$M2M\_Flowgate-m$  = the relevant flowgate;

$RTO\_MF_{M2M\_Flowgate-m}$  = the Market Flow caused by RTO generation dispatch and transaction scheduling on M2M Flowgate m after accounting for the operation of both the common and non-common PARs;

$RTO\_GTL_{M2M\_Flowgate-m}$  = the generation to load flow for the entire RTO footprint on M2M Flowgate m;

$Parallel\_Transfers_{M2M\_Flowgate-m}$  = the flow on M2M Flowgate m caused by interchange schedules that are not jointly scheduled by the participating RTOs;

$Shared\_Transfers_{M2M\_Flowgate-m}$  = the flow on M2M Flowgate m caused by interchange schedules that are jointly scheduled by the participating RTOs; and

$PAR\_Impact_{M2M\_Flowgate-m}$  = the flow on M2M Flowgate m that is affected after accounting for the operation of both the common and non-common PARs.

## 6 M2M Entitlement Determination Method

M2M Entitlements are the equivalent of financial rights for the Non-Monitoring RTO to use the Monitoring RTO's transmission system within the confines of the M2M redispatch process. The Parties worked together to develop the M2M Entitlement determination method set forth below.

Each Party shall calculate a M2M Entitlement on each M2M Flowgate and compare the results on a mutually agreed upon schedule.



## **6.1 M2M Entitlement Topology Model and Impact Calculation**

The M2M Entitlement calculation shall be based on a static topological model to determine a non-Monitoring RTO's share of a M2M Flowgate's total capacity based on historic dispatch patterns. The model must include the following items:

1. a static transmission and generation model;
2. generator, load, and PAR shift factors;
3. generator output, load, and interchange schedules from 2009 through 2011 or any subsequent three year period mutually agreed to by the Parties;
4. a PAR impact assumption that the PAR control is perfect for all PARs within the transmission model except the PARs at the Michigan-Ontario border; and
5. new or upgraded Transmission Facilities.

The Parties shall calculate the GLDFs using a transmission model that contains a mutually agreed upon set of: (1) transmission lines that are modeled as in-service; (2) generators; and (3) loads. Using these GLDFs, generator output data from the three year period agreed to by the Parties, and load data from the three year period agreed to by the Parties, the Parties shall calculate each Party's MW impact on each M2M Flowgate for each hour in the three year period agreed to by the Parties. Using these impacts, the Parties shall create a reference year consisting of four periods ("M2M Entitlement Periods") for each M2M Flowgate. The M2M Entitlement Periods are as follows:

1. M2M Entitlement Period 1: December, January, and February;
2. M2M Entitlement Period 2: March, April, and May;
3. M2M Entitlement Period 3: June, July, and August; and
4. M2M Entitlement Period 4: September, October, and November.

For each of the M2M Entitlement Periods listed above the Non-Monitoring RTO will calculate its M2M Entitlement on each M2M Flowgate for each hour of each day of a week that will serve as the representative week for that M2M Entitlement Period. The M2M Entitlement for each day/hour, for each M2M Flowgate will be calculated by averaging the Non-Monitoring RTO's Market Flow on an M2M Flowgate for each particular day/hour of the week. The Non-Monitoring RTO shall use the Market Flow data for all of the like day/hours, that occurred in that day of the week and hour in the M2M Entitlement Period, in each year contained within the three year period agreed to by the Parties to calculate the Non-Monitoring RTO's average Market Flow on each M2M Flowgate. When determining M2M settlements each Party will use the M2M Entitlement that corresponds to the hour of the week and to the M2M Entitlement Period for which the real-time Market Flow is being calculated.

The Parties will use the M2M Entitlements that are calculated based on data from the 2009 through 2011 three year period for at least their first year of implementing the M2M coordination process.

## **6.2 M2M Entitlement Calculation**

Each Party shall independently calculate the Non-Monitoring RTO's M2M Entitlement for all M2M Flowgates using the equations set forth in this section. The Parties shall mutually agree upon M2M Entitlement calculations. Any disputes that arise in the M2M Entitlement calculations will be resolved in accordance with the dispute resolution procedures set forth in section 35.15 of the Agreement.

Eighty percent of the RECo load shall be excluded from the calculation of Market Flows and M2M Entitlements, and shall instead be reflected as a PJM obligation over the Ramapo PARs in accordance with Sections 7.2.1 and 8.3 of this M2M Schedule D. The remaining twenty percent of RECo load shall be included in the M2M Entitlement and Market Flow calculations as PJM load.

The following assumptions apply to the M2M Entitlement calculation:

1. the Parties shall calculate the values in this section using the M2M Entitlement Topology Model discussed in Section 6.1 above, unless otherwise stated;
2. the impacts from the *Parallel\_Transfers* and *Shared\_Transfers* terms of the Market Flow calculation (*see* Section 5.5) are excluded from the Market Flow that is used to calculate M2M Entitlements;
3. perfect PAR Control exists for all PARs within the transmission model except the PARs at the Ontario/Michigan border; and
4. External Capacity Resources may be included in the calculation of M2M Entitlements consistent with Section 6.2.1.1 below.

Once the Reference Year Market Flows have been calculated for each interval to determine the integrated hourly Market Flow for each hour of the relevant three year period agreed to by the Parties, the new M2M Entitlement will be determined for a representative week in each M2M Entitlement Period using the method established in Section 6.1 above. In the event of new or upgraded Transmission Facilities, Section 6.3 below sets forth the rules that will be used to adjust M2M Entitlements.

### **6.2.1 Treatment of Out-of-Area Capacity Resources and Representation of Ontario/Michigan PARs in the M2M Entitlement Calculation Process**

#### **6.2.1.1 Modeling of External Capacity Resources**

External Capacity Resources may be included in the M2M Entitlement calculation to the extent the Parties mutually agree to their inclusion.

For the initial implementation of this M2M coordination process that will use 2009 through 2011 data to develop M2M Entitlements, PJM will be permitted to include its External

Capacity Resources in the M2M Entitlement calculation. NYISO has not requested inclusion of any External Capacity Resources in the M2M Entitlement calculation for the initial implementation of M2M. When the Parties decide to update the data used to determine M2M Entitlements:

- a. PJM will be permitted to include External Capacity Resources that have an equivalent net M2M Entitlement impact to the net M2M Entitlement impact of the PJM External Capacity Resources that were used for the initial implementation of the M2M coordination process. Inclusion of PJM External Capacity Resources that exceed the net M2M Entitlement impact of the PJM External Capacity Resources that were used for the initial implementation of the M2M coordination process must be mutually agreed to by the Parties.
- b. The Parties may mutually agree to permit the NYISO to include External Capacity Resources in the M2M Entitlement calculation.

#### **6.2.1.2 Modeling of the Ontario/Michigan PARs**

The Ontario/Michigan PARs will be modeled as not controlling power flows in the M2M Entitlement calculation process. The Parties agree that this modeling treatment is only appropriate when it is paired with the rules for calculating Market Flows and M2M settlements that are set forth in Sections 5 and 8 of this Agreement. Section 7.1 specifies how the RTOs will adjust Market Flows to account for the impact of the operation of the Ontario/Michigan PARs when the PARs are in service. The referenced Market Flow and M2M settlement rules are necessary because they are designed to ensure that M2M settlement obligations based on M2M Entitlements and Market Flows will not result in compensation for M2M redispatch when no actual M2M redispatch occurs.

### **6.3 M2M Entitlement Adjustment for New Transmission Facilities or Upgraded Transmission Facilities**

This section sets forth the rules for incorporating new or upgraded Transmission Facilities into the M2M Entitlement calculation. For all M2M Entitlement adjustments, the non-building RTO is the non-funding market, and the building RTO is the funding market.

If the cost of a new or upgraded Transmission Facility is borne solely by the Market Participants of the building RTO for the new or upgraded Transmission Facility, the Market Participants of the building RTO will exclusively benefit from the increase in transfer capability on the building RTO's Transmission Facilities. Therefore, the non-building RTO's M2M Entitlements shall not increase as result of such new or upgraded Transmission Facilities. Reciprocally, a building RTO's M2M Entitlements on the non-building RTO's M2M Flowgates shall not increase as a result of such new or upgraded Transmission Facilities.

To the extent a building RTO's upgraded or new Transmission Facility reduces the non-building RTO's impacts on one or more of the building RTO's M2M Flowgates by redistributing

the non-building RTO's modeled flows, the non-building RTO's M2M Entitlement will be redistributed to ensure that the non-building RTO's aggregate M2M Entitlements on the building RTOs transmission system, including both existing M2M Flowgates and upgraded or new Transmission Facilities that are not yet M2M Flowgates, is not decreased.

In assessing the impact of transmission upgrades or new Transmission Facilities the non-building RTO's revised total circulation through the building RTO shall not result in a net increase in M2M Entitlements for the non-building RTO on the building RTO's transmission system. The formulas below shall be used to determine the *pro-rata* adjustment that will be applied to determine the redistributed interval level and hourly integrated Market Flow (*i.e.*, the Transmission Adjusted Market Flow). Once a Transmission Adjusted Market Flow that incorporates the topology adjustment and reallocation of flows has been calculated for each hour of the three year period agreed to by the Parties, the new M2M Entitlement will be determined for each hour and day of the week in each M2M Entitlement Period using the method established in Section 6.1 above.

If Transmission Facilities outside the Balancing Authority Areas of the Parties are added or upgraded and the new or upgraded Transmission Facilities would, individually or in aggregate, cause a change in either Party's aggregate M2M Entitlements of at least 10%, then the Parties may mutually agree to incorporate those Transmission Facilities into the static transmission model used to perform the M2M Entitlement calculations.

### **M2M Entitlement Transmission Adjusted Market Flow Calculation:**

This process determines the Transmission Adjusted Market Flow for existing and new Transmission Facilities when new Transmission Facilities are built or existing Transmission Facilities are upgraded. This process does not apply to the addition of new M2M Flowgates that are associated with existing Transmission Facilities.

First, determine the reference set of Market Flows, called Reference Year Market Flows, for all M2M Flowgates using a static transmission model before adding any upgraded or new Transmission Facilities.

Second, account for new or upgraded Transmission Facilities in order from the first completed new/upgraded facility to the last (most recently completed) new/upgraded facility. Reflect the new/upgraded facilities, grouped by building RTO, in the reference year model to determine the new set of Market Flows called New Year Market Flows.

Third, compare the New Year Market Flows to the Reference Year Market Flows, in net across all M2M Flowgates and upgraded or new Transmission Facilities, to determine whether the New Year Market Flows have increased or decreased relative to the Reference Year Market Flows. If the comparison indicates that New Year Market Flows have increased or decreased relative to the Reference Year Market Flows, apply the formulas below to determine new Transmission Adjusted Market Flows.

The comparison process is performed on a step-by-step basis. In some cases it will be appropriate to aggregate the impacts of more than one new or upgraded Transmission Facility into a single “step” of the evaluation.

**Transmission Adjusted Market Flow Formula:**

$$\begin{aligned}
 TotPost &= \sum_{f \in F} Post_f \\
 TotPre &= \sum_{f \in F} Pre_f \\
 NewPost &= \sum_{f \in N} Post_f \\
 ExistPost &= \sum_{f \in E} Post_f \\
 ExistPre &= \sum_{f \in E} Pre_f
 \end{aligned}$$

The non-building RTO’s Transmission Adjusted Market Flow ( $Ent_f$ ) is calculated as follows for each Transmission Facility in the building RTO’s set of monitored M2M Flowgates  $f \in F$ :

$$Ent_f = \begin{cases} Post_f \cdot \frac{TotPre}{TotPost}, & \text{if } ExistPost > ExistPre \\ Post_f, & \text{if } ExistPost \leq ExistPre \text{ and } f \in E \\ \left( \text{Max}((ExistPre - ExistPost), 0) \right) \cdot \frac{Post_f}{NewPost}, & \text{if } ExistPost \leq ExistPre \text{ and } f \in N. \end{cases}$$

The building RTO’s Transmission Adjusted Market Flow ( $Ent_f$ ) is calculated as follows for each Transmission Facility in the non-building RTO’s set of monitored M2M Flowgates  $f \in F$ :

$$Ent_f = \begin{cases} Post_f \cdot \frac{TotPre}{TotPost}, & \text{if } ExistPost > ExistPre \text{ and } f \in E \\ Post_f, & \text{if } ExistPost \leq ExistPre \text{ and } f \in E \\ 0, & \text{otherwise.} \end{cases}$$

Where:

$f$  represents the relevant Transmission Facility within the building or non-building RTO.

$E$  represents the existing facilities: the set of M2M Flowgates and previously accounted for new or upgraded Transmission Facilities (which may not be M2M Flowgates) in the relevant (building or non-building) RTO.

$N$  represents the new or upgraded facilities: the set of Transmission Facilities in the relevant (building or non-building) RTO whose impact on M2M Entitlements is being evaluated.

$F$  represents the set of all Transmission Facilities in the relevant (building or non-building) RTO, including all elements of sets  $E$  and  $N$ .

$Pre_f$  is pre-upgrade market flow on  $f$ : the market flow on facility  $f$  calculated using the M2M Entitlement assumptions and based on a transmission topology that includes all pre-existing Transmission Facilities and all new or upgraded Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated.

$Post_f$  is the post-upgrade market flow on  $f$ : the market flow on facility  $f$  calculated using the M2M Entitlement assumptions and based on a transmission topology that includes all pre-existing Transmission Facilities and all new or upgraded Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated, *and* all new or upgraded Transmission Facilities whose impact on M2M Entitlements is being evaluated in the current evaluation step.

#### **6.4 M2M Entitlement Adjustment for a New Set of Generation, Load and Interchange Data**

Section 6.3 above addresses how new or upgraded transmission facilities will be reflected in the determination of M2M Entitlements. This section explains how the Parties will update the model used to determine M2M Entitlements to reflect new/updated generation, load and interchange information.

When moving the initial 2009-2011 period generation, interchange and load data forward, the RTOs will need to gather the data specified in Sections 6.1, 6.2 and (where appropriate) 6.3, above for the agreed upon three year period. External Capacity Resources will be included consistent with Section 6.2.1.1, above.

In accordance with the rules specified in Sections 6.1, 6.2 and (where appropriate) 6.3, above, the new set of data will be used to establish a new Reference Year Market Flow. When new or upgraded Transmission Facility adjustments are necessary, the new Reference Year Market Flows will be used to determine the New Year and Transmission Adjusted Market Flows based on the rules set forth above. When no new or upgraded Transmission Facility adjustments need to be applied, the new Reference Year Market Flows are the basis for the new M2M Entitlements.

### **7 Real-Time Energy Market Coordination**

Operation of the Ramapo PARs and redispatch are used by the Parties in real-time operations to effectuate this M2M coordination process. Operation of the Ramapo PARs will permit the Parties to redirect energy to reduce the overall cost of managing transmission congestion and to converge the participating RTOs' cost of managing transmission congestion. Operation of the Ramapo PARs to manage transmission congestion requires cooperation between the NYISO and PJM. Operation of the Ramapo PARs shall be coordinated with the operation of other PARs at the NYISO – PJM interface.

When a M2M Flowgate that is under the operational control of either NYISO or PJM and that is eligible for redispatch coordination, becomes binding in the Monitoring RTOs real-time security constrained economic dispatch, the Monitoring RTO will notify the Non-Monitoring RTO of the transmission constraint and will identify the appropriate M2M Flowgate that requires

redispatch assistance. The Monitoring and Non-Monitoring RTOs will provide the economic value of the M2M Flowgate constraint (i.e., the Shadow Price) as calculated by their respective dispatch models. Using this information, the security-constrained economic dispatch of the Non-Monitoring RTO will include the M2M Flowgate constraint; the Monitoring RTO will evaluate the actual loading of the M2M Flowgate constraint and request that the Non-Monitoring RTO modify its Market Flow via redispatch if it can do so more efficiently than the Monitoring RTO (i.e., if the Non-Monitoring RTO has a lower Shadow Price for that M2M Flowgate than the Monitoring RTO).

An iterative coordination process will be supported by automated data exchanges in order to ensure the process is manageable in a real-time environment. The process of evaluating the Shadow Prices between the RTOs will continue until the Shadow Prices converge and an efficient redispatch solution is achieved. The continual interactive process over the following dispatch cycles will allow the transmission congestion to be managed in a coordinated, cost-effective manner by the RTOs. A more detailed description of this iterative procedure is discussed in Section 7.1 and the appropriate use of this iterative procedure is described in Section 8.

## **7.1 Real-Time Redispatch Coordination Procedures**

The following procedure will apply for managing redispatch for M2M Flowgates in the real-time Energy market:

### **7.1.1 M2M Flowgates shall be monitored per each RTO's internal procedures.**

- a. When (i) an M2M Flowgate is constrained to a defined limit (actual or contingency flow) by a non-transient constraint, and (ii) Market Flows are such that the Non-Monitoring RTO may be able to provide an appreciable amount of redispatch relief to the Monitoring RTO, then the Monitoring RTO shall reflect the monitored M2M Flowgate as constrained.
- b. M2M Flowgate limits shall be periodically verified and updated.

### **7.1.2 Testing for an Appreciable Amount of Redispatch Relief and Determining the Settlement Market Flow:**

When the PARs at the Michigan-Ontario border are not in-service, the ability of the Non-Monitoring RTO to provide an appreciable amount of redispatch relief will be determined by comparing the Non-Monitoring RTO's Market Flow to the Non-Monitoring RTO M2M Entitlement for the constrained M2M Flowgate. When the Non-Monitoring RTO Market Flow (also the Market Flow used for settlement) is greater than the Non-Monitoring RTO M2M Entitlement for the constrained M2M Flowgate, the Monitoring RTO will assume that an appreciable

amount of redispatch relief is available from the Non-Monitoring RTO and will engage the M2M coordination process for the constrained M2M Flowgate.

When the PARs at the Michigan-Ontario border are in-service, the ability of the Non-Monitoring RTO to provide an appreciable amount of redispatch relief will be determined by comparing either (i) the Non-Monitoring RTO’s unadjusted Market Flow, or (ii) the Non-Monitoring RTO Market Flow adjusted to reflect the expected impact of the PARs at the Michigan-Ontario border (“LEC Adjusted Market Flow”), to the Non-Monitoring RTO M2M Entitlement for the constrained M2M Flowgate. The rules for determining which Market Flow (unadjusted or adjusted) to compare to the Non-Monitoring RTO M2M Entitlement when the PARs at the Michigan-Ontario border are in-service are set forth below.

**a. Calculating the Expected Impact of the PARs at the Michigan-Ontario Border on Market Flows**

The Non-Monitoring RTO’s unadjusted Market Flow is determined as  $RTO\_MF$  in accordance with the calculation set forth in Section 5 above. The expected impact of the PARs at the Michigan-Ontario border is determined as follows:

$$MICH - OH\_PAR\_Impact_{M2M\_Flowgate-m} = \sum_{MICH-OH\ Path=1}^4 \left( \frac{(PSF_{(MICH-OH\ Path, M2M\_Flowgate-m)}) \times (RTO\_MF_{MICH-OH\ Path} - LEC/4)}{1} \right)$$

Where:

$M2M\_Flowgate-m$  = the relevant M2M Flowgate;

$MICH-OH\ Path$  = each of the four PAR paths connecting Michigan to Ontario, Canada;

$MICH-OH\_PAR\_Impact_{M2M\_Flowgate-m}$  = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on M2M Flowgate m;

$PSF_{(MICH-OH\ Path, M2M\_Flowgate-m)}$  = the PSF of each of the four Michigan-Ontario PAR paths on M2M Flowgate m;

$RTO\_MF_{MICH-OH\ Path}$  = the Market Flow for each of the four Michigan-Ontario PAR paths, computed in the same manner



as the Market Flow is computed for M2M Flowgates in Section 5 above; and

LEC = Actual circulation around Lake Erie as measured by each RTO.

The Non-Monitoring RTO's LEC Adjusted Market Flow, reflecting the expected impact of the PARs on the Michigan-Ontario border, can be determined by adjusting the *RTO\_MF* from Section 5 to incorporate the *MICH-OH\_PAR\_Impact* calculated above.

$$\begin{aligned} \text{LEC Adjusted Market Flow}_{M2M\_Flowgate-m} &= RTO\_MF_{M2M\_Flowgate-m} \\ &\quad - MICH - OH\_PAR\_Impact_{M2M\_Flowgate-m} \end{aligned}$$

Where:

$M2M\_Flowgate-m$  = the relevant flowgate;

MICH-OH Path = each of the four PAR paths connecting Michigan to Ontario, Canada;

$MICH-OH\_PAR\_Impact_{M2M\_Flowgate-m}$  = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on M2M Flowgate m;

$RTO\_MF_{M2M\_Flowgate-m}$  = the Market Flow caused by RTO generation dispatch and transaction scheduling on M2M Flowgate m after accounting for the operation of both the common and non-common PARs; and

$LEC \text{ Adjusted Market Flow}_{M2M\_Flowgate-m}$  = the Market Flow caused by RTO generation dispatch and transaction scheduling on M2M Flowgate m after accounting for the operation of the common PARs, the non-common PARs, and the PARs at the Michigan-Ontario border.

**b. Determining Whether to Use Unadjusted Market Flow or LEC Adjusted Market Flow; Determining if Appreciable Redispatch Relief is Available**

- 1) When the Non-Monitoring RTO's LEC Adjusted Market Flow equals the Non-Monitoring RTO's unadjusted Market Flow and the Non-Monitoring RTO's Market Flow (also the Market Flow used for settlement) is greater than

the Non-Monitoring RTO M2M Entitlement for the constrained M2M Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the M2M coordination process for the constrained M2M Flowgate.

2) When the Non-Monitoring RTO's unadjusted Market Flow is greater than the Non-Monitoring RTO's LEC Adjusted Market Flow, then the following calculation shall be performed to determine if an appreciable amount of redispatch relief is expected to be available:

A. Determine the minimum of (a) the Non-Monitoring RTO's unadjusted Market Flow, and (b) the Non-Monitoring RTO's M2M Entitlement, for the constrained M2M Flowgate; and

B. Determine the maximum of (x) the value from step A above, and (y) the Non-Monitoring RTO's LEC Adjusted Market Flow

When the value from B above (the Market Flow used for settlement), is greater than the Non-Monitoring RTO's M2M Entitlement for the constrained M2M Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the M2M coordination process for the constrained M2M Flowgate.

3) When the Non-Monitoring RTO's unadjusted Market Flow is less than the Non-Monitoring RTO LEC Adjusted Market Flow, the following calculation shall be performed to determine if an appreciable amount of redispatch relief is expected to be available:

A. Determine the maximum of (a) the Non-Monitoring RTO's unadjusted Market Flow, and (b) the Non-Monitoring RTO M2M Entitlement, for the constrained M2M Flowgate; and

B. Determine the minimum of (x) the value from A above, and (y) the Non-Monitoring RTO's LEC Adjusted Market Flow

When the value from B above (the Market Flow used for settlement), is greater than the Non-Monitoring RTO's M2M Entitlement for the constrained M2M Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the M2M coordination process for the constrained M2M Flowgate.

- 7.1.3 The Monitoring RTO initiates M2M, notifies the Non-Monitoring RTO of the M2M Flowgate that is subject to coordination and updates required information.
- 7.1.4 The Non-Monitoring RTO shall acknowledge receipt of the notification and one of the following shall occur:
- a. The Non-Monitoring RTO refuses to activate M2M:
    - i. The Non-Monitoring RTO notifies the Monitoring RTO of the reason for refusal; and
    - ii. The M2M State is set to “Refused”; or
  - b. The Non-Monitoring RTO agrees to activate M2M:
    - i. Such an agreement shall be considered an initiation of the M2M process for operational and settlement purposes; and
    - ii. The M2M State is set to “Activated”.
- 7.1.5 The Parties have agreed to transmit information required for the administration of this procedure, as per section 35.7.1 of the Agreement.
- 7.1.6 As Shadow Prices converge and approach zero or the Non-Monitoring RTO’s Market Flows and Shadow Prices are such that an appreciable amount of redispatch relief can no longer be provided to the Monitoring RTO, the Monitoring RTO shall be responsible for the continuation or termination of the M2M process. Current and forecasted future system conditions shall be considered.<sup>1</sup>

When the Monitoring RTO’s Shadow Price is not approaching zero the Monitoring RTO can (1) use the procedure called *Testing for an Appreciable Amount of Relief and Determining the Settlement Market Flow* from step 2b above, and (2) compare the Non-Monitoring RTO’s Shadow Price to the Monitoring RTO’s Shadow Price, to determine whether there is an appreciable amount of market flow relief being provided.

When the *Testing for an Appreciable Amount of Relief and Determining the Settlement Market Flow* procedure indicates there is not an appreciable amount of relief being provided, and the Non-Monitoring RTO Shadow Price is not less than the Monitoring RTO Shadow Price, then the Monitoring RTO may terminate the M2M coordination process.

- 7.1.7 Upon termination of M2M, the Monitoring RTO shall

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<sup>1</sup> Termination of M2M redispatch may be requested by either RTO in the event of a system emergency.

- a. Notify the Non-Monitoring RTO; and
- b. Transmit M2M data to the Non-Monitoring RTO with the M2M State set to “Closed”. The timestamp with this transmission shall be considered termination of the M2M process for operational and settlement purposes.

## **7.2 Real-Time Ramapo PAR Coordination**

The Ramapo PARs will be operated to facilitate interchange schedules while minimizing regional congestion costs. When congestion is not present, the Ramapo PARs will be operated to achieve the target flow as established below in Section 7.2.1.

In order to preserve the long-term availability of the Ramapo PARs, a maximum of 20 taps per PAR per day, and a maximum of 400 taps per calendar month will normally be observed.

### **7.2.1 Ramapo Target Value**

A Target Value for flow between the NYISO and PJM shall be determined for each Ramapo PAR (the 3500 PAR and the 4500 PAR) (“ $Target_{Ramapo}$ ”). These Target Values shall be determined by a formula based on the net interchange schedule between the Parties plus the deviation of actual flows and desired flows across the ABC and JK interfaces and shall be used for settlement purposes as:

$$\begin{aligned}
 Target_{Ramapo} &= (RamapoInterchangeFactor) + (Actual_{JK} + RECo\_Load - Actual_{ABC}) \\
 &\quad - (Auto\ Correction\ Factor_{JK} - Auto\ Correction\ Factor_{ABC})
 \end{aligned}$$

Where:

$Target_{Ramapo}$  = Calculated Target Value for the flow on each Ramapo PAR (PAR3500 and PAR4500);

$RamapoInterchangeFactor$  = 61% of the net interchange schedule between PJM and NYISO over the AC tie lines distributed evenly across the in-service Ramapo PARs; A positive value indicates flows from PJM to NYISO and a negative value indicates flows from NYISO to PJM.

$Actual_{JK}$  = Telemetered real-time flow over the JK interface. A positive value indicates flows from NYISO to PJM and a negative value indicates flows from PJM to NYISO;

$Actual_{ABC}$  = Telemetered real-time flow over the ABC interface. A positive value indicates flows from PJM to NYISO and a negative value indicates flows from NYISO to PJM.;

$RECo\_Load$  = 80% of the telemetered real-time Rockland Electric Company Load;

$Auto\ Correction\ Factor_{JK}$  = The JK interface Auto Correction component of the JK interface real-time desired flow as described in Schedule C to the Agreement. A positive value indicates flows from NYISO to PJM and a negative value indicates flows from PJM to NYISO; and

$Auto\ Correction\ Factor_{ABC}$  = The ABC interface Auto Correction component of the ABC interface real-time desired flow as described in Schedule C to the Agreement. A positive value indicates flows from PJM to NYISO and a negative value indicates flows from NYISO to PJM.

In accordance with Appendix 3 of Schedule C to the Agreement, the Participating RTOs will mutually agree on the circumstances under which they will allow up to thirteen percent of PJM to New York interchange schedules to flow over the ABC and JK interfaces. When a portion of PJM to New York interchange schedules are allowed to flow over the ABC and JK interfaces, the allowed scheduled interchange will be captured as a change to the  $Actual_{JK}$  and  $Actual_{ABC}$  terms above.

### 7.2.2 Determination of the Cost of Congestion at Ramapo

The incremental cost of congestion relief provided by each Ramapo PAR shall be determined by each of the Parties. These costs shall be determined by multiplying each Party's Shadow Price on each of its M2M Flowgates by the PSF for each Ramapo PAR for the relevant M2M Flowgates.

The incremental cost of congestion relief provided by each Ramapo PAR shall be determined by the following formula:

$$Congestion\$_{(Ramapo,RTO)} = \sum_{M2M\ Flowgates-m \in M2M\ Flowgates_{RTO}} (PSF_{(M2M\ Flowgate-m,Ramapo)} \times Shadow\$_{M2M\ Flowgate-m})$$

Where:

$Congestion\$_{(Ramapo,RTO)}$  = Cost of congestion at each Ramapo PAR for the relevant participating RTO;

|                                     |  |
|-------------------------------------|--|
| $M2M\ Flowgates_{RTO} =$            | Set of M2M Flowgates for the relevant participating RTO;             |
| $PSF_{(M2M\ Flowgate-m, Ramapo)} =$ | The PSF for each Ramapo PARs on M2M Flowgate-m; and                  |
| $Shadow\$_{M2M\ Flowgate-m} =$      | The Shadow Price on the relevant participating RTO's M2M Flowgate m. |

### 7.2.3 Desired PAR Changes

If the NYISO congestion costs associated with the Ramapo PAR are greater than the PJM congestion costs associated with the Ramapo PAR, then hold or take taps into NYISO.

If the PJM congestion costs associated with the Ramapo PAR are greater than NYISO congestion costs associated with the Ramapo PAR, then hold or take taps into PJM.

Any action on the Ramapo PARs will be coordinated between the Parties and taken into consideration other PAR actions.

## 8 Real-Time Energy Market Settlements

### 8.1 Information Used to Calculate M2M Settlements

For each M2M Flowgate there are two components of the M2M settlement, a redispatch component and a Ramapo PARs coordination component. Both M2M settlement components are defined below.

For the redispatch component, market settlements under this M2M Schedule will be calculated based on the following:

1. the Non-Monitoring RTO's real-time Market Flow, determined in accordance with Section 7.1 above, on each M2M Flowgate compared to its M2M Entitlement for M2M Flowgates eligible for redispatch on each M2M Flowgate; and
2. the *ex-ante* Shadow Price at each M2M Flowgate.

For the Ramapo PARs coordination component, Market settlements under this M2M Schedule will be calculated based on the following:

1. actual real-time flow on each of the Ramapo PARs compared to its target flow ( $Target_{Ramapo}$ );
2. Ramapo PSF for each M2M Flowgate; and
3. the *ex-ante* Shadow Price at each M2M Flowgate.

## 8.2 Real-Time Redispatch Settlement

If the M2M Flowgate is eligible for redispatch, then compute the real-time redispatch settlement for each interval as specified below.

When  $RT\_MktFlow_{M2M\ Flowgate-m} > M2M\_Ent_{M2M\ Flowgate-m}$ ,

$$\begin{aligned} MonRTO\_Payment_{M2M\ Flowgate-m} &= Mon\_Shadow\$_{M2M\ Flowgate-m} \\ &\times (RT\_MktFlow_{M2M\ Flowgate-m} - M2M\_Ent_{M2M\ Flowgate-m}) \end{aligned}$$

When  $RT\_MktFlow_{M2M\ Flowgate-m} < M2M\_Ent_{M2M\ Flowgate-m}$ ,

$$\begin{aligned} Non\_Mon\_Payment_{M2M\ Flowgate-m} &= Non\_Mon\_Shadow\$_{M2M\ Flowgate-m} \\ &\times (M2M\_Ent_{M2M\ Flowgate-m} - RT\_MktFlow_{M2M\ Flowgate-m}) \end{aligned}$$

Where:

$Non\_MonRTO\_Payment_{M2M\ Flowgate-m}$  = M2M redispatch settlement, in the form of a payment to the Non-Monitoring RTO from the Monitoring RTO, for M2M Flowgate m;

$MonRTO\_Payment_{M2M\ Flowgate-m}$  = M2M redispatch settlement, in the form of a payment to the Monitoring RTO from the Non-Monitoring RTO, for M2M Flowgate m;

$RT\_MktFlow_{M2M\ Flowgate-m}$  = real-time RTO\_MF, determined for settlement in accordance with Section 7.1 above, for M2M Flowgate m;

$M2M\_Ent_{M2M\ Flowgate-m}$  = Non-Monitoring RTO M2M Entitlement for M2M Flowgate m;

$Mon\_Shadow\$_{M2M\ Flowgate-m}$  = Monitoring RTO's Shadow Price for M2M Flowgate m; and

$Non\_Mon\_Shadow\$_{M2M\ Flowgate-m}$  = Non-Monitoring RTO's Shadow Price for M2M Flowgate m.

### 8.3 Ramapo PARs Settlement

For each M2M Flowgate, compute the real-time Ramapo PAR settlement for each interval as specified below.

For each M2M Flowgate, when  $Actual_{Ramapo} > Target_{Ramapo}$ ,

$$\begin{aligned} PJMPayment_{M2M\ Flowgate-m} &= Shadow\$_{M2M\ Flowgate-m} \times PSF_{(M2M\ Flowgate-m, Ramapo)} \\ &\times (Actual_{Ramapo} - Target_{Ramapo}) \end{aligned}$$

For each M2M Flowgate, when  $Actual_{Ramapo} < Target_{Ramapo}$ ,

$$\begin{aligned} NYPayment_{M2M\ Flowgate-m} &= Shadow\$_{M2M\ Flowgate-m} \times PSF_{(M2M\ Flowgate-m, Ramapo)} \\ &\times (Target_{Ramapo} - Actual_{Ramapo}) \end{aligned}$$

Where:

$Actual_{Ramapo}$  = Measured real-time actual flow on each of the Ramapo PARs. For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

$Target_{Ramapo}$  = Calculated Target Value for the flow on each Ramapo PAR (PAR3500 and PAR4500) as described in Section 7.2.1 above. For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

$Shadow\$_{M2M\ Flowgate-m}$  = Shadow Price, as computed by the payee, for M2M Flowgate m;

$PSF_{(M2M\ Flowgate-m, Ramapo)}$  = The PSF for each Ramapo PARs for M2M Flowgate m;

$PJMPayment_{M2M\ Flowgate-m}$  = Ramapo PARs settlement, in the form of a payment to PJM from NYISO, for M2M Flowgate m; and

$NYPayment_{M2M\ Flowgate-m}$  = Ramapo PARs settlement, in the form of a payment to NYISO from PJM, for M2M Flowgate m.

### 8.4 Calculating a Combined M2M Settlement

The M2M settlement for each M2M Flowgate shall be the sum of the real-time redispatch settlement and Ramapo PARs settlement



If NYISO is the Monitoring RTO for the M2M Flowgate:

$$M2M\ Settlement_{M2M\ Flowgate\ m_i} = \left( \frac{MonRTO\ Payment_{M2M\ Flowgate\ m_i} - Non\ MonRTO\ Payment_{M2M\ Flowgate\ m_i} + NYPayment_{M2M\ Flowgate\ m_i}}{Non\ MonRTO\ Payment_{M2M\ Flowgate\ m_i} + NYPayment_{M2M\ Flowgate\ m_i}} \right) \times S_i / 3600sec$$

If PJM is the Monitoring RTO for the M2M Flowgate:

$$M2M\ Settlement_{M2M\ Flowgate\ m_i} = \left( \frac{MonRTO\ Payment_{M2M\ Flowgate\ m_i} - Non\ MonRTO\ Payment_{M2M\ Flowgate\ m_i} + PJMPayment_{M2M\ Flowgate\ m_i}}{Non\ MonRTO\ Payment_{M2M\ Flowgate\ m_i} + PJMPayment_{M2M\ Flowgate\ m_i}} \right) \times S_i / 3600sec$$

Where:

$M2M\ Settlement_{M2M\ Flowgate\ m_i}$  = M2M settlement, defined as a payment from the Non-Monitoring RTO to the Monitoring RTO, for interval  $i$ ; and

$Non\ MonRTO\ Payment_{M2M\ Flowgate\ m_i}$  = Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Flowgate  $m$  for interval  $i$ ;

$MonRTO\ Payment_{M2M\ Flowgate\ m_i}$  = Monitoring RTO payment to Non-Monitoring RTO for congestion on M2M Flowgate  $m$  for interval  $i$ ;

$PJMPayment_{M2M\ Flowgate\ m_i}$  = Ramapo PARs settlement, in the form of a payment to PJM from NYISO, for M2M Flowgate  $m$  for interval  $i$ ;

$NYPayment_{M2M\ Flowgate\ m_i}$  = Ramapo PARs settlement, in the form of a payment to NYISO from PJM, for M2M Flowgate  $m$  for interval  $i$ ; and  $S_i$  = number of seconds in interval  $i$ .

For the purpose of settlements calculations, each interval will be calculated separately and then integrated to an hourly value:

$$M2M\_Settlement_h = \sum_{M2M\ Flowgate\ m}^{all} \sum_{i=1}^n M2M\_Settlement_{M2M\ Flowgate\ m_i}$$

Where:

$M2M\_Settlement_h$  = M2M settlement for hour  $h$ ; and

$n$  = Number of intervals in hour  $h$ .

Section 10.1 of this M2M Schedule sets forth circumstances under which the M2M coordination process and M2M settlements may be temporarily suspended.

## **9 When One of the RTOs Does Not Have Sufficient Redispatch**

Under the normal M2M coordination process, sufficient redispatch for a M2M Flowgate may be available in one RTO but not the other. When this condition occurs, in order to ensure an operationally efficient dispatch solution is achieved, the RTO without sufficient redispatch will redispatch all effective generation to control the M2M Flowgate to a “relaxed” Shadow Price limit. Then this RTO calculates the Shadow Price for the M2M Flowgate using the available redispatch which is limited by the maximum physical control action inside the RTO. Because the magnitude of the Shadow Price in this RTO cannot reach that of the other RTO with sufficient redispatch, unless further action is taken, there will be a divergence in Shadow Prices and the LMPs at the RTO border.

A special process is designed to enhance the price convergence under this condition. If the Non-Monitoring RTO cannot provide sufficient relief to reach the Shadow Price of the Monitoring RTO, the constraint relaxation logic will be deactivated. The Non-Monitoring RTO will then be able to use the Monitoring RTO’s Shadow Price without limiting the Shadow Price to the maximum Shadow Price associated with a physical control action inside the Non-Monitoring RTO. With the M2M Flowgate Shadow Prices being the same in both RTOs, their resulting bus LMPs will converge in a consistent price profile.

## **10 Appropriate Use of the M2M Process**

Under normal operating conditions, the Parties will model all M2M Flowgates in their respective real-time EMSs. M2M Flowgates will be controlled using M2M tools for coordinated redispatch and coordinated operation of the Ramapo PARs, and will be eligible for M2M settlements.

### **10.1 Qualifying Conditions for M2M Settlement**

**10.1.1 Purpose of M2M.** M2M was established to address regional, not local issues. The intent is to implement the M2M coordination process and settle on such coordination where both Parties have significant impact.

**10.1.2 Minimizing Less than Optimal Dispatch.** The Parties agree that, as a general matter, they should minimize financial harm to one RTO that results from the M2M coordination process initiated by the other RTO that produces less than optimal dispatch.

**10.1.3 Use M2M Whenever Binding a M2M Flowgate.** During normal operating conditions, the M2M redispatch process will be initiated by the Monitoring RTO

whenever an M2M Flowgate that is eligible for redispatch is constrained and therefore binding in its dispatch. Coordinated operation of the Ramapo PARs is the default condition and does not require initiation by either Party to occur.

- 10.1.4 Most Limiting Flowgate.** Generally, controlling to the most limiting Flowgate provides the preferable operational and financial outcome. In principle and as much as practicable, the M2M coordination process will take place on the most limiting Flowgate, and to that Flowgate's actual limit (thermal, reactive, stability).
- 10.1.5 Abnormal Operating Conditions.** A Party that is experiencing system conditions that require the system operators' immediate attention may temporarily delay implementation of the M2M redispatch process or cease an active M2M redispatch event until a reasonable time after the system condition that required the system operators' immediate attention is resolved.
- 10.1.6 Transient System Conditions.** A Party that is experiencing intermittent congestion due to transient system conditions including, but not limited to, interchange ramping or transmission switching, is not required to implement the M2M redispatch process unless the congestion continues after the transient condition(s) have concluded.
- 10.1.7 Temporary Cessation of M2M Coordination Process Pending Review.** If the net charges to a Party resulting from implementation of the M2M coordination process for a market-day exceed five hundred thousand dollars, then the Party that is responsible for paying the charges may (but is not required to) suspend implementation of this M2M coordination process (for a particular M2M Flowgate, or of the entire M2M coordination process) until the Parties are able to complete a review to ensure that both the process and the calculation of settlements resulting from the M2M coordination process are occurring in a manner that is both (a) consistent with this M2M Coordination Schedule, and (b) producing a just and reasonable result. The Party requesting suspension must identify specific concerns that require investigation within one business day of requesting suspension of the M2M coordination process. If, following their investigation, the Parties mutually agree that the M2M coordination process is (i) being implemented in a manner that is consistent with this M2M Coordination Schedule and (ii) producing a just and reasonable result, then the M2M coordination process shall be re-initiated as quickly as practicable. If the Parties are unable to mutually agree that the M2M coordination process was being implemented appropriately, or of the Parties are unable to mutually agree that the M2M coordination process was producing a just and reasonable result, the suspension (for a particular M2M Flowgate, or of the entire M2M coordination process) shall continue while the Parties engage in dispute resolution in accordance with section 35.15 of the Agreement.

**10.1.8 Suspension of M2M Settlement when a Request for Taps on Common PARs to Prevent Overuse is Refused.** If a Party requests that taps be taken on any Common PAR to reduce the requesting Party's overuse of the other Party's transmission system, refusal by the other Party or its Transmission Owner(s) to permit taps to be taken to reduce overuse shall result in the Ramapo PAR settlement component of M2M (*see* Section 8.3 above) being suspended for the requesting Party until the tap request is granted. The refusing Party shall not be relieved of any of its M2M settlement obligations.

**10.1.9 Suspension of Ramapo PAR Settlement due to Transmission Facility Outage(s).** The Parties shall suspend Ramapo PAR settlements when: (a) the Branchburg – Ramapo 500kV 5018 transmission line is out of service; or (b) there is a simultaneous outage of Ramapo PAR3500 and Ramapo PAR4500; or (c) the occurrence of both 10.1.9(a) and 10.1.9(b).

No other Transmission Facility outage(s) will trigger suspension of Ramapo PAR settlements under this section 10.1.9.

## **10.2 After-the-Fact Review to Determine M2M Settlement**

Based on the communication and data exchange that has occurred in real-time between the Parties, there will be an opportunity to review the use of the market-to-market process to verify it was an appropriate use of the M2M coordination process and subject to M2M settlement. The Parties will initiate the review as necessary to apply these conditions and settlements adjustments.

## **10.3 Access to Data to Verify Market Flow Calculations**

Each Party shall provide the other Party with data to enable the other Party independently to verify the results of the calculations that determine the M2M settlements under this M2M Coordination Schedule. A Party supplying data shall retain that data for two years from the date of the settlement invoice to which the data relates, unless there is a legal or regulatory requirement for a longer retention period. The method of exchange and the type of information to be exchanged pursuant to section 35.7.1 of the Agreement shall be specified in writing. The Parties will cooperate to review the data and mutually identify or resolve errors and anomalies in the calculations that determine the M2M settlements. If one Party determines that it is required to self report a potential violation to the Commission's Office of Enforcement regarding its compliance with this M2M Coordination Schedule, the reporting Party shall inform, and provide a copy of the self report to, the other Party. Any such report provided by one Party to the other shall be Confidential Information.

## **11 M2M Change Management Process**

### **11.1 Notice**

Prior to changing any process that implements this M2M Schedule, the Party desiring the change shall notify the other Party in writing or via email of the proposed change. The notice shall include a complete and detailed description of the proposed change, the reason for the proposed change, and the impacts the proposed change is expected to have on the implementation of the M2M coordination process, including M2M settlements under this M2M Schedule.

### **11.2 Opportunity to Request Additional Information**

Following receipt of the Notice described in Section 10.1, the receiving party may make reasonable requests for additional information/documentation from the other Party. Absent mutual agreement of the parties, the submission of a request for additional information under this Section shall not delay the obligation to timely note any objection pursuant to Section 10.3, below.

### **11.3 Objection to Change**

Within ten business days after receipt of the Notice described in Section 10.1 (or within such longer period of time as the parties mutually agree), the receiving Party may notify in writing or via email the other Party of its disagreement with the proposed change. Any such notice must specifically identify and describe the concern(s) that required the receiving party to object to the described change.

### **11.4 Implementation of Change**

The Party proposing a change to its implementation of the M2M coordination process shall not implement such change until (a) it receives written or email notification from the other Party that the other Party concurs with the change, or (b) the ten business day notice period specified in Section 10.3 expires, or (c) completion of any dispute resolution process initiated pursuant to this Agreement.