June 28, 2019

Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1-A
Washington, D.C. 20426

Re: New York Independent System Operator, Inc. and PJM Interconnection, L.L.C.
Joint Operating Agreement Revisions, Docket No. ER19-2282-000

Dear Ms. Bose:

Pursuant to Section 205 of the Federal Power Act ("FPA"),\(^1\) the rules and regulations of the Federal Energy Regulatory Commission (the "Commission" or "FERC"),\(^2\) and consistent with the Commission’s Order Granting Request for Waiver ("Waiver Order"),\(^3\) the New York Independent System Operator, Inc. (the “NYISO”) and PJM Interconnection, L.L.C. (“PJM”) (collectively the “RTOs”) submit, in electronic format, revisions to the Joint Operating Agreement between the NYISO and PJM ("JOA")\(^4\) that is set forth in Attachment CC (Section 35) to the NYISO’s Open Access Transmission Tariff ("NYISO OATT").\(^5\) The majority of the proposed JOA revisions implement a long-term solution to address concerns identified by the RTOs in their

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\(^1\) 16 U.S.C. § 824d.
\(^2\) 18 C.F.R. Part 35.
\(^3\) Order Granting Request for Waiver, 165 FERC ¶ 61,149 (2018).
\(^5\) Order No. 714, Electronic Tariff Filings, ¶ 31,276 (2008), and Section 35.1 of the Commission’s regulations, 18 C.F.R. § 35.1(a), allow multiple public utilities that are parties to the same tariff (e.g., a joint tariff such as the JOA) to designate one of the public utilities as the designated filer of the joint tariff. The designated filer submits a single tariff filing for inclusion in its database that reflects the joint tariff, along with the requisite certificates of concurrence from the other parties to the joint tariff. NYISO is the designated filing party for the JOA. Therefore, NYISO is submitting the JOA modifications in the instant filing along with PJM’s Certificate of Concurrence. The designation of the NYISO as the designated filer for the JOA is for administrative convenience and in no way shall limit PJM’s filing rights under the Federal Power Act as they relate to the JOA.
joint request for limited waiver of the JOA (“Waiver Request”) to authorize redispatch of
generation in PJM to mitigate post-contingency overloads of transmission equipment on the New
York side of the East Towanda–Hillside 230 kV transmission line (the “East Towanda–Hillside
Tie Line”).

JOA revisions proposed in this filing were developed to address the concerns
identified in the Waiver Request with: (1) the addition of a new type of coordinated Flowgate
called an “Other Coordinated Flowgate,” along with rules addressing the implementation of these
new Flowgates; and (2) changes to the criteria that determine when the RTOs can initiate, and keep
active, redispatch coordination.

In addition to proposing revisions to the JOA needed to resolve the concerns identified in
the Waiver Request, the RTOs propose the following other improvements to the JOA and to the
Market-to-Market (“M2M”) Coordination Process set forth in JOA, Schedule D: (a) simplify the
M2M entitlement calculation process; (b) clarify the confidentiality provisions related to sharing
EMS models and the EMS model data with the RTOs’ respective transmission owners; (c) remove
an extraneous time-weighting from the NY-NJ PAR Settlement calculation rules; (d) clarify the
constraint relaxation provisions by more clearly aligning redispatch operations with the security-
constrained economic dispatch models of both the NYISO and PJM; (e) add rules that protect a
Non-Monitoring RTO that has a negative M2M Entitlement on a Flowgate from incurring
unreasonable M2M settlement obligations; and (f) add a new rule to address situations in which a
Phase Angle Regulator (“PAR”) becomes “stuck” due to a physical or SCADA failure and is not
capable of achieving its normal operating range, that will permit the M2M PAR coordination
process to account for such a PAR’s limited capabilities.

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No. ER18-2442-000 (September 17, 2018).
The RTOs request an effective date of September 16, 2019, for the majority of the revisions proposed in this filing, including all of the revisions that are necessary to ensure that the long-term solution described in the Waiver Request is in effect prior to the expiration of the limited waiver granted by the Waiver Order. For the reasons explained in Section III of this filing letter, the RTOs request waiver of the Commission’s notice requirement and a flexible effective date in order to permit the proposed revisions to the M2M Entitlement rules in Section 6 of Schedule D to the JOA to become effective on a to-be-determined date in December of 2019 or January of 2020, after the RTOs provide at least two weeks prior notice to the Commission and to their stakeholders.

I. BACKGROUND

As described in the Waiver Request, the RTOs have seen and expect to continue to see contingency overloads on the East Towanda–Hillside Tie Line at various times as a result of the addition by PJM of the Liberty (Asylum) Combined Cycle 850 MW unit (“Liberty Unit”) when the Liberty Unit is operating and there are transmission outages in the area. The limiting element is on the New York side of the East Towanda–Hillside Tie Line—a wave trap at the Hillside substation. The East Towanda–Hillside Tie Line is not a coordinated M2M Redispatch Flowgate under the currently effective JOA.

PJM normally has efficient redispatch relief available to relieve the constraint on the limiting element. However, PJM’s ability to take controlling actions in its real-time markets is limited because, although PJM’s actions were taken to protect the reliability of the Bulk Electric System (“BES”), and consistent with good utility practice and the applicable reliability standards (e.g., TOP-001-4, R18), PJM determined that including the constraint in its real-time market

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7 See 18 C.F.R. § 35.3(a)(1).
8 NYISO market flows tend to relieve the constraint on the East Towanda–Hillside Tie Line. However, the NYISO does not have generation available that can be dispatched in real-time to provide appreciable relief.
dispatch would violate PJM’s Open Access Transmission Tariff (“PJM Tariff”), Section 33.2 and PJM Tariff, Attachment K-Appendix, Section 1.7.6.9

The RTOs also identified concerns with adding the East Towanda–Hillside Tie Line as a M2M Flowgate for generation redispatch under the currently effective M2M rules. JOA, Schedule D, Section 7.1.2 provides that PJM and the NYISO will only invoke M2M coordination under JOA when the Non-Monitoring RTO Market Flow is greater than its M2M Entitlement, and shall close M2M coordination once the Non-Monitoring RTO Market Flow falls below its M2M Entitlement. However, in order to consistently control the post-contingency exceedance on the East Towanda–Hillside Tie Line without violating PJM’s Tariff, the RTOs must have the authority to keep the Flowgate activated consistently for the entire period the post-contingency exceedance is observed by PJM and/or the NYISO, without regard to whether the Non-Monitoring RTO’s Market Flows exceed its M2M Entitlement during that time period.

Consequently, PJM and the NYISO submitted the Waiver Request in order to add the East Towanda–Hillside Tie Line as a M2M Flowgate to protect the reliability of the BES and to permit PJM to conduct redispatch operations to control flows to the most restrictive rating on the NYISO side of the East Towanda–Hillside Tie Line without violating the PJM Tariff.

New York State Electric & Gas (“NYSEG”) has commenced the process of upgrading the wave trap at the Hillside substation. The RTOs expect that the wave trap upgrade will increase the facility rating sufficiently to make the conductor the limiting element. When NYSEG’s effort is complete, the East Towanda–Hillside Tie Line will be secured to the same rating by both PJM

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9 PJM Tariff, Attachment K-Appendix, Section 1.7.6 (a) (Scheduling and Dispatching) grants PJM authority to dispatch or redispatch generation to control constraints on neighboring systems on M2M Flowgates. If a tie line is not a M2M Flowgate under the JOA and there is a constraint on the NYISO side of the tie line, PJM has no authority under the PJM Tariff to dispatch PJM generation to control the constraint.
and the NYISO. NYSEG has informed the NYISO that it currently anticipates placing the upgraded wave trap in service in late November 2019.

In the Waiver Order, the Commission granted the request for waiver effective September 18, 2018, until: (1) the date on which the Commission approves JOA revisions proposed in a FPA section 205 filing submitted by the RTOs to implement a long-term solution to address the concerns identified in the Waiver Request to become effective; (2) the date on which the RTOs jointly request that the waiver end; or (3) September 17, 2019, whichever is soonest.\(^\text{10}\)

II. DESCRIPTION OF FILING

A. JOA Revisions Adding a New Other Coordinated Flowgate to Implement a Long-Term Solution to Address Concerns Identified in the Waiver Request and Permit Redispatch Coordination for the East Towanda–Hillside Tie Line and Similar Facilities

The following JOA revisions are proposed to permit the RTOs to coordinate their dispatch affecting the East Towanda–Hillside Tie Line and to permit the RTOs to agree to coordinate their dispatch affecting other similarly situated facilities going-forward.

1. Other Coordinated Flowgates

In order to address the concerns identified in the Waiver Filing the RTOs have mutually agreed to add a new type of redispatch Flowgate\(^\text{11}\) known as an Other Coordinated Flowgate. An Other Coordinated Flowgate is a new term added to JOA Section 35.2.1, defined as “a Flowgate where constraints are jointly monitored and coordinated as set forth in Schedule D to this Agreement.”

\(^{10}\) Waiver Order at PP 1 and 26.

\(^{11}\) The JOA definition of Flowgate is revised to mean all three types of JOA Flowgates: M2M Redispatch Flowgate, NY-NJ PAR Coordinated Flowgate and the new Other Coordinated Flowgate.
With the addition of this new type of Flowgate, the RTOs propose revisions to Section 3 of Schedule D to the JOA to update the eligibility study criteria under which the RTOs may propose to add a new Other Coordinated Flowgate (revised Section 3.2) and a new M2M Redispatch Flowgate (revised Section 3.3). Under this qualification study criteria, an Other Coordinated Flowgate is eligible for redispatch coordination if any resource has significant impact on the Flowgate. The proposed revisions, however, limit M2M Redispatch Flowgate eligibility to redispatch coordination only if a Qualified Resource has significant impact on the Flowgate. A Qualified Resource is a newly defined term the RTOs propose to add to the JOA. The new definition limits Qualified Resources to generation that can be effectively dispatched to relieve congestion on a facility and, therefore, explicitly excludes generators with intermittent fuel sources (e.g. wind, solar, etc.).

Other Coordinated Flowgates are subject to redispatch coordination for reliability purposes; however, such Flowgates will ordinarily lack impactful dispatchable generation on the Non-Monitoring RTO’s system. Therefore, the RTOs proposed JOA revisions include the addition of a provision in Section 8.1 of Schedule D to the JOA which provides that redispatch coordination for Other Coordinated Flowgates is not subject to M2M redispatch settlement under Section 8.2 of Schedule D to the JOA. This solution, which addresses the unique situation associated with the East Towanda–Hillside Tie Line and potentially other similarly situated facilities, allows the RTOs to establish redispatch coordination to control constraints on a Flowgate for reliability purposes even when the Non-Monitoring RTO does not have, and historically has not had, impactful generation available for redispatch. To protect the participating RTOs from any unexpected consequences of implementing an Other Coordinated Flowgate, Section 4.3 of the JOA permits
either RTO to withdraw its agreement to implement an Other Coordinated Flowgate following two
weeks’ notice to the other RTO (or a shorter notice period that the RTOs agree to).

The addition of Other Coordinated Flowgates and the associated JOA revisions are just and
reasonable solutions to the limited concerns identified in the Waiver Request. With these JOA
revisions, the RTOs can add the East Towanda–Hillside Tie Line as a coordinated redispatch
flowgate under the JOA despite that Flowgate not qualifying as a M2M Redispatch Flowgate. As
a result, PJM will have the ability to take controlling actions to protect the reliability of the BES
and dispatch PJM generation to address the constraint on the East Towanda–Hillside Tie Line and,
potentially, other similarly situated facilities consistent with good utility practice and the
applicable reliability standards (e.g., TOP-001-4, R18) because such actions will not violate PJM
Tariff, Section 33.2 and PJM Tariff, Attachment K-Appendix, Section 1.7.6. These Tariff
provisions allow PJM to redispact to secure “coordinated flowgates … in accordance with the
[JOA].”

By adding a new flowgate type that is appropriate for the East Towanda–Hillside Tie Line,
the RTOs can ensure LMP setting across the seam reflects the cost to control this Tie Line. This
will, in turn, provide added transparency benefits which currently only apply to M2M Flowgates
under the JOA. First, any instance of M2M redispact for a M2M flowgate is posted in real-time
to both RTOs’ limiting constraints postings on their respective OASIS’s. The OASIS postings
describe the time, duration, and shadow price associated with M2M redispact events. Real-time
LMPs are also publicly posted at the following URLs:

PJM: https://dataminer2.pjm.com/feed/rt_marginal_value/definition

NYISO: http://mis.nyiso.com/public/P-33list.htm
Second, owners of any resources that are dispatched through M2M coordination receive additional relevant information through the normal PJM Open Access Transmission Tariff settlements and billing procedures. The RTOs post nodal and zonal LMPs along with day-ahead and real time binding constraints with marginal values.

The same price transparency benefits will apply to determine the time, duration, and cost of re-dispatch for resources for the East Towanda–Hillside Tie Line constraint redispatch once it is subject to redispatch coordination as an Other Coordinated Flowgate under the JOA.

2. **Redispatch Coordination When the Non-Monitoring RTO’s Market Flows Do Not Exceed its M2M Entitlement**

In the redispatch coordination process, the Monitoring RTO is the Party that has operational control of a Flowgate. The Non-Monitoring RTO does not have operational control of the Flowgate. Traditionally, redispatch coordination has been initiated by the Monitoring RTO when the Non-Monitoring RTO’s Market Flows on a constrained M2M Redispatch Flowgate exceed the Non-Monitoring RTO’s M2M Entitlement at that Flowgate.

The RTOs propose to revise Section 7.1.1(a) of Schedule D to the JOA to permit the Non-Monitoring RTO to voluntarily agree to engage in redispatch coordination (i) on an M2M Redispatch Flowgate at times when its Market Flows do not exceed the Non-Monitoring RTO’s M2M Entitlement; or (ii) for an Other Coordinated Flowgate. As explained in Section I above, this capability is necessary to permit the RTOs to use redispatch coordination to address a constraint that secures a line to limits that are based on post-contingency flows. The ability to initiate or to continue redispatch coordination at times when an RTO’s Market Flow is below its M2M Entitlement will enable the RTOs to obtain additional economic efficiencies from M2M
redispatch coordination because it will permit cost-effective coordination to continue even when the Non-Monitoring RTO’s Market Flow is below its M2M Entitlement.

The RTOs also propose to add Section 7.1.4(b) to Scheduled D of the JOA. It permits the Non-Monitoring RTO to withdraw its agreement to continue redispatch coordination at a Flowgate. This new rule is appropriate because a Non-Monitoring RTO that voluntarily agrees to initiate redispatch coordination for a Flowgate should not be stuck with an obligation to incur unexpected redispatch costs if system conditions change. This new rule will permit the Non-Monitoring RTO to withdraw its agreement to participate in redispatch coordination when circumstances change. The Non-Monitoring RTO’s decision to conclude M2M Redispatch coordination may have M2M settlement consequences to it and to the Monitoring RTO.

B. Other Proposed Improvements to Schedule D to the JOA

The improvements to the JOA proposed below were developed based on the RTOs’ experience in implementing the M2M process and operating in compliance with the requirements of the JOA. The proposed improvement related to negative entitlements was identified in the RTOs’ discussions about how to address joint coordination of the East Towanda–Hillside Tie Line; however, the other proposed improvements are not related to coordination on the East Towanda–Hillside Tie Line.

1. Simplification of Rules for Calculating M2M Entitlements

The rules that the RTOs developed to update the M2M Entitlement values that affect M2M Redispatch Flowgates have proven extremely cumbersome to implement in practice. The difficulty of implementing some of the existing rules has prevented the RTOs from timely updating M2M Entitlement values. The RTOs propose to improve and significantly streamline the M2M Entitlement determination method set forth in Section 6 of Schedule D to the JOA.
The RTOs propose to employ the newly streamlined calculation method to (each) develop revised M2M Entitlements for each M2M Redispatch Flowgate on an annual basis. The RTOs will compare their M2M Entitlement calculations to determine if updates are needed.\textsuperscript{12} Performing the calculation on an annual basis avoids the need to have a distinct method of determining whether an existing set of Entitlements needs to be modified to reflect changed conditions.

The RTOs propose to use historical power flows for the most recently completed three calendar years to determine M2M Entitlements. The RTOs also propose to determine M2M Entitlements using different time groupings than were previously employed.\textsuperscript{13} Because M2M Entitlements will be recalculated annually, the RTOs propose to delete the cumbersome M2M Entitlement adjustment rules that are set forth in Sections 6.3 and 6.4 of the JOA entirely, and to replace those rules with the opportunity for the RTOs to mutually agree to reflect any impact upgrades may have on M2M Entitlements on a more expedited basis.\textsuperscript{14}

2. \textit{M2M Redispatch Settlement Protection for Non-Monitoring RTO with a Negative M2M Entitlement at an M2M Redispatch Flowgate}

The RTOs propose to add rules to Section 8.1 of Schedule D to the JOA to address M2M settlements for a M2M Redispatch Flowgate when the Non-Monitoring RTO has a negative entitlement to a Flowgate. A negative entitlement to a Flowgate may occur if the Non-Monitoring RTO’s historical Market Flows have provided counter-flow on a M2M Redispatch Flowgate. The proposed new rules protect the Non-Monitoring RTO from incurring M2M settlement obligations that incorporate a baseline expectation that the Non-Monitoring RTO will relieve congestion. When determining whether a Non-Monitoring RTO with a negative M2M Entitlement incurs an

\textsuperscript{12} See proposed revisions to Section 6 of Schedule D to the JOA.

\textsuperscript{13} See proposed revisions to Sections 6.1 of Schedule D to the JOA.

\textsuperscript{14} See id.
obligation to pay the Monitoring RTO in the M2M redispatch settlement process, the proposed rules effectively set the Non-Monitoring RTO’s M2M Entitlement to zero (no congestion impact on the M2M Flowgate), instead of using a negative M2M Entitlement value.

3. Proposed Correction to NY-NJ PAR Settlement Calculation

The RTOs propose to correct an equation in Section 8.3 of Schedule D to the JOA to remove a redundant time-weighting of the equation. The RTOs implementation of the NY-NJ PAR Settlement rules appropriately ignores the redundant language that the RTOs propose to strike.

4. Proposed Changes to Address Circumstances When One of the RTOs Cannot Provide Sufficient Redispatch Relief

The RTOs propose to revise Section 9 of the JOA to more clearly explain the process the RTOs will follow when either the Monitoring RTO or the Non-Monitoring RTO cannot provide sufficient redispatch relief to address a coordinated Flowgate. If the Monitoring RTO does not have sufficient redispatch capability available to address the constraint, it will price the Flowgate in accordance with the rules specified in its tariffs. If the Non-Monitoring RTO cannot provide sufficient redispatch relief to achieve the shadow price of the Monitoring RTO, then the Non-Monitoring RTO will deactivate any constraint relaxation logic that it employs and use a price up to and including the Monitoring RTO’s shadow price to address the Flowgate constraint in its dispatch. The proposed change more clearly explains the process that is currently being followed by both RTOs.

5. Proposed Revisions to Address Stuck PARs

The RTOs propose to revise Section 10.1.10 of the JOA to address the circumstance where a PAR becomes “stuck” due to a physical or SCADA failure and is not capable of achieving its normal operating range, but is not bypassed entirely. In this circumstance, the rules the RTOs
propose will, practically speaking, suspend NY-NJ PAR Settlements for the stuck PAR when its reduced capability prevents one of the RTOs from providing relief it would be able to provide if the PAR was fully functional, and the limitation would cause that RTO to owe a payment to the other RTO.

C. Proposed Improvements to Other Sections of the JOA

1. Definitions

The RTOs propose to revise several definitions and to add new defined terms in Section 35.2.1. These changes all relate to the introduction of the Other Coordinated Flowgate and the proposed changes to the M2M coordination rules described above. The RTOs renamed “M2M Flowgate” to “M2M Redispatch Flowgate;” and added as a defined term “NY-NJ PAR Coordinated Flowgate.” The proposed revised definitions were developed to distinguish the addition of the new form of redispatch coordination for Other Coordinated Flowgates from redispatch coordination on M2M Redispatch Flowgates. A corresponding revision is the proposal to change the defined term “M2M Event” to “Coordination Event.”

The defined term “Flowgate” is revised to state that the term means all 3 flowgate types in the revised JOA: “M2M Redispatch Flowgate,” “Other Coordinated Flowgate,” and “NY-NJ PAR Coordinated Flowgate.” As a result, the RTOs changed the definition of “Monitoring RTO” to delete the reference to “M2M” so it means “the Party that has operational control over a Flowgate.” All references to M2M Flowgate in other definitions and throughout the body of the JOA have been revised to align with these new defined terms.

Finally, the RTOs add a new definition “Qualified Resource” as follows:

“Qualified Resource” shall mean a generator that can be effectively committed, decommitted and/or redispatched to relieve a M2M Redispatch Flowgate or Other Coordinated Flowgate. Generators that cannot or do not follow commitment or dispatch instructions, including but not limited to generators with no difference between their
historically offered minimum and maximum operating limits and generators with intermittent fuel sources, are not considered Qualified Resources.

As discussed above, this new definition is needed because under the qualification study criteria the proposed JOA revisions limit M2M Redispatch Flowgate eligibility to redispatch coordination only if a Qualified Resource has significant impact on the Flowgate.

2. **Sharing of Confidential Transmission System Information with Transmission Owners**

The RTOs propose to add new language to JOA Section 35.7.2, confidentiality provisions, to clarify that the EMS models and the data used for EMS models exchanged between the RTOs pursuant to JOA Section 35.7.1 may be released by the receiving parties (*i.e.* PJM and NYISO) to their respective transmission owners for operational and reliability compliance purposes provided the transmission owners are required to maintain the EMS models and data as confidential consistent with or superior to the terms and conditions of the JOA.

This clarifying change is proposed because the confidentiality and protection provisions of the JOA prohibit any party to the JOA to share “confidential” data exchanged by the parties without prior permission, except in limited and enumerated circumstances; however, the “Protection” Provision in the JOA, Section 35.8.2, states that PJM and NYISO agree not to disclose Confidential Information without the prior written permission of the Party supplying Confidential Information “[e]xcept as set forth herein” – meaning that the Protection section contemplates exceptions to the prior written permission requirement. That section immediately precedes Section 35.8.3, which states that the Party receiving the Confidential Information shall treat it in the same confidential manner as its governing documents require it to treat the Confidential Information of its own members and Market Participants. The RTOs routinely share EMS modeling data with their respective transmission owners for the reliability compliance reasons set forth below. Thus, the
RTOs now make clear that the exchange of the EMS models and data with their respective transmission owners for operating reliability purposes fall into those “enumerated circumstances.”

While the EMS models and data is considered “confidential information” under the JOA, several exceptions set forth in the JOA allow disclosure of that data to the RTOs’ transmission owners without prior permission because the exchange of the EMS data furthers operating reliability, is permissible under FERC’s Standards of Conduct, and is permitted to be disclosed under PJM and the NYISO’s respective governing agreements. For example, JOA Section 35.5.8 (“Adoption of Standards”) states:

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: … 35.5.8.4 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.

NERC, IRO-014-3 R1 requires PJM and the NYISO, as the Reliability Coordinators, to have and implement Operating Procedures, Operating Processes, or Operating Plans for activities that require notification or coordination of actions that may impact adjacent Reliability Coordination areas, to support interconnection reliability. NERC standard IRO-014-3 R1.4 requires the RTOs to exchange information including planned and unplanned outage information to support the RTOs’ Operational Planning Analyses (“OPAs”) and Real-time Assessments (“RTAs”). For the RTOs to conduct OPAs and RTAs, they need to have an accurate model. This in turn requires the RTOs to share the EMS models obtained under the JOA with their respective transmission owners because the RTOs rely on their transmission owners as a backup to perform RTAs when RTA capability is unavailable.
3. Description of the M2M Coordination Processes in the Body of the JOA

The RTOs propose to revise the overview of the M2M Coordination Processes that is set forth in Section 35.12.1 of the body of the JOA. The proposed wording changes better align the overview with the M2M coordination processes, as revised by the changes proposed in this filing, and adds the new type of Other Coordinated Flowgate subject redispatch coordination described above.

III. EFFECTIVE DATE

The RTOs request an effective date of September 16, 2019 for all of the proposed JOA revisions except the proposed revisions to Section 6 of Schedule D to the JOA, for which the RTOs request a flexible effective date. The RTOs propose to make all of the JOA revisions that are necessary to implement a long-term solution to the concerns described in the Waiver Request effective prior to the expiration of the limited waiver granted by the Commission in the Waiver Order.

The changes proposed to Section 6 of Schedule D to the JOA implement a streamlined and improved method of determining and calculating M2M Entitlements. The NYISO requires additional time to develop and test the software necessary for it to implement the proposed M2M Entitlement improvements. The RTOs request a waiver of the Commission’s regulations to permit the proposed revisions to Section 6 of Schedule D to the JOA to become effective more than 120 days after the date of this filing,15 and request a flexible effective date between December 1, 2019 and January 31, 2020 for the proposed revisions to Section 6 of Schedule D to the JOA.

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15 See 18 C.F.R. § 35.3(a)(1).
The NYISO proposes to submit a compliance filing at least two weeks in advance of an effective date that the RTOs mutually agree to, specifying the date on which the revisions to Section 6 of Schedule D to the JOA that are included in this filing will take effect. Consistent with Commission precedent, the NYISO’s submission of a compliance filing will provide adequate notice to the Commission, to PJM, to participants in this Docket, and to the NYISO’s Market Participants of the implementation date for the changes to the M2M Entitlement rules. To ensure that all of PJM’s stakeholders are aware of the change, PJM hereby commits to promptly serve the PJM Members and all state utility regulatory commissions in the PJM Region by posting the filing electronically. The RTOs will not be able to provide a more precise effective date until the software changes the NYISO requires to implement the proposed M2M Entitlement JOA revisions are ready for deployment and testing is complete.

No Market Participant will be prejudiced by the RTOs’ request to permit the proposed revisions to Section 6 of Schedule D to the JOA to become effective more than 120 days after the date of this filing because it is not possible for the NYISO to implement the new rules in 120 days and NYISO will work diligently to implement the new requirements. Furthermore, as explained above, the RTOs will provide at least two weeks prior notice before they implement the proposed M2M Entitlement revisions.

16 New York System Operator, Inc., 106 FERC ¶ 61,111 at PP 5, 10 (2004) (“We will allow NYISO to implement parts of the filing prior to September 2004, as such parts become ready for implementation, provided that NYISO adheres to the three steps identified above in Paragraph 5 of this order.”); New York Independent System Operator, Inc., Letter Order, Docket No. ER11-2544-000 (Feb. 10, 2011).
IV. STAKEHOLDER REVIEW

PJM reviewed the revisions proposed in this filing with the Members Committee webinar meeting on April 22, 2019, and the Markets Implementation Committee on April 10, 2019, and May 15, 2019.

The NYISO’s stakeholders unanimously approved a motion to recommend the submission of this filing to the Commission at the May 20, 2019 Management Committee meeting. The NYISO first presented and discussed the proposed revisions with its stakeholders at the Market Issues Working Group meetings held on April 10, 2019. The proposed changes were also discussed with the NYISO’s Business Issues Committee on May 13, 2019, where they were unanimously approved, with abstentions. The NYISO Board of Directors approved the NYISO’s submission of the proposed JOA revisions on June 4, 2019.

V. DOCUMENTS SUBMITTED

The RTOs enclose with this transmittal letter:

1. A clean version of the RTOs’ proposed revisions to their JOA, effective September 16, 2019 (Attachment I);

2. A blacklined version of the RTOs’ proposed revisions to their JOA, effective September 16, 2019 (Attachment II);

3. A clean version of the RTOs’ proposed revisions to their JOA, with an effective date to be determined (Attachment III);

4. A marked version of the RTOs’ proposed revisions to their JOA, effective date to be determined (Attachment IV); and

5. PJM’s concurrence letter, concurring with the proposed revisions to the JOA (Attachment V).
VI. CORRESPONDENCE AND COMMUNICATION

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

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VII. SERVICE

A. NYISO Service

This filing will be posted on the NYISO’s website at www.nyiso.com. In addition, the NYISO will email an electronic copy of this filing to each of its customers, to each participant on its stakeholder committees, to the New York Public Service Commission, and to the New Jersey Board of Public Utilities.

B. PJM Service

PJM has served a copy of this filing on all PJM Members and on all state utility regulatory commissions in the PJM Region by posting this filing electronically. In accordance with the

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17 The RTOs request a limited waiver of Rule 203(b)(3) of the Commission’s Rules of Practice and Procedure to permit each RTO to designate two representatives to receive service in this proceeding.
Commission’s regulations, PJM will post a copy of this filing to the FERC filings section of its internet site, located at the following link: [http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx](http://www.pjm.com/documents/ferc-manuals/ferc-filings.aspx) with a specific link to the newly-filed document, and will send an e-mail on the same date as this filing to all PJM Members and all state utility regulatory commissions in the PJM Region alerting them that this filing has been made by PJM and is available by following such link. If the document is not immediately available by using the referenced link, the document will be available through the referenced link within 24 hours of the filing. Also, a copy of this filing will be available on the FERC’s eLibrary website located at the following link: [http://www.ferc.gov/docs-filing/elibrary.asp](http://www.ferc.gov/docs-filing/elibrary.asp) in accordance with the Commission’s regulations and Order No. 714.

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18 See 18C.F.R §§ 35.2(e) and 385.2010(f)(3).
19 PJM already maintains, updates and regularly uses e-mail lists for all PJM Members and affected state commissions.
VIII. Conclusion

The RTOs respectfully request that the Commission accept the attached JOA revisions for filing with effective dates that are consistent with Section III of this filing letter.

Respectfully submitted,

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Attachment I
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.

35.2.1 Abbreviations, Acronyms and Definitions

“3500 PAR” shall mean the 3500 phase angle regulator at the Ramapo station connected to the 5018 Hopatcong-Ramapo 500 kV line.

“4500 PAR” shall mean the 4500 phase angle regulator at the Ramapo station connected to the 5018 Hopatcong-Ramapo 500 kV line.

“A PAR” shall mean the phase angle regulator located at the Goethals station connected to the A2253 Linden-Goethals 230 kV line.

“ABC Interface” shall mean the transfer path comprised of the A2253 Linden-Goethals, B3402 Hudson-Farragut and C3403 Marion-Farragut tie lines between PJM and NYISO.

“ABC PARs” shall mean the A PAR, B PAR and C PAR that control flow on the ABC Interface.

“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 PAR” shall mean, for purposes of Section 8.3.1 of Schedule D to this Agreement, a NY-NJ PAR that is not subject to any of the following circumstances:

(1) a PAR that is not operational and is unable to be moved;
(2) a PAR that is technically “in-service” but is being operated in an outage configuration and is only capable of feeding radial load;
(3) a PAR that is tapped-out in a particular direction is not available in the tapped-out direction;
(4) if the maximum of 400 taps/PAR/month is exceeded at an ABC PAR, Ramapo PAR or a Waldwick PAR, and the relevant asset owner restricts the RTOs from taking further taps on the affected PAR, then the affected PAR shall not be available until NYISO and PJM agree to and implement an increased bandwidth in accordance with Section 7.2 of Schedule D to this Agreement;
(5) PJM is permitted to reserve up to three taps at each end of the PAR tap range of each Waldwick PAR to secure the facilities on a post contingency basis, a Waldwick PAR shall not be considered available if a tap move would require the use of a reserved PAR tap; or
(6) NYISO is permitted to reserve up to two taps at each end of the tap range of each ABC PAR and Ramapo PAR to secure the facilities on a post contingency basis, an ABC or Ramapo PAR shall not be considered available if a tap move would require the use of a reserved PAR tap.

PJM or NYISO may choose to use PAR taps they are permitted to reserve to perform M2M coordination, but they are not required to do so.

“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.

“B PAR” shall mean the phase angle regulator located at the Farragut station connected to the B3402 Hudson-Farragut 345 kV line.

“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.

“C PAR” shall mean the phase angle regulator located at the Farragut station connected to the C3403 Marion-Farragut 345 kV line.

“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.

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

“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.

“Coordinated Transaction Scheduling” or “CTS” shall mean the market rules that allow transactions to be scheduled based on a bidder’s willingness to purchase energy from a source in either the NYISO or PJM Control Area and sell it at a sink in the other Control Area if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.

“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.

“CTS Interface Bid” shall mean: (1) in PJM, a unified real-time bid to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of
Section 1.13 of Schedule 1 of the Amended and Restated Operating Agreement of PJM, L.L.C.; and (2) in NYISO, a real-time bid provided by an entity engaged in an external transaction at a CTS Enabled Interface, as more fully described in NYISO Services Tariff Section 2.3.

“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.

“E PAR” shall mean the phase angle regulator located at the Waldwick station on the E-2257 Waldwick-Hawthorne 230 kV line.

“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.

“F PAR” shall mean the phase angle regulator located at the Waldwick station on the F-2258
Waldwick-Hillsdale 230 kV line.

“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. When used herein, Flowgate shall mean M2M Redispacth
Flowgate, NY-NJ PAR Coordinated Flowgate, and Other Coordinated Flowgate.

“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 intertie(s).

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

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

“ISO” shall mean Independent System Operator.

“JK Interface” shall mean the transfer path comprised of the JK Ramapo-South Mahwah-Waldwick tie lines between PJM and NYISO.

“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 Redispatch Flowgate’s total capability to be used for settlement purposes that is calculated pursuant to Section 6 of Schedule D to this Agreement.

“M2M Redispatch 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 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 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.

“NY-NJ PARs” shall mean, individually and/or collectively, the ABC PARs, the Ramapo PARs, and the Waldwick PARs, all of which are components of the NYISO – PJM interface.

“NY-NJ PAR Coordinated Flowgate” shall mean Flowgates where constraints, impacted by the NY-NJ PARs, are jointly monitored and coordinated as defined and set forth in Schedule D to this Agreement.

“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.

“O PAR” shall mean the phase angle regulator located at the Waldwick station on the O-2267 Waldwick-Fairlawn 230kV line.
“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.

“Operational Base Flow” or “OBF” shall mean an equal and opposite MW offset of power flows over the Waldwick PARs and ABC PARs to account for natural system flows over the JK Interface and the ABC Interface in order to facilitate the reliable operation of the NYISO and/or PJM transmission systems. The OBF is not a firm transmission service on either the NYISO transmission system or on the PJM transmission system. The OBF shall not result in charges from one Party to the other Party, or from one Party to the other Party’s Market Participants, except for the settlements described in the Real-Time Energy Market Coordination and Settlements provisions set forth in Sections 7 and 8 of Schedule D to this Agreement. In particular, the NYISO and its Market Participants shall not be subjected to PJM Regional Transmission Expansion Plan (“RTEP”) cost allocations as a result of the OBF.

“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.
“Other Coordinated Flowgate” shall mean a Flowgate where constraints are jointly monitored and coordinated as defined and set forth in Schedule D to this Agreement.

“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.

“Qualified Resource” shall mean a generator that can be effectively committed, decommitted and/or redispached to relieve a M2M Redispatch Flowgate or Other Coordinated Flowgate. Generators that cannot or do not follow commitment or dispatch instructions, including but not limited to generators with no difference between their historically offered minimum and maximum operating limits and generators with intermittent fuel sources, are not considered Qualified Resources.

“Ramapo Interface” shall mean the transfer path comprised of the 5018 Hopatcong-Ramapo 500 kV tie line between PJM and NYISO.

“Ramapo PARs” shall mean the 3500 PAR and 4500 PAR that control flow on the Ramapo Interface.

“Real-Time Commitment” shall mean NYISO’s multi-period security constrained unit commitment and dispatch model, as defined in the NYISO Tariffs.
“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.

“Storm Watch” shall mean actual or anticipated severe weather conditions under which region-specific portions of the New York State Transmission System are operated in a more conservative manner by reducing transmission transfer limits.

“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.

“Waldwick PARs” shall mean the E PAR, F PAR and O PAR that control flow on the JK Interface.

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.
35.7 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;

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 Flowgates;

b. actual limits for Flowgates;

c. *ex ante* Shadow Prices on constrained Flowgates;

d. requested relief during a Coordination 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 Redispatch Flowgates and Other Coordinated Flowgates; and
g. binding constraint thresholds (the shift factor thresholds used to identify the resource(s) available to relieve a transmission constraint).

35.7.10 Additional information required for the Parties to administer CTS, including:

a. interchange transaction offer attributes (frequency of scheduling, offer type, source and sink);

b. forecasted interchange schedules;

c. forecasted prices; and

d. CTS interface limits.

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.

Notwithstanding anything to the contrary in this Agreement, EMS models and the data used for EMS modeling exchanged pursuant to Section 35.7.1 may be released by the receiving Party to its Transmission Owners for operational and reliability compliance purposes. The respective Party’s Transmission Owners shall be required to maintain the EMS models and the data as confidential in a manner consistent with or superior to the terms and conditions contained herein.

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.
35.12 M2M Coordination Processes and Coordinated Transaction Scheduling

35.12.1 M2M Coordination Processes

The fundamental philosophy of the M2M coordination processes that are 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 NY-NJ 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 processes on defined Flowgates that experience congestion. The goal of redispatch coordination at M2M Redispatch Flowgates and Other Coordinated Flowgates is to utilize the more cost effective generation between the two markets to manage the congestion in accordance with Section 7.1 of the attached Market-to-Market Coordination Schedule. The goal of NY-NJ PAR coordination is to operate the NY-NJ PARs to efficiently manage the congestion in accordance with Section 7.2 of the attached Market-to-Market Coordination Schedule. NY-NJ PAR coordination can occur at any Flowgate and need not be formally invoked by either Party. It is ordinarily in effect.

The M2M coordination process include settlement rules that apply when M2M coordination is occurring.

35.12.2 Coordinated Transaction Scheduling

Coordinated Transaction Scheduling or “CTS” are real time market rules implemented by NYISO and PJM that allow transactions to be scheduled based on a bidder’s willingness to
purchase energy at a source (in the PJM Control Area or the NYISO Control Area) and sell it at a sink (in the other Control Area) if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.

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

NYISO and PJM may suspend the scheduling of CTS transactions when NYISO or PJM are not able to adequately implement schedules as expected due to: (1) a failure or outage of the data link between NYISO and PJM prevents the exchange of accurate or timely data necessary to implement the CTS transactions; (2) a failure or outage of any computational or data systems preventing the actual or accurate calculation of data necessary to implement the CTS transactions; or (3) when necessary to ensure or preserve system reliability.
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<th>Section</th>
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<td>7.1</td>
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<td>7.2</td>
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<tr>
<td>8</td>
</tr>
<tr>
<td>8.1</td>
</tr>
<tr>
<td>8.2</td>
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</table>
8.3 NY-NJ PAR Settlements

8.4 Calculating a Combined M2M Settlement

9 When One of the RTOs Does Not Have Sufficient Redispatch

10 Appropriate Use of the M2M Coordination Process

10.1 Qualifying Conditions for M2M Settlement

10.2 After-the-Fact Review to Determine M2M Settlement

10.3 Access to Data to Verify Market Flow Calculations

11 M2M Change Management Process

11.1 Notice

11.2 Opportunity to Request Additional Information

11.3 Objection to Change

11.4 Implementation of Change
1 Overview of the Market-to-Market Coordination Processes

The purpose of the M2M coordination processes are 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 processes are 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 processes focuses on real-time market coordination to manage transmission limitations that occur on the 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 NY-NJ 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 Redispatch 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 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 Flowgates. For the purposes of the M2M coordination process (in addition to the studies described in Section 3 of this Schedule D) the following will be used in determining Flowgates.

2.1 NYISO and PJM will only be performing redispatch or NY-NJ PAR coordination on Flowgates that are under the operational control of NYISO or PJM. NYISO and PJM will not be performing redispatch or NY-NJ PAR coordination 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 NY-NJ 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 is not an additional criterion for determination of Flowgates.

2.3 For the purpose of determining whether a monitored element Flowgate is eligible for redispatch or NY-NJ PAR coordination, a threshold for determining a significant GLDF or NY-NJ PARs PSF will take into account the number of
monitored elements. Implementation of Flowgates will ordinarily occur through mutual agreement.

2.4 M2M Redispatch Flowgates and Other Coordinated Flowgates that are eligible for redispatch coordination are also eligible for coordinated operation of the NY-NJ PARs. Flowgates that are eligible for coordinated operation of the NY-NJ PARs are not necessarily also eligible for redispatch coordination.

2.5 The NYISO shall post a list of all of the Flowgates located in the New York Control Area (“NYCA”) on its web site. PJM shall post a list of all of the Flowgates located in its Control Area on its web site.

3 **Flowgate Studies**

To identify Flowgates the Parties will perform an off-line study to determine if there is a significant GLDF for at least one generator within the Non-Monitoring RTO, or significant PSF for at least one NY-NJ PAR, on a potential Flowgate within the Monitoring RTO that 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 Flowgate studies will be based on the same assumptions used for determining M2M Entitlements in Section 6 of this Schedule D.

3.1 Either Party may propose that a new Flowgate be added at any time. The Parties will work together to perform the necessary studies within a reasonable timeframe.

3.2 The GLDF thresholds for a Other Coordinated Flowgate with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF on any resource;

ii. Two monitored elements, 7.5% GLDF on any resource; and

iii. Three or more monitored elements, 10% GLDF on any resource.

For potential Other Coordinated Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.3 The GLDF thresholds for a M2M Redispatch Flowgate with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF on any Qualified Resource;

ii. Two monitored elements, 7.5% GLDF on any Qualified Resource; and
iii. Three or more monitored elements, 10% GLDF on any Qualified Resource.

For potential M2M Redispacht Flowgate that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispacht coordination.

3.4 The NY-NJ PARs PSF thresholds for NY-NJ PAR Coordinated Flowgates with one or more monitored elements are defined as:

i. Single monitored element, 5% NY-NJ PARs PSF;

ii. Two monitored elements, 7.5% NY-NJ PARs PSF; and

iii. Three or more monitored elements, 10% NY-NJ PARs PSF.

For potential Flowgates that pass the above NY-NJ PARs PSF criteria, the Parties must still mutually agree to add each Flowgate for coordinated operation of the NY-NJ PARs.

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

4 Removal of Flowgates from M2M Coordination Processes

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

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

4.2 A M2M Redispacht Flowgate that does not satisfy the criteria set forth in Section 3.3 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 Notice to the other Party that it withdraws its agreement to the M2M Redispacht Flowgate, or at a later or earlier date that the Parties mutually agree upon. The Notice must include an explanation of the reason(s) why the agreement to the M2M Redispacht Flowgate was withdrawn.

4.3 A Other Coordinated Flowgate shall be removed two weeks after either Party provides a Notice to the other party that it withdraws its agreement to the Other Coordinated Flowgate, or at a later or earlier date that the Parties mutually agree
4.4 The Parties can mutually agree to remove a Flowgate whether or not it passes the coordination tests. A Flowgate should be removed when the Parties agree that the relevant coordination processes are 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated Flowgates

The first step to determining the Market Flow on a Flowgate is to calculate generator, load and PAR shift factors for each of the Flowgates. For real-time 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, of this Schedule D.

\[ Zonal_{Total\ Load_{zone}} = Load_{zone} + Losses_{zone} \] for each RTO load zone

Where:
zone = the relevant RTO load zone;

Zonal_Total_Loadzone = the sum of the RTO’s load and transmission losses for the zone;

Loadzone = the load within the zone; and

Losseszone = 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:

\[ \text{Zonal Reduced Load}_{\text{zone}} = \text{Zonal Total Load}_{\text{zone}} - \sum_{\text{scheduled lines}=1}^{\text{all}} \text{Import Schedules}_{\text{scheduled line, zone}} \]

Where:

zone = the relevant RTO load zone;

scheduled_line = each of the Transmission Facilities identified in Table 1 below;

Zonal_Reduced_Loadzone = 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_Loadzone = the sum of the RTO’s load and transmission losses for the zone; and

Import_Schedules\text{\_scheduled line, zone} = 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>
<thead>
<tr>
<th>Scheduled Line</th>
<th>NYISO Load Zone</th>
<th>PJM Load Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennison Scheduled Line</td>
<td>North</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Cross-Sound Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Proxy</th>
<th>Balancing Authorities Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>PJM</td>
</tr>
<tr>
<td>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.</td>
<td>NYISO</td>
</tr>
</tbody>
</table>

*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_{zone} = 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_{proxy} = 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_{zone} = 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_{zone} = 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:

\[
\text{Zonal Final Load}_{\text{zone}} = \text{Zonal Weighting}_{\text{zone}} \times \text{RTO Final Load}
\]

Where:

\( \text{zone} = \) the relevant RTO load zone;

\( \text{Zonal Final Load}_{\text{zone}} = \) the final RTO load served by internal RTO generation in the zone;

\( \text{Zonal Weighting}_{\text{zone}} = \) the percentage of the RTO’s load contained within the zone; and

\( \text{RTO Final Load} = \) 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 Flowgate as:

\[
\text{RTO LSF}_{\text{Flowgate-m}} = \sum_{\text{zone}=1}^{\text{all}} \left( \text{LSF}_{(\text{zone,Flowgate-m})} \times \left( \frac{\text{Zonal Final Load}_{\text{zone}}}{\text{RTO Final Load}} \right) \right)
\]

Where:

\( \text{Flowgate-m} = \) the relevant flowgate;

\( \text{zone} = \) the relevant RTO load zone;

\( \text{RTO LSF}_{\text{Flowgate-m}} = \) the load shift factor for the entire RTO footprint on Flowgate m;

\( \text{LSF}_{(\text{zone,Flowgate-m})} = \) the load shift factor for the RTO zone on Flowgate m;

\( \text{Zonal Final Load}_{\text{zone}} = \) the final RTO load served by internal RTO generation in the zone; and

\( \text{RTO Final Load} = \) 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;
\( Gen_{\text{unit,zone}} = \) the real-time output of the unit in a given zone;
\( \text{Reduced } Gen_{\text{unit}} = \) each unit’s real-time output after reducing the RTO Net Gen by the real-time export schedules over scheduled lines;
\( \text{RTO Reduced } Gen_{\text{zone}} = \) the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone; and
\( \text{RTO Gen}_{\text{zone}} = \) 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.

\[
\text{RTO Net Gen} = \sum_{\text{zone}=1}^{\text{all}} \text{RTO Reduced } Gen_{\text{zone}}
\]

Where:
zone = the relevant RTO load zone;
\( \text{RTO Net Gen} = \) the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines; and
\( \text{RTO Reduced } Gen_{\text{zone}} = \) the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone.

\[
\text{RTO Final Gen} = \text{RTO Net Gen} - \sum_{\text{proxy}=1}^{\text{all}} \text{Export Schedules}_{\text{proxy}}
\]

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;

\[
RTO_{\text{Final Gen}} = \text{the sum of the RTO’s generation output for the entire RTO footprint, sequentially reduced by (i) the sum of export schedules over all scheduled lines, and (ii) the sum of all proxy export schedules;}
\]

\[
RTO_{\text{Net Gen}} = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines; and}
\]

\[
\text{Export Schedules}_{\text{proxy}} = \text{the sum of export schedules at a given proxy.}
\]

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

\[
Gen_{\text{Final unit}} = \text{Reduced Gen}_{\text{unit}} \times \frac{RTO_{\text{Final Gen}}}{RTO_{\text{Net Gen}}}
\]

Where:

unit = the relevant generator;

Gen_{\text{Final unit}} = the portion of each unit’s output that is serving the RTO Net Load;

Reduced Gen_{\text{unit}} = each unit’s real-time output after reducing the RTO Net Gen by the real-time export schedules over scheduled lines;

RTO_{\text{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_{\text{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 Flowgates**

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

\[
RTO_{\text{GTL}_{\text{Flowgate-m}}} = \sum_{\text{unit}=1}^{\text{all}} \left( Gen_{\text{Final unit}} \times \frac{RTO_{\text{Final Gen}}}{RTO_{\text{Net Gen}}} \right) - RTO_{\text{LSF}_{\text{Flowgate-m}}}
\]

Where:
Flowgate-m = the relevant flowgate;

unit = the relevant generator;

RTO\_GTL\_Flowgate-m = the generation to load flow for the entire RTO footprint on Flowgate m;

Gen\_Final\_unit = the portion of each unit’s output that is serving RTO Net Load;

GSF(unit,Flowgate-m) = the generator shift factor for each unit on Flowgate m; and

RTO\_LSF\_Flowgate-m = the load shift factor for the entire RTO footprint on Flowgate m.

### 5.5 Compute the RTO Interchange Scheduling Impacts for all 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>
<thead>
<tr>
<th>Scheduling Point</th>
<th>Scheduling Point Type</th>
<th>Participating RTO(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYISO-PJM</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>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.</td>
<td>non-common</td>
<td>PJM</td>
</tr>
<tr>
<td>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</td>
<td>non-common</td>
<td>NYISO</td>
</tr>
</tbody>
</table>
provide to PJM notice of any new or deleted non-common scheduling points prior to implementing such changes in its M2M software.

\[
RTO_{_{Transfers}}_{_{sched\_pt}} = Import_{_{sched\_pt}} + WheelsIn_{_{sched\_pt}} - Export_{_{sched\_pt}} - WheelsOut_{_{sched\_pt}}
\]

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;

\( Import_{_{sched\_pt}} = \) 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;

\( Export_{_{sched\_pt}} = \) 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.

\[
Parallel_{_{Transfers}}_{_{Flowgate-m}} = \sum_{\text{all } nc\_sched\_pt = 1}^{\text{all}} RTO_{_{Transfers}}_{_{nc\_sched\_pt}} \times PTDF_{_{nc\_sched\_pt,Flowgate-m}}
\]

Where:

\( Flowgate-m = \) 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\textsubscript{Flowgate-\textit{m}} = the flow on Flowgate \textit{m} due to the net interchange schedule at the non-common scheduling point; 

RTO\textsubscript{Transfers\textsubscript{nc_sched_pt}} = the net interchange schedule at the non-common scheduling point, where a positive number indicates the import direction; and 

PTDF\textsubscript{(nc_sched_pt, Flowgate-\textit{m})} = the power transfer distribution factor of the non-common scheduling point on Flowgate \textit{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. \textit{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.

\[ Shared\textsubscript{Transfers}_{Flowgate-\textit{m}} = \sum_{cmn\_sched\_pt=1}^{a} \text{RTO\textsubscript{Transfers}_{cmn\_sched\_pt}} \times \text{PTDF}_{(cmn\_sched\_pt, Flowgate-\textit{m})} \]

Where:

Flowgate-\textit{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\textsubscript{Transfers}_{Flowgate-\textit{m}} = the flow on Flowgate \textit{m} due to interchange schedules on the common scheduling point; 

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

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

5.6 \textbf{Compute the PAR Effects for all 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

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

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

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;
- \(PAR\_Control_{par}\) = the flow deviation on each of the PARs;
- \(Actual\_MW_{par}\) = the actual flow on each of the PARs, determined consistent with Table 4 above; and
- \(Target\_MW_{par}\) = 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 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 Flowgate m based on the PAR_Control_par MWs calculated above:

\[ Cmn\_PAR\_Control_{Flowgate-m} = \sum_{cmn\_par=1}^{all} (PSF_{cmn\_par,Flowgate-m} \times PAR\_Control_{cmn\_par}) \]

Where:

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_{Flowgate-m} = the sum of flow on Flowgate m after accounting for the operation of common PARs;

PSF_{cmn\_par,Flowgate-m} = the PSF of each of the common PARs on Flowgate m; and

PAR_Control_{cmn\_par} = the flow deviation on each of the common PARs.

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

\[ Cmn\_PAR\_MF_{Flowgate-m} = \sum_{cmn\_par=1}^{all} \left( \frac{PSF_{cmn\_par,Flowgate-m}}{RTO\_GTI_{cmn\_par} + Parallel\_Transfers_{cmn\_par}} \right) \]

Where:

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_{Flowgate-m} = \text{the sum of flow on Flowgate m due to the generation to load flows and interchange schedules on the common PARs;}

PSF_{\text{cmn par,Flowgate-m}} = \text{the PSF of each of the common PARs on Flowgate m;}

RTO\_GTL_{\text{cmn par}} = \text{the generation to load flow for each common par, computed in the same manner as the generation to load flow is computed for Flowgates in Section 5.4 above; and}

Parallel\_Transfer_{\text{cmn par}} = \text{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 Flowgate m as:

\[
Cmn\_PAR\_Impact_{Flowgate-m} = Cmn\_PAR\_MF_{Flowgate-m} - Cmn\_PAR\_Control_{Flowgate-m}
\]

Where:

Flowgate-m = \text{the relevant flowgate;}

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

Cmn\_PAR\_MF_{Flowgate-m} = \text{the sum of flow on Flowgate m due to the generation to load and interchange schedules on the common PARs; and}

Cmn\_PAR\_Control_{Flowgate-m} = \text{the flow deviation on each of the common PARs.}

**Non-Common PARs**

For the equations below, the NYISO will be credited or responsible for \textit{PAR Impact} on all 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 Flowgate m based on the PAR control MW above:

\[
NC\_PAR\_Control_{Flowgate-m} = \sum_{nc\_par=1}^{all} PSF_{(nc\_par,Flowgate-m)} \times PAR\_Control_{nc\_par}
\]

Where:

Flowgate-m = \text{the relevant flowgate;}
nc_par = each of the non-common phase angle regulators, modeled as Flowgates, identified in Table 4 above;

NC_PAR_ControlFlowgate-m = the sum of flow on Flowgate m after accounting for the operation of non-common PARs;

PSF(nc_par,Flowgate-m) = the PSF of each of the non-common PARs on Flowgate m; and

PAR_Controlnc_par = 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 Flowgate m as the Market Flow across each PAR multiplied by that PAR’s shift factor on Flowgate m:

\[ NC\_PAR\_MF_{Flowgate-m} = \sum_{nc\_par} (PSF_{nc\_par,Flowgate-m} \times (RTO\_GTL_{nc\_par} + Parallel\_Transfers_{nc\_par})) \]

Where:

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_MFFlowgate-m = the sum of flow on Flowgate m due to the generation to load flows and interchange schedules on the non-common PARs;

PSF(nc_par,Flowgate-m) = the outage transfer distribution factor of each of the non-common PARs on Flowgate m;

RTO_GTL_{nc_par} = the generation to load flow for each non-common par, computed in the same manner as the generation to load flow is computed for Flowgates in Section 5.4 above; and

Parallel_Transfers_{nc_par} = the flow, as computed above where the 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 Flowgate m as:

\[ NC\_PAR\_Impact_{Flowgate-m} = NC\_PAR\_MF_{Flowgate-m} - NC\_PAR\_Control_{Flowgate-m} \]
Where:

Flowgate-m = the relevant flowgate;

NC_PAR_ImpactFlowgate-m = the potential flow on Flowgate m that is affected by the operation of non-common PARs;

NC_PAR_MFFlowgate-m = the sum of flow on Flowgate m due to the generation to load and interchange schedules on the non-common PARs;

and

NC_PAR_ControlFlowgate-m = the sum of flow on Flowgate m after accounting for the operation of non-common PARs.

**Aggregate all PAR Effects for Each Flowgate**

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

\[ PAR_{\text{Impact}}_{\text{Flowgate}-m} = Cmn_{\text{PAR}_{\text{Impact}}_{\text{Flowgate}-m}} + NC_{\text{PAR}_{\text{Impact}}_{\text{Flowgate}-m}} \]

Where:

Flowgate-m = the relevant flowgate;

PAR_{\text{Impact}}_{\text{Flowgate}-m} = the flow on Flowgate m that is affected after accounting for the operation of both common and non-common PARs;

Cmn_{\text{PAR}_{\text{Impact}}_{\text{Flowgate}-m}} = potential flow on Flowgate m that is affected by the operation of the common PARs; and

NC_{\text{PAR}_{\text{Impact}}_{\text{Flowgate}-m}} = the potential flow on Flowgate m that is affected by the operation of non-common PARs.

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

With the \( RTO_{\text{GTL}} \) and \( PAR_{\text{IMPACT}} \) known, we can now compute the \( RTO_{\text{MF}} \) for all Flowgates as:

\[ RTO_{\text{MF}}_{\text{Flowgate-}m} = RTO_{\text{GTL}}_{\text{Flowgate-}m} + Parallel_{\text{Transfers}}_{\text{Flowgate-}m} + Shared_{\text{Transfers}}_{\text{Flowgate-}m} - PAR_{\text{Impact}}_{\text{Flowgate-}m} \]

Where:

Flowgate-m = the relevant flowgate;
\[ \text{RTO\_MF}_{\text{Flowgate-m}} = \text{the Market Flow caused by RTO generation dispatch and} \\
\quad \text{transaction scheduling on Flowgate m after accounting for the} \\
\quad \text{operation of both the common and non-common PARs;} \]

\[ \text{RTO\_GTL}_{\text{Flowgate-m}} = \text{the generation to load flow for the entire RTO footprint on} \\
\quad \text{Flowgate m;} \]

\[ \text{Parallel\_Transfers}_{\text{Flowgate-m}} = \text{the flow on Flowgate m caused by interchange schedules} \\
\quad \text{that are not jointly scheduled by the participating RTOs;} \]

\[ \text{Shared\_Transfers}_{\text{Flowgate-m}} = \text{the flow on Flowgate m caused by interchange schedules} \\
\quad \text{that are jointly scheduled by the participating RTOs;} \]

\[ \text{PAR\_Impact}_{\text{Flowgate-m}} = \text{the flow on Flowgate m that is affected after accounting for} \\
\quad \text{the operation of both the common and non-common PARs.} \]

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 use both RTOs’ static topological models to determine the Non-Monitoring RTO’s mutually agreed upon share of a M2M Flowgate’s total capacity based on historic dispatch patterns. Both RTOs’ models 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 models except the PARs at the Michigan-Ontario border;
5. new or upgraded Transmission Facilities; and
Each Party 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 this 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 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 models 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 of this Schedule D.

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 of this Schedule D 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.


This Section sets forth the rules for incorporating new or upgraded Transmission Facilities, and Transmission Facility retirements, 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 new or upgraded Transmission Facility, or Transmission Facility retirement, 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 new or upgraded Transmission Facilities, or Transmission Facility retirements, 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.

The Parties will mutually perform an analysis to determine if new or upgraded Transmission Facilities, or Transmission Facility retirements, will have an impact on any of the non-building RTO’s M2M Flowgates. If the new or upgraded Transmission Facilities, or Transmission Facility retirements, are determined to have a 5% or less impact on each of the non-building RTO’s M2M Flowgates, calculated individually for each M2M Flowgate, then the non-building RTO is not required to update its operational models to incorporate the new, upgraded or retired Transmission Facilities. If the new or upgraded Transmission Facilities, or Transmission Facility retirements, are determined to have greater than a 5% impact, but less than a 10% impact on each of the non-building RTO’s M2M Flowgates, calculating the impact individually for each M2M Flowgate, then the Parties may mutually agree not to require the non-building RTO to update its operational models.

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 models 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 or retired Transmission Facilities when new Transmission Facilities are built or existing Transmission Facilities are upgraded or retired. 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 new or upgraded Transmission Facilities, or removing retired Transmission Facilities.

Second, account for new or upgraded Transmission Facilities or Transmission Facility retirements in order from the first completed new/upgraded/retired facility to the last (most recently completed) new/upgraded/retired facility. Reflect the new/upgraded/retired 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 (after adding new or upgraded Transmission Facilities and/or removing retired 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:

\[
\begin{align*}
\text{TotPost} &= \sum_{f \in E} \text{Post}_f \\
\text{TotPre} &= \sum_{f \in E} \text{Pre}_f \\
\text{NewPost} &= \sum_{f \in N} \text{Post}_f \\
\text{ExistPost} &= \sum_{f \in E} \text{Post}_f \\
\text{ExistPre} &= \sum_{f \in E} \text{Pre}_f
\end{align*}
\]

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

\[
\text{Ent}_f = \begin{cases} 
\text{Post}_f \cdot \frac{\text{TotPre}}{\text{TotPost}}, & \text{if } \text{ExistPost} > \text{ExistPre} \\
\text{Post}_f, & \text{if } \text{ExistPost} \leq \text{ExistPre} \text{ and } f \in E \\
\left(\max\left((\text{ExistPre} - \text{ExistPost}), 0\right)\right) \cdot \frac{\text{Post}_f}{\text{NewPost}}, & \text{if } \text{ExistPost} \leq \text{ExistPre} \text{ and } f \in N.
\end{cases}
\]

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

\[
\text{Ent}_f = \begin{cases} 
\text{Post}_f \cdot \frac{\text{TotPre}}{\text{TotPost}}, & \text{if } \text{ExistPost} > \text{ExistPre} \text{ and } f \in E \\
\text{Post}_f, & \text{if } \text{ExistPost} \leq \text{ExistPre} \text{ and } f \in E \\
0, & \text{otherwise}.
\end{cases}
\]

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, upgraded or retired Transmission Facilities (which may not be M2M Flowgates) in the relevant (building or non-building) RTO.

\(N\) represents the new, upgraded or retired 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 $N$.

$\text{Pref}_f$ is pre-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated.

$\text{Post}_f$ is the post-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated, and all new, upgraded or retired Transmission Facilities whose impact on M2M Entitlements is being evaluated in the current evaluation step. For Transmission Facility retirements, $\text{Post}_f$ shall equal zero.

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 and Transmission Facility retirements 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 or Transmission Facility retirement 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 or Transmission Facility retirement 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 NY-NJ PARs and redispatch are used by the Parties in real-time operations to effectuate this M2M coordination process. Operation of the NY-NJ 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 NY-NJ PARs to manage transmission congestion requires cooperation between the NYISO and PJM. Operation of the NY-NJ PARs shall be coordinated by the RTOs.
When a M2M Redispatch Flowgate or Other Coordinated Flowgate begins 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 Flowgate that requires redispatch assistance. The Monitoring and Non-Monitoring RTOs will provide the economic value of the 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 Flowgate constraint; the Monitoring RTO will evaluate the actual loading of the 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 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 10.

7.1 Real-Time Redispatch Coordination Procedures

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

7.1.1 Flowgates shall be monitored per each RTO’s internal procedures.

a. When (i) a 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 for a M2M Redispatch Flowgate, or (iii) the Non-Monitoring RTO agrees to initiate and to continue coordination for a M2M Redispatch Flowgate or Other Coordinated Flowgate, then the Monitoring RTO shall reflect the monitored Flowgate as constrained.

b. 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 for M2M Redispatch Flowgates:

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

When any of 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 Redispatch Flowgate. The rules for determining which Market Flow (unadjusted or adjusted) to compare to the Non-Monitoring RTO M2M Entitlement when any of the PARs at the Michigan-Ontario border are in-service are set forth below.


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:

$$MICH-OH\_PAR\_Impact_{Flowgate-m} = \sum_{MICH-OH\_Path=1}^{4} \left( \frac{PSF_{(MICH-OH\_Path, Flowgate-m)}}{(RTO_{MF}^{MICH-OH\_Path} - LEC/4) \times MACH-OH_{Path}=1} \right)$$

Where:

Flowgate-m = the relevant Flowgate;

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

MICH-OH_PAR_Impact_{Flowgate-m} = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on Flowgate m;

PSF_{(MICH-OH Path, Flowgate-m)} = the PSF of each of the four Michigan-Ontario PAR paths on Flowgate m;
RTO_MF_{MICH-OH \ Path} = \text{the Market Flow for each of the four Michigan-Ontario PAR paths, computed in the same manner as the Market Flow is computed for Flowgates in Section 5 above; and}

\[ \text{LEC} = \text{Actual circulation around Lake Erie as measured by each RTO.} \]

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.

\[
\text{LEC Adjusted Market Flow}_{Flowgate-m} = RTO\_MF_{Flowgate-m} - MICH - OH \_PAR \_Impact_{Flowgate-m}
\]

Where:

Flowgate-m = the relevant flowgate;

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

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

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

\( \text{LEC Adjusted Market Flow}_{Flowgate-m} \) = the Market Flow caused by RTO generation dispatch and transaction scheduling on 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 Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the coordination process for the constrained M2M Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring
RTO and will engage the coordination process for the constrained M2M Redispatch Flowgate.

7.1.3 The Monitoring RTO initiates redispatch coordination, notifies the Non-Monitoring RTO of the M2M Redispatch Flowgates or Other Coordinated Flowgates that are 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 redispatch coordination:
   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 redispatch coordination:
   i. Such an agreement shall be considered an initiation of the redispatch process; and
   ii. The M2M State is set to “Activated”.
   iii. If the Non-Monitoring RTO later withdraws its agreement to activate redispatch coordination at a Flowgate, then the Non-Monitoring RTO notifies the Monitoring RTO of the reason for its decision and the Monitoring RTO shall terminate the redispatch coordination process and set the M2M State to “Refused”.

7.1.5 The Parties have agreed to transmit information required for the administration of this procedure, as per Section 35.7.1 of this 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 redispatch process. Current and forecasted future system conditions shall be considered. Termination of redispatch coordination may be requested by either RTO in the event of a system emergency.

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 redispatch coordination, the Monitoring RTO shall

a. Notify the Non-Monitoring RTO; and

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

7.2 **Real-Time NY-NJ PAR Coordination**

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

PJM and the NYISO have operational control of the NY-NJ PARs and direct the operation of the NY-NJ PARs, while Public Service Electric and Gas Company (“PSE&G”) and Consolidated Edison Company of New York (“Con Edison”) have physical control of the NY-NJ PARs. The Con Edison dispatcher sets the PAR taps for the ABC PARs and Ramapo PARs at the direction of the NYISO. The PSE&G dispatchers set the PAR taps for the Waldwick PARs at the direction of PJM.

PJM and the NYISO have the responsibility to direct the operation of the NY-NJ PARs to maintain compliance with the requirements of this Agreement. PJM and the NYISO shall make reasonable efforts to minimize movement of the NY-NJ PARs while implementing the NY-NJ PAR target flows and the NY-NJ PAR coordination process. PJM and the NYISO will employ a +/- 50 MW operational bandwidth around each NY-NJ PAR’s target flow to limit tap movements and to maintain actual flows at acceptable levels. This operational bandwidth shall not impact or change the NY-NJ PAR Settlement rules in Section 8.3 of this Agreement. The operational bandwidth provides a guideline to assist the RTOs’ efforts to avoid unnecessary NY-NJ PAR tap movements.

In order to preserve the long-term availability of the NY-NJ PARs, a maximum number of 20 PAR tap changes per NY-NJ PAR per day, and a maximum number of 400 PAR tap changes per NY_NJ PAR per calendar month will normally be observed. If the number of PAR tap changes exceed these limits, then the operational bandwidth shall be increased in 50 MW...
increments until the total number of PAR tap changes no longer exceed 400 PAR tap changes per NY-NJ PAR per month, unless PJM and the NYISO mutually agree otherwise.

In order to implement the NY-NJ PAR coordination process, including the establishment and continuation of the initial and any future OBF as defined in this Section and Section 35.2 of this Agreement, on the ABC PARs and the Waldwick PARs, the facilities comprising the ABC Interface and JK Interface shall be functional and operational at all times, consistent with Good Utility Practice, except when they are taken out-of-service to perform maintenance or are subject to a forced outage.

7.2.1 NY-NJ PAR Target Values

A Target Value for flow between the NYISO and PJM shall be determined for each NY-NJ PAR based on the net interchange schedule between the Parties. These Target Values shall be used for settlement purposes as:

\[ T_{ZIWLP} = (IZTLLIRhZZWFLPRZTIP) + (RIIZZSZFZBLFZNNP) + (RECZLZLP) \]

Where:

\[ T_{ZIWLP} = \text{Calculated Target Value for the flow on each NY-NJ PAR} \]

For purposes of this equation, a positive value* indicates a flow from PJM to the NYISO.

* The sign conventions apply to the formulas used in this Agreement. The Parties may utilize different sign conventions in their market software so long as the software produces results that are consistent with the rules set forth in this Agreement.

\[ IZTLLIRhZZWFLPRZTIP = \text{The MW value of the net interchange schedule between PJM and NYISO over the AC tie lines distributed across each in-service NY-NJ PAR calculated as net interchange schedule times the interchange percentage. The interchange percentage for each NY-NJ PAR is listed in Table 5.} \]

If a NY-NJ PAR is out-of-service or is bypassed, or if the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange, the percentage of net interchange normally assigned to that NY-NJ PAR will be transferred over the western AC tie lines between the NYISO and PJM. The remaining in-service NY-NJ PARs will continue to be assigned the interchange percentages specified in Table 5.

\[ OperationalBaseFlow_{PAX} = \text{The MW value of OBF distributed across each of the in-service ABC PARs and Waldwick PARs.} \]
Either Party may establish a temporary OBF to address a reliability issue until a long-term solution to the identified reliability issue can be implemented. Any temporary OBF that is established shall be at a level that both Parties can reliably support. The Party that establishes the OBF shall: (1) explain the reliability need to the other Party; (2) describe how the OBF addresses the identified reliability need; and (3) identify the expected long-term solution to address the reliability need.

The initial 400 MW OBF, effective on May 1, 2017, is expected to be reduced to zero MW by June 1, 2021.

The Parties may mutually agree to modify an established OBF value that normally applies when all of the ABC PARs and Waldwick PARs are in service. Modification of the normally applied OBF value will be implemented no sooner than two years after mutual agreement on such modification has been reached, unless NYISO and PJM mutually agree to an earlier implementation date.

The NYISO and PJM shall post the OBF values, in MW, normally applied to each ABC PAR and Waldwick PAR when all of the ABC PARs and Waldwick PARs are in service, on their respective websites. The NYISO and PJM shall also post the methodology used to reduce the OBF under certain outage conditions on their respective websites. The NYISO and PJM shall review the OBF MW value at least annually.

\[ RECo_{Load_{PARx}} = \]

The MW value of the telemetered real-time Rockland Electric Company Load to be delivered over a NY-NJ PAR shall be calculated as real-time RECo Load times the RECo Load percentage listed in Table 5. RECo Load is the portion of Orange and Rockland load that is part of PJM. The primary objective of the NY-NJ PARs is the delivery of scheduled interchange. Deliveries to serve RECo Load over the Ramapo PARs will only be permitted to the extent there is unused transfer capability on the Ramapo PARs after accounting for interchange. Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load percentage (80%) will be applied to the
in-service Ramapo PAR. The RECo Load percentage ordinarily used for each NY-NJ PAR is listed in Table 5:

<table>
<thead>
<tr>
<th>PAR Name</th>
<th>Description</th>
<th>Interchange Percentage</th>
<th>RECo Load Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>RAMAPO PAR3500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>4500</td>
<td>RAMAPO PAR4500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>E</td>
<td>WALDWICK E2257</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>F</td>
<td>WALDWICK F2258</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>O</td>
<td>WALDWICK O2267</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>A</td>
<td>GOETHSLN BK_1N</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>B</td>
<td>FARRAGUT TR11</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>C</td>
<td>FARRAGUT TR12</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

^ Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load Percentage (80%) will be applied to the in-service Ramapo PAR.

7.2.2 Determination of the Cost of Congestion at each NY-NJ PAR

The incremental cost of congestion relief provided by each NY-NJ 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 NY-NJ PAR Coordinated Flowgates by the PSF for each NY-NJ PAR for the relevant NY-NJ PAR Coordinated Flowgates.

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

\[
\text{Congestion}^{(P_{ARx,RTO})} = \sum_{NY-NJ \ PAR \ Coordinated \ Flowgate-m \ in \ NY-NJ \ PAR \ Coordinated \ Flowgate_{RTO}} \left( PSF_{NY-NJ \ PAR \ Coordinated \ Flowgate-m,PARx} \times \text{Shadow}^{(NY-NJ \ PAR \ Coordinated \ Flowgate-m)} \right)
\]

Where:

\[
\text{Congestion}^{(P_{ARx,RTO})} = \text{Cost of congestion at each NY-NJ PAR for the relevant participating RTO, where a negative cost of}
\]
congestion indicates taps in the direction of the relevant participating RTO would alleviate that RTO’s congestion;

\[
NY - NJ PAR Coordinated Flowgates_{RTO} = \text{Set of NY-NJ PAR Coordinated Flowgates for the relevant participating RTO;}
\]

\[
PSF_{(NY-NJ PAR Coordinated Flowgate–m,PARx)} = \text{The PSF for each NY-NJ PAR on NY-NJ PAR Coordinated Flowgate–m; and}
\]

\[
Shadow$^{NY-NJ PAR Coordinated Flowgate–m} = \text{The Shadow Price on the relevant participating RTO’s NY-NJ PAR Coordinated Flowgate m.}
\]

### 7.2.3 Desired PAR Changes

Consistent with the congestion cost calculation established in Section 7.2.2 above, if the NYISO congestion costs associated with a NY-NJ PAR are less than the PJM congestion costs associated with the same NY-NJ PAR, then hold or take taps into NYISO.

Similarly, if the PJM congestion costs associated with a NY-NJ PAR are less than NYISO congestion costs associated with the same NY-NJ PAR, then hold or take taps into PJM.

Any action on the NY-NJ 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 Flowgate there are two components of the M2M settlement, a redispatch component and a NY-NJ PAR 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 Redispatch Flowgate compared to its M2M Entitlement for M2M Redispatch Flowgates eligible for redispatch on each M2M Redispatch Flowgate; and
2. the *ex-ante* Shadow Price at each M2M Redispatch Flowgate.

When determining M2M settlements for a M2M Redispatch Flowgate, each Party will use the M2M Entitlement that corresponds to the period/group for which the real-time Market Flow is being calculated except for the following scenarios:
1. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is greater than or equal to zero the M2M Entitlement will be set to zero.

2. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is also negative, but exceeds the M2M Entitlement, both the M2M Entitlement and market flow will be set to zero.

Redispatch coordination for Other Coordinated Flowgates is not subject to redispatch settlement under Section 8.2 of this Schedule D. NY-NJ PAR coordination for Other Coordinated Flowgates is subject to NY-NJ PAR coordination settlement under Section 8.3 of this Schedule D.

For the NY-NJ 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 NY-NJ PARs compared to its target flow (Target\text{PAR}_x);
2. PSF for each NY-NJ PAR onto each M2M Flowgate; and
3. the \textit{ex-ante} Shadow Price at each M2M Flowgate.

Either or both of the Parties shall be excused from paying an \textit{M2MPARSettlement} (described in Section 8.3 of this Schedule D) to the other Party at times when a Storm Watch is in effect in New York and the operating requirements and other criteria set forth in Section 8.3.1 below are satisfied.

\section*{8.2 Real-Time Redispatch Settlement}

For each M2M Redispach Flowgate compute the real-time redispatch settlement for each interval as specified below.

When \(RT_{MktFlow}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} > M2M_{Ent}^{M2M \text{ Redispach Flowgate}\rightarrow m_i}\),

\[
MonRTO\_Payment_{M2M \text{ Redispach Flowgate}\rightarrow m_i} = Mon\_Shadow_{M2M \text{ Redispach Flowgate}\rightarrow m_i} \times \left( RT_{MktFlow}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} - M2M_{Ent}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} \right) \times \frac{S_i}{3600 \text{ sec}}
\]

When \(RT_{MktFlow}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} < M2M_{Ent}^{M2M \text{ Redispach Flowgate}\rightarrow m_i}\),

\[
Non\_MonRTO\_Payment_{M2M \text{ Redispach Flowgate}\rightarrow m_i} = Non\_Mon\_Shadow_{M2M \text{ Redispach Flowgate}\rightarrow m_i} \times \left( M2M_{Ent}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} - RT_{MktFlow}^{M2M \text{ Redispach Flowgate}\rightarrow m_i} \right) \times \frac{S_i}{3600 \text{ sec}}
\]
Where:

\[ \text{Non\_MonRTO\_Payment}_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{M2M redispatch settlement, in the form of a payment to the Non-Monitoring RTO from the Monitoring RTO, for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ \text{MonRTO\_Payment}_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{M2M redispatch settlement, in the form of a payment to the Monitoring RTO from the Non-Monitoring RTO, for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ RT\_MktFlow_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{real-time RTO\_MF, determined for settlement in accordance with Section 7.1 above, for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ M2M\_Ent_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{Non-Monitoring RTO M2M Entitlement for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ \text{Mon\_Shadow$}_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{Monitoring RTO’s Shadow Price for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ \text{Non\_Mon\_Shadow$}_{M2M\text{ Redispatch Flowgate}\_m_i} = \text{Non-Monitoring RTO’s Shadow Price for M2M Redispatch Flowgate } m \text{ and interval } i; \]

\[ s_i = \text{number of seconds in interval } i. \]

### 8.3 NY-NJ PARs Settlements

Compute the real-time NY-NJ PARs settlement for each interval as specified below.

When

\[ \text{Actual}_{\text{PARx}_i} > \text{Target}_{\text{PARx}_i}, \]

\[ NY\text{Impact}_{\text{PARx}_i} = \text{Max}\left( \text{Congestion$}_{(\text{PARx}_{NY})_i} \times \left( \text{Target}_{\text{PARx}_i} - \text{Actual}_{\text{PARx}_i} \right), 0 \right) \times \frac{s_i}{3600sec} \]
\[ PJMImpact_{PARx_i} = \left( \text{Congestion$_{(PARx,PJM)}$}_i \times (\text{Actual}_{PARx_i} - \text{Target}_{PARx_i}) \right) \times \frac{s_i}{3600 \text{sec}} \]

When \( \text{Actual}_{PARx_i} < \text{Target}_{PARx_i} \),

\[ NYImpact_{PARx_i} = \left( \text{Congestion$_{(PARx,NY)}$}_i \times (\text{Target}_{PARx_i} - \text{Actual}_{PARx_i}) \right) \times \frac{s_i}{3600 \text{sec}} \]

\[ PJMImpact_{PARx_i} = \max \left( \left( \text{Congestion$_{(PARx,PJM)}$}_i \times (\text{Actual}_{PARx_i} - \text{Target}_{PARx_i}) \right), 0 \right) \times \frac{s_i}{3600 \text{sec}} \]

\[ M2MPARSettlement_i = \left( \min \left( \sum \text{NYImpact}_{PARx_i}, 0 \right) - \min \left( \sum \text{PJMImpact}_{PARx_i}, 0 \right) \right) \]

Where:

\( \text{Actual}_{PARx_i} \) = Measured real-time actual flow on each of the NY-NJ PARs for interval \( i \). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\( \text{Target}_{PARx_i} \) = Calculated Target Value for the flow on each NY-NJ PAR as described in Section 7.2.1 above for interval \( i \). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\( PJMImpact_{PARx_i} \) = PJM Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on PJM’s system congestion for interval \( i \). For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing PJM’s system congestion, whereas a negative value indicates that the PAR flow relative to target flow is increasing PJM’s system congestion.
NYImpact_{PARx_i} = \text{NYISO Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on NYISO’s system congestion for interval } i. \text{ For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing NYISO’s system congestion, whereas a negative value indicates that the PAR flow relative to the target flow is increasing NYISO’s system congestion system.}

Congestion^S_{(PARx,PJM)_i} = \text{Cost of congestion at each NY-NJ PAR for PJM, calculated in accordance with Section 7.2.2 above for interval } i;

Congestion^S_{(PARx,NY)_i} = \text{Cost of congestion at each NY-NJ PAR for NYISO, calculated in accordance with Section 7.2.2 above for interval } i, \text{ and}

M2MPARSettlement_i = \text{M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval } i.

s_i = \text{number of seconds in interval } i.

8.3.1 NY-NJ PAR Settlements During Storm Watch Events

PJM shall not be required to pay a M2MPARSettlement (calculated in accordance with Section 8.3 of this Schedule D) to NYISO when a Storm Watch is in effect and PJM has taken the actions required below to assist the NYISO, or when NYISO has not taken the actions required below to address power flows resulting from the redispatch of generation to address the Storm Watch.

NYISO shall not be required to pay a M2MPARSettlement to PJM when a Storm Watch is in effect and NYISO has taken the actions required of it below to address power flows resulting from the redispatch of generation to address the Storm Watch.

When a Storm Watch is in effect, the RTOs will determine whether PJM and/or NYISO are required to pay a M2MPARSettlement to the other RTO based on three Storm Watch compliance requirements that address the operation of (a) the JK transmission lines and associated Waldwick PARs, (b) the ABC transmission lines and associated ABC PARs, and (c) the 5018 transmission line and associated Ramapo PARs. Compliance shall be determined as follows:

a. \textit{JK Storm Watch compliance:} Subject to the exceptions that follow, PJM will be “Compliant” at the JK interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:
i. Flow on the JK interface was at or above the sum of the Target flows for each Available Waldwick PAR at any point in the trailing (rolling) 15-minutes; or

ii. PJM took at least two taps on each Available Waldwick PAR in the direction to reduce flow into PJM at any point in the trailing (rolling) 15-minutes.

If NYISO denies PJM’s request to take one or more taps at a Waldwick PAR to reduce flow into PJM and achieve compliance at the JK interface, then PJM shall be considered “Compliant” at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at an ABC PAR increasing flow into New York, and flow on the ABC interface is not at or above the sum of the Target flows for each Available ABC PAR, then PJM may request that NYISO take a tap at an ABC PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not take the requested tap within five minutes of receiving PJM’s request. “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at a Ramapo PAR increasing flow into New York, and flow on the 5018 interface is not at or above the sum of the Target flows for each Available Ramapo PAR, then PJM may request that NYISO take a tap at a Ramapo PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not either (i) take the requested tap within five minutes of receiving PJM’s request, or (ii) inform PJM that NYISO is unable to take the requested tap at Ramapo because the change would result in an actual or post-contingency overload on the 5018 lines, or on either of the Ramapo PARs (NYISO will be responsible for demonstrating both the occurrence and duration of the condition). “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

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1 For example, if the sum of the Target flows for Available Waldwick PARs is +200 MW, then PJM will be “Compliant” if flow into PJM on JK was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
If PJM cannot take a required tap at a Waldwick PAR because the change would result in an actual or post-contingency overload on either or both of the JK lines, or on any of the Waldwick PARs, and the overload cannot be addressed through NYISO taking taps at ABC or Ramapo, then PJM will be considered “Compliant” at the JK interface until the condition is resolved. PJM will be responsible for demonstrating both the occurrence and duration of the condition.

b. **ABC Storm Watch compliance**: Subject to the exceptions that follow, NYISO will be “Compliant” at the ABC interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the ABC interface was at or above the sum of the Target values for each Available ABC PAR at any point in the trailing (rolling) 15-minutes\(^2\); or

ii. NYISO took at least two taps on each Available ABC PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at an ABC PAR to increase flow into New York and achieve compliance at the ABC interface, then NYISO shall be considered “Compliant” at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the ABC interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change would result in an actual or post-contingency overload on one or more of the ABC lines, or on any of the ABC PARs, and the overload cannot be addressed through NYISO taking taps at Ramapo or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the ABC interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

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\(^2\) For example, if the sum of the Target values for each Available ABC PAR is +200 MW, then NYISO will be “Compliant” if flow into New York on ABC was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
c. **5018 Storm Watch compliance**: Subject to the exceptions that follow, NYISO will be “Compliant” at the 5018 interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the 5018 interface was at or above the sum of the Target values for each Available Ramapo PAR described in Section 7.2.1 of this Schedule D at any point in the trailing (rolling) 15-minutes; or

ii. NYISO took at least two taps on each Available Ramapo PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at a Ramapo PAR to increase flow into New York and achieve compliance at the 5018 interface, then NYISO shall be considered “Compliant” at the 5018 interface.

If NYISO cannot take a required tap at a Ramapo PAR because it will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the 5018 interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the Ramapo interface.

If NYISO cannot take a required tap at a Ramapo PAR because the change would result in an actual or post-contingency overload on the 5018 line, or on either of the Ramapo PARs, and the overload cannot be addressed through NYISO taking taps at ABC or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the 5018 interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

When a Storm Watch is in effect in New York, PJM shall only be required to pay a M2MPARSettlement to NYISO when PJM is “Non-compliant” at the JK interface, while NYISO is “Compliant” at both the ABC and 5018 interfaces. Otherwise, PJM shall not be required to pay a M2MPARSettlement to NYISO at times when a Storm Watch is in effect in New York.

When a Storm Watch is in effect in New York, NYISO shall only be required to pay a M2MPARSettlement to PJM when NYISO is “Non-compliant” at the ABC interface or the 5018 interface, or both of those interfaces. When NYISO is “Compliant” at both the ABC and 5018
interfaces, NYISO shall not be required to pay a M2MPARSettlement to PJM at times when a
Storm Watch is in effect in New York.

When all three interfaces (JK, ABC, 5018) are “Compliant,” or during the first 15-minutes in
which a Storm Watch is in effect, this Section 8.3.1 excuses the Parties from paying a
M2MPARSettlement to each other at times when a Storm Watch is in effect in New York.

Compliance and Non-compliance shall be determined for each interval of the NYISO
settlement cycle (normally, every 5-minutes) that a Storm Watch is in effect.

8.4 Calculating a Combined M2M Settlement

The M2M settlement shall be the sum of the real-time redispatch settlement for each
M2M Flowgate and M2MPARSettlement for each interval

\[
\text{Redispatch NY Settlement}_i = \left( \sum_{\text{all NY M2M Redispatch Flowgates}} (\text{MonRTO Payment}_{M2M Redispatch Flowgate m_i} - \text{Non MonRTO Payment}_{M2M Redispatch Flowgate m_i}) \right)
\]

\[
\text{Redispatch PJM Settlement}_i = \left( \sum_{\text{all PJM M2M Redispatch Flowgates}} (\text{MonRTO Payment}_{M2M Redispatch Flowgate m_i} - \text{Non MonRTO Payment}_{M2M Redispatch Flowgate m_i}) \right)
\]

Where:

Redispatch NY Settlement\(_i\) = M2M NYISO settlement, defined as a payment
from PJM to NYISO when the value is positive, and
a payment from the NYISO to PJM when the value
is negative for interval \(i\);

Redispatch PJM Settlement\(_i\) = M2M PJM settlement, defined as a payment from
NYISO to PJM when the value is positive, and a
payment from the PJM to NYISO when the value
is negative for interval \(i\);

Non MonRTO Payment\(_{M2M Redispatch Flowgate m_i}\) = Monitoring RTO payment to Non-Monitoring RTO
for congestion on M2M Redispatch Flowgate \(m\) for
interval \(i\); and
\[ \text{MonRTO Payment}_{M2M\ Redisp\ Flowgate\ m_i} = \text{Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Redisp\ Flowgate m for interval i}. \]

\[ M2M\ Settlement_i = \text{Redispatch PJM Settlement}_i - \text{Redispatch NY Settlement}_i + M2MPAR\ Settlement_i \]

Where:

\[ M2M\ Settlement_i = \text{M2M settlement, defined as a payment from the NYISO to PJM when the value is positive, and a payment from PJM to the NYISO when the value is negative for interval i;} \]

\[ \text{Redispatch NY Settlement}_i = \text{M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval i;} \]

\[ \text{Redispatch PJM Settlement}_i = \text{M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval i;} \]

\[ M2MPAR\ Settlement_i = \text{M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval i.} \]

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

\[ M2M\ Settlement_h = \sum_{i=1}^{n} M2M\ Settlement_i \]

Where:

\[ M2M\ Settlement_h = \text{M2M settlement for hour h; and} \]

\[ n = \text{Number of intervals in hour h.} \]

Section 10.1 of this Schedule D sets forth circumstances under which the M2M coordination process and M2M settlements may be temporarily suspended.
When One of the RTOs Does Not Have Sufficient Redispatch

It is possible that sufficient redispatch for a M2M Redispatch Flowgate or Other Coordinated Flowgate may not be available to the Monitoring RTO. In these scenarios, the Monitoring RTO will price the flowgate using rules specific to that RTO’s Tariff language.

However, subject to Section 10.1.2 of this Schedule D, if the Non-Monitoring RTO cannot provide sufficient relief to reach the shadow price of the Monitoring RTO, any 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 Redispatch Flowgate shadow prices being the same in both RTOs, their resulting bus LMPs will converge in a consistent price profile.

Appropriate Use of the M2M Coordination 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 NY-NJ 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 NY-NJ 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. 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.

b. Either Party may temporarily suspend an active M2M coordination process or delay implementation of the M2M coordination process if a Party is experiencing, or acting in good faith suspects it may be experiencing, (1) a failure or outage of the data link between the Parties prevents the exchange of accurate or timely real-time data necessary to implement the M2M coordination process; or (2) a failure or outage of any computational or data systems preventing the actual or accurate calculation of data necessary to implement the M2M coordination process. The Parties shall resolve the issue causing the failure or outage of the data link, computational systems, or data systems as soon as possible in accordance with Good Utility Practice. The Parties shall resume implementation of the M2M coordination process following the successful testing of the data link or relevant system(s) after the failure or outage condition 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 this Agreement.

10.1.8 Suspension of M2M Settlement when a Request for Taps on NY-NJ PARs to Prevent Overuse is Refused. If a Party requests that taps be taken on any NY-NJ 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 NY-NJ PAR settlement component of M2M (see Section 8.3 above) being suspended until the tap request is granted.

10.1.9 Suspension of NY-NJ PAR Settlement due to Transmission Facility Outage(s). The Parties shall suspend PAR settlements for a NY-NJ PAR when that NY-NJ PAR is out of service, is bypassed, or the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange.

No other Transmission Facility outage(s) will trigger suspension of NY-NJ PAR settlements under this Section 10.1.9.

10.1.10 Suspension of NY-NJ PAR Settlement due to a Stuck PAR
The Parties shall suspend PAR settlements for a NY-NJ PAR when the NY-NJ PAR cannot be adjusted due to physical or SCADA failure and either of the following two conditions occur:

1. The failure is on one of the A, B, C, 3500, or 4500 PARs, the flow on the PAR is below the Target flow for that PAR, or
2. The failure is on one of the E, F or O PARs, the flow on the PAR is above the Target flow for that PAR.

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 M2M coordination 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. The Parties will cooperate to review the data exchanged and used to determine M2M settlements and will mutually identify and resolve errors and anomalies in the calculations that determine the M2M settlements.

If the data exchanged for the M2M redispatch process was relied on by the Non-Monitoring RTO’s dispatch to determine the shadow cost the Non-Monitoring RTO was dispatching to when providing relief at an M2M Flowgate, the data transmitted by the Monitoring RTO that was used to determine the Non-Monitoring RTO’s shadow cost shall not be modified except by mutual agreement prior to calculating M2M settlements. Any necessary corrections to the data exchange shall be made for future M2M coordination.

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 this 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 11.1, 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 11.3, below.

11.3 Objection to Change

Within ten business days after receipt of the Notice described in Section 11.1 (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 11.3 expires, or (c) completion of any dispute resolution process initiated pursuant to this Agreement.
Attachment II
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.

35.2.1 Abbreviations, Acronyms and Definitions

“3500 PAR” shall mean the 3500 phase angle regulator at the Ramapo station connected to the 5018 Hopatcong-Ramapo 500 kV line.

“4500 PAR” shall mean the 4500 phase angle regulator at the Ramapo station connected to the 5018 Hopatcong-Ramapo 500 kV line.

“A PAR” shall mean the phase angle regulator located at the Goethals station connected to the A2253 Linden-Goethals 230 kV line.

“ABC Interface” shall mean the transfer path comprised of the A2253 Linden-Goethals, B3402 Hudson-Farragut and C3403 Marion-Farragut tie lines between PJM and NYISO.

“ABC PARs” shall mean the A PAR, B PAR and C PAR that control flow on the ABC Interface.

“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 PAR” shall mean, for purposes of Section 8.3.1 of Schedule D to this Agreement, a NY-NJ PAR that is not subject to any of the following circumstances:

1. A PAR that is not operational and is unable to be moved;
2. A PAR that is technically “in-service” but is being operated in an outage configuration and is only capable of feeding radial load;
3. A PAR that is tapped-out in a particular direction is not available in the tapped-out direction;
4. If the maximum of 400 taps/PAR/month is exceeded at an ABC PAR, Ramapo PAR or a Waldwick PAR, and the relevant asset owner restricts the RTOs from taking further taps on the affected PAR, then the affected PAR shall not be available until NYISO and PJM agree to and implement an increased bandwidth in accordance with Section 7.2 of Schedule D to this Agreement;
5. PJM is permitted to reserve up to three taps at each end of the PAR tap range of each Waldwick PAR to secure the facilities on a post contingency basis, a Waldwick PAR shall not be considered available if a tap move would require the use of a reserved PAR tap; or
6. NYISO is permitted to reserve up to two taps at each end of the tap range of each ABC PAR and Ramapo PAR to secure the facilities on a post contingency basis, an ABC or Ramapo PAR shall not be considered available if a tap move would require the use of a reserved PAR tap.

PJM or NYISO may choose to use PAR taps they are permitted to reserve to perform M2M coordination, but they are not required to do so.

“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.

“B PAR” shall mean the phase angle regulator located at the Farragut station connected to the B3402 Hudson-Farragut 345 kV line.

“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.

“C PAR” shall mean the phase angle regulator located at the Farragut station connected to the C3403 Marion-Farragut 345 kV line.

“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.

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

“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.

“Coordinated Transaction Scheduling” or “CTS” shall mean the market rules that allow transactions to be scheduled based on a bidder’s willingness to purchase energy from a source in either the NYISO or PJM Control Area and sell it at a sink in the other Control Area if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.

“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.

“CTS Interface Bid” shall mean: (1) in PJM, a unified real-time bid to simultaneously purchase and sell energy on either side of a CTS Enabled Interface in accordance with the procedures of
Section 1.13 of Schedule 1 of the Amended and Restated Operating Agreement of PJM, L.L.C.; and (2) in NYISO, a real-time bid provided by an entity engaged in an external transaction at a CTS Enabled Interface, as more fully described in NYISO Services Tariff Section 2.3.

“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.

“E PAR” shall mean the phase angle regulator located at the Waldwick station on the E-2257 Waldwick-Hawthorne 230 kV line.

“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.

“F PAR” shall mean the phase angle regulator located at the Waldwick station on the F-2258 Waldwick-Hillsdale 230 kV line.

“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. When used herein, Flowgate shall mean M2M Redispatch Flowgate, NY-NJ PAR Coordinated Flowgate, and Other Coordinated Flowgate.

“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 intertie(s).

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

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

“ISO” shall mean Independent System Operator.

“JK Interface” shall mean the transfer path comprised of the JK Ramapo-South Mahwah-Waldwick tie lines between PJM and NYISO.

“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 Redispatch 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 Redispatch 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.

“NY-NJ PARs” shall mean, individually and/or collectively, the ABC PARs, the Ramapo PARs, and the Waldwick PARs, all of which are components of the NYISO – PJM interface.

“NY-NJ PAR Coordinated Flowgate” shall mean Flowgates where constraints, impacted by the NY-NJ PARs, are jointly monitored and coordinated as defined and set forth in Schedule D to this Agreement.

“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.
“**O PAR**” shall mean the phase angle regulator located at the Waldwick station on the O-2267 Waldwick-Fairlawn 230kV line.

“**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.

“**Operational Base Flow**” or “**OBF**” shall mean an equal and opposite MW offset of power flows over the Waldwick PARs and ABC PARs to account for natural system flows over the JK Interface and the ABC Interface in order to facilitate the reliable operation of the NYISO and/or PJM transmission systems. The OBF is not a firm transmission service on either the NYISO transmission system or on the PJM transmission system. The OBF shall not result in charges from one Party to the other Party, or from one Party to the other Party’s Market Participants, except for the settlements described in the Real-Time Energy Market Coordination and Settlements provisions set forth in Sections 7 and 8 of Schedule D to this Agreement. In particular, the NYISO and its Market Participants shall not be subjected to PJM Regional Transmission Expansion Plan (“RTEP”) cost allocations as a result of the OBF.

“**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.

“Other Coordinated Flowgate” shall mean a Flowgate where constraints are jointly monitored and coordinated as defined and set forth in Schedule D to this Agreement.

“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.

“Qualified Resource” shall mean a generator that can be effectively committed, decommitted and/or rescheduled to relieve a M2M Redispatch Flowgate or Other Coordinated Flowgate. Generators that cannot or do not follow commitment or dispatch instructions, including but not limited to generators with no difference between their historically offered minimum and maximum operating limits and generators with intermittent fuel sources, are not considered Qualified Resources.

“Ramapo Interface” shall mean the transfer path comprised of the 5018 Hopatcong-Ramapo 500 kV tie line between PJM and NYISO.

“Ramapo PARs” shall mean the 3500 PAR and 4500 PAR that control flow on the Ramapo Interface.
“Real-Time Commitment” shall mean NYISO’s multi-period security constrained unit commitment and dispatch model, as defined in the NYISO Tariffs.

“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.

“Storm Watch” shall mean actual or anticipated severe weather conditions under which region-specific portions of the New York State Transmission System are operated in a more conservative manner by reducing transmission transfer limits.

“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.

“Waldwick PARs” shall mean the E PAR, F PAR and O PAR that control flow on the JK Interface.

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.
35.7 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;

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 Coordination 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 Redispatch Flowgates and Other Coordinated Flowgates; and
g. binding constraint thresholds (the shift factor thresholds used to identify the resource(s) available to relieve a transmission constraint).

35.7.1.10 Additional information required for the Parties to administer CTS, including:

a. interchange transaction offer attributes (frequency of scheduling, offer type, source and sink);

b. forecasted interchange schedules;

c. forecasted prices; and

d. CTS interface limits.

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 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.

Notwithstanding anything to the contrary in this Agreement, EMS models and the data used for EMS modeling exchanged pursuant to Section 35.7.1 may be released by the receiving Party to its Transmission Owners for operational and reliability compliance purposes. The respective Party’s Transmission Owners shall be required to maintain the EMS models and the data as confidential in a manner consistent with or superior to the terms and conditions contained herein.

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.
35.12 M2M Coordination Processes and Coordinated Transaction Scheduling

35.12.1 M2M Coordination Processes

The fundamental philosophy of the M2M transmission congestion-coordination processes 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 NY-NJ 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 processes 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. The goal of redispatch coordination at M2M Redispatch Flowgates and Other Coordinated Flowgates is 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. The goal of NY-NJ PAR coordination is to operate the NY-NJ PARs to efficiently manage the congestion in accordance with Section 7.2 of the attached Market-to-Market Coordination Schedule. NY-NJ PAR coordination can occur at any Flowgate and need not be formally invoked by either Party. It is ordinarily in effect.
The M2M coordination process includes a settlement process rules that apply when M2M coordination is occurring.

### 35.12.2 Coordinated Transaction Scheduling

Coordinated Transaction Scheduling or “CTS” are real time market rules implemented by NYISO and PJM that allow transactions to be scheduled based on a bidder’s willingness to purchase energy at a source (in the PJM Control Area or the NYISO Control Area) and sell it at a sink (in the other Control Area) if the forecasted price at the sink minus the forecasted price at the corresponding source is greater than or equal to the dollar value specified in the bid.

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

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

## Market-to-Market Coordination Schedule

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1 **Overview of the Market-to-Market Coordination Processes**

The purpose of the M2M coordination processes 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 processes 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 processes 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 NY-NJ 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 Redispatch 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 of this Schedule D) the following will be used in determining M2M Flowgates.

2.1 NYISO and PJM will only be performing the M2M Redispatch or NY-NJ PAR coordination process on M2M Flowgates that are under the operational control of NYISO or PJM. NYISO and PJM will not be performing Redispatch or NY-NJ PAR 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 NY-NJ 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 redispatch or NY-NJ PAR the M2M coordination process, a threshold for determining a significant GLDF or NY-NJ PARs 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 NY-NJ PARs. Flowgates with significant GLDF will also be included in joint redispatch.

2.5 M2M Redispatch Flowgates and Other Coordinated Flowgates that are eligible for redispatch coordination are also eligible for coordinated operation of the NY-NJ PARs. M2M-Flowgates that are eligible for coordinated operation of the NY-NJ 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 New York Control Area (“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 there is a significant GLDF for at least one generator within the Non-Monitoring RTO, or significant PSF for at least one NY-NJ PAR, on a potential M2M-Flowgate within the Monitoring RTO that 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 of this Schedule D.

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 thresholds for a Other Coordinated Flowgate with one or more monitored elements are defined as:

   i. Single monitored element, 5% GLDF on any resource;

   ii. Two monitored elements, 7.5% GLDF on any resource; and

   iii. Three or more monitored elements, 10% GLDF on any resource.
For potential Other Coordinated Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.3 The GLDF thresholds for a M2M Redispatch Flowgate with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF on any Qualified Resource;

ii. Two monitored elements, 7.5% GLDF on any Qualified Resource; and

iii. Three or more monitored elements, 10% GLDF on any Qualified Resource.

For potential M2M Redispatch Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.24 The GLDF or NY-NJ PARs PSF thresholds for M2M NY-NJ PAR Coordinated Flowgates with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF/NY-NJ PARs PSF;

ii. Two monitored elements, 7.5% GLDF/NY-NJ PARs PSF; and

iii. Three or more monitored elements, 10% GLDF/NY-NJ PARs PSF.

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

3.3 For potential M2M Flowgates that pass the above NY-NJ PARs PSF criteria, the Parties must still mutually agree to add each Flowgate as an M2M Flowgate for redispatch coordination.

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 GLDF or PSF criteria.

4 Removal of M2M-Flowgates from M2M Coordination Processes

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 affects 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 NY-NJ 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 Redispatch Flowgate that does not satisfy the criteria set forth in Section 3.2-3 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 Redispatch 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 Redispatch Flowgate was withdrawn.

4.3 A Other Coordinated Flowgate shall be removed two weeks after either Party provides a Notice to the other party that it withdraws its agreement to the Other Coordinated Flowgate, or at a later or earlier date that the Parties mutually agree upon. The Notice must include an explanation of the reason(s) why the agreement to the Other Coordinated Flowgate was withdrawn.

4.34 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 relevant coordination processes are 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated 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, of this Schedule D.

\[ Z_{\text{Zonal\_Total\_Load zone}} = L_{\text{Load zone}} + L_{\text{Losses zone}}, \text{ for each RTO load zone} \]

Where:

- \( \text{zone} = \) the relevant RTO load zone;
- \( Z_{\text{Zonal\_Total\_Load zone}} = \) the sum of the RTO’s load and transmission losses for the zone;
- \( L_{\text{Load zone}} = \) the load within the zone; and
- \( L_{\text{Losses zone}} = \) 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:

\[ Z_{\text{Zonal\_Reduced\_Load zone}} = Z_{\text{Zonal\_Total\_Load zone}} - \sum_{\text{scheduled\_line}=1}^\text{all} \text{Import\_Schedules}_{\text{scheduled\_line\_zone}} \]

Where:

- \( \text{zone} = \) the relevant RTO load zone;
- \( \text{scheduled\_line} = \) each of the Transmission Facilities identified in Table 1 below;
- \( Z_{\text{Zonal\_Reduced\_Load zone}} = \) 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\_{zone} = \text{the sum of the RTO’s load and transmission losses for the zone; and}

Import\_{Schedule}^{\text{Scheduled line, zone}} = \text{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

<table>
<thead>
<tr>
<th>Scheduled Line</th>
<th>NYISO Load Zone</th>
<th>PJM Load Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennison Scheduled Line</td>
<td>North</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Cross-Sound Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>New York City</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>New York City</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>Long Island</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>Northport – Norwalk Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

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*

<table>
<thead>
<tr>
<th>Proxy</th>
<th>Balancing Authorities Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>PJM</td>
</tr>
<tr>
<td>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</td>
<td>NYISO</td>
</tr>
</tbody>
</table>
to implementing such changes in its M2M software.

*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

\(Zonal\ Reduced\ Load_{zone}\) = 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

\(Import_{Schedules}_{proxy}\) = the sum of import schedules at a given proxy.

Next, calculate the Zonal Load weighting factor for each RTO load zone:
\[
Zonal\_Weighting_{\text{zone}} = \left( \frac{Zonal\_Reduced\_Load_{\text{zone}}}{RTO\_Net\_Load} \right)
\]

Where:

zone = the relevant RTO load zone;

\(Zonal\_Weighting_{\text{zone}}\) = 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

\(Zonal\_Reduced\_Load_{\text{zone}}\) = 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:

\[
Zonal\_Final\_Load_{\text{zone}} = Zonal\_Weighting_{\text{zone}} \times RTO\_Final\_Load
\]

Where:

zone = the relevant RTO load zone;

\(Zonal\_Final\_Load_{\text{zone}}\) = the final RTO load served by internal RTO generation in the zone;

\(Zonal\_Weighting_{\text{zone}}\) = 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:

\[
RTO\_LSF_{\text{M2M}\_\text{Flowgate}=m} = \sum_{\text{zone}=1}^{\text{all}} \left( LSF_{(\text{zone},\text{M2M}\_\text{Flowgate}=m)} \times \left( \frac{Zonal\_Final\_Load_{\text{zone}}}{RTO\_Final\_Load} \right) \right)
\]

Where:
M2M_Flowgate-m  =  the relevant flowgate;
zone =  the relevant RTO load zone;
RTO_LSFM2M_Flowgate-m =  the load shift factor for the entire RTO footprint on M2M Flowgate m;
LSF(zone,M2M_Flowgate-m) =  the load shift factor for the RTO zone on M2M Flowgate m;
Zonal_Final_Loadzone =  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:

\[ RTO_Genzone = \sum_{unit=1}^{all} Gen_{unit,zone}, \text{for each RTO load zone} \]

Where:

zone =  the relevant RTO load zone;
unit =  the relevant generator;
RTO_Genzone =  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_Genzone = the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone;

RTO_Genzone = 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;

\[ \text{RTO\_Net\_Gen} = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines; and} \]

\[ \text{RTO\_Reduced\_Gen}_{\text{zone}} = \text{the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone.} \]

\[ RTO\_Final\_Gen = RTO\_Net\_Gen - \sum_{\text{proxy}=1}^{\text{all}} \text{Export\_Schedules}_{\text{proxy}} \]

Where:

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

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

\[ \text{RTO\_Net\_Gen} = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines; and} \]

\[ \text{Export\_Schedules}_{\text{proxy}} = \text{the sum of export schedules at a given proxy.} \]

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

\[ \text{Gen\_Final}_{\text{unit}} = \text{Reduced Gen}_{\text{unit}} \times \frac{RTO\_Final\_Gen}{RTO\_Net\_Gen} \]

Where:

\[ \text{unit} = \text{the relevant generator;} \]

\[ \text{Gen\_Final}_{\text{unit}} = \text{the portion of each unit’s output that is serving the RTO Net Load;} \]
Reduced Gen\text{unit} = \text{each unit’s real-time output after reducing the RTO Net Gen by the real-time export schedules over scheduled lines;}

RTO Final Gen = \text{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 = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines.}

5.4 \textbf{Compute the RTO GTL for all M2M Flowgates}

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

\[ \text{RTO GTL}_\text{M2M Flowgate-m} = \sum_{\text{unit}=1}^{\text{all}} \text{Gen Final}_\text{unit} \times \left( \text{GSF (unit, M2M Flowgate-m)} - \text{RTO LSF}_\text{M2M Flowgate-m} \right) \]

Where:

\text{M2M Flowgate-m} = \text{the relevant flowgate;}

\text{unit} = \text{the relevant generator;}

\text{RTO GTL}_\text{M2M Flowgate-m} = \text{the generation to load flow for the entire RTO footprint on M2M Flowgate m;}

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

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

\text{RTO LSF}_\text{M2M Flowgate-m} = \text{the load shift factor for the entire RTO footprint on M2M Flowgate m.}

5.5 \textbf{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
<table>
<thead>
<tr>
<th>Scheduling Point</th>
<th>Scheduling Point Type</th>
<th>Participating RTO(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYISO-PJM</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>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.</td>
<td>non-common</td>
<td>PJM</td>
</tr>
<tr>
<td>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.</td>
<td>non-common</td>
<td>NYISO</td>
</tr>
</tbody>
</table>

\[
RTO_{\text{Transfers}}_{\text{sched}_\text{pt}} = \text{Imports}_{\text{sched}_\text{pt}} + \text{WheelsIn}_{\text{sched}_\text{pt}} - \text{Exports}_{\text{sched}_\text{pt}} - \text{WheelsOut}_{\text{sched}_\text{pt}}
\]

Where:

- \text{sched}_\text{pt} = \text{the relevant scheduling point. A scheduling point can be either a proxy or a scheduled line;}
- \text{RTO}_{\text{Transfers}}_{\text{sched}_\text{pt}} = \text{the net interchange schedule at a scheduling point;}
- \text{Imports}_{\text{sched}_\text{pt}} = \text{the import component of the interchange schedule at a scheduling point;}
- \text{WheelsIn}_{\text{sched}_\text{pt}} = \text{the injection of wheels-through component of the interchange schedule at a scheduling point;}

Exportssched_{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. \textit{Parallel\_Transfers} are applied to the Market Flow of the responsible participating RTO. For example, the \textit{Parallel\_Transfers} computed for the IESO-NYISO non-common scheduling point are applied to the NYISO Market Flow.

\[
\text{Parallel\_Transfers}_{M2M\_Flowgate-m} = \sum_{\text{nc\_sched\_pt}=1}^{all} \text{RTO\_Transfers}_{\text{nc\_sched\_pt}} \times \text{PTDF}_{(\text{nc\_sched\_pt}, \text{M2M\_Flowgate-m})}
\]

Where:

- \text{M2M\_Flowgate-m} = the relevant flowgate;
- \text{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;

\[
\text{Parallel\_Transfers}_{M2M\_Flowgate-m} = \text{the flow on M2M\_Flowgate m due to the net interchange schedule at the non-common scheduling point;}
\]

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

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

The equation below applies to common scheduling points that directly interconnect the participating RTOs. \textit{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.

\[
\text{Shared\_Transfers}_{M2M\_Flowgate-m} = \sum_{\text{cmn\_sched\_pt}=1}^{all} \text{RTO\_Transfers}_{\text{cmn\_sched\_pt}} \times \text{PTDF}_{(\text{cmn\_sched\_pt}, \text{M2M\_Flowgate-m})}
\]
Where:

- \( \text{M2M Flowgate-m} = \) the relevant flowgate;
- \( \text{cmn_sched_pt} = \) 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;
- \( \text{Shared Transfers}_{\text{M2M Flowgate-m}} = \) the flow on \( \text{M2M Flowgate m} \) due to interchange schedules on the common scheduling point;
- \( \text{RTO Transfers}_{\text{cmn_sched_pt}} = \) the net interchange schedule at a common scheduling point, where a positive number indicates the import direction; and
- \( \text{PTDF}_{(\text{cmn_sched_pt, M2M Flowgate-m})} = \) the generation shift factor of the common scheduling point on \( \text{M2M Flowgate m} \). 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>
<thead>
<tr>
<th>PAR</th>
<th>Description</th>
<th>PAR Type</th>
<th>Actual Schedule</th>
<th>Target Schedule</th>
<th>Responsible Participating RTO(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RAMAPO PAR3500</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>2</td>
<td>RAMAPO PAR4500</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>3</td>
<td>FARRAGUT TR11</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>4</td>
<td>FARRAGUT TR12</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>5</td>
<td>GOETHSLN BK_1N</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>6</td>
<td>WALDWICK O2267</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>7</td>
<td>WALDWICK F2258</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>8</td>
<td>WALDWICK E2257</td>
<td>common</td>
<td>From telemetry</td>
<td>From telemetry*</td>
<td>NYISO and PJM</td>
</tr>
</tbody>
</table>
*Pursuant to the rules for implementing the M2M coordination process over the NY-NJ PARs that are set forth in this M2M Schedule.

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

\[
\text{PAR Control}_{\text{par}} = \text{Actual MW}_{\text{par}} - \text{Target MW}_{\text{par}}
\]

Where:

\(\text{par} = \) each of the phase angle regulators listed in Table 4, above;

\(\text{PAR Control}_{\text{par}} = \) the flow deviation on each of the PARs;

\(\text{Actual MW}_{\text{par}} = \) the actual flow on each of the PARs, determined consistent with Table 4 above; and

\(\text{Target MW}_{\text{par}} = \) 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 \(\text{PAR Impact}\) 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\(_{\text{par}}\) MWs calculated above:

\[
\text{Cmn PAR Control}_{\text{M2M Flowgate} - m} = \sum_{\text{cmn par}=1}^{\text{all}} (PSF_{\text{cmn par, M2M Flowgate} - m}) \times \text{PAR Control}_{\text{cmn par}}
\]

Where:

\(\text{M2M Flowgate-}m = \) the relevant flowgate;

\(\text{cmn par} = \) each of the common phase angle regulators, modeled as Flowgates, identified in Table 4, above;
Cmn_PAR_Control\textsubscript{M2M-Flowgate-m} = the sum of flow on M2M-Flowgate m after accounting for the operation of common PARs;

PSF\textsubscript{(cmn_par,M2M-Flowgate-m)} = the PSF of each of the common PARs on M2M-Flowgate m; and

PAR\_Control\textsubscript{cmn_par} = 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:

$$C_{CM\_IMP\_P\_R\_MFM2M\_Flowgate-m} = \sum_{cmn\_par=1}^{all} \left( PSF\textsubscript{(cmn\_par,M2M-Flowgate-m)} \times \left(RTO\_GTL\textsubscript{cmn\_par} + Parallel\_Transfers\textsubscript{cmn\_par} \right) \right)$$

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\textsubscript{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\textsubscript{(cmn\_par,M2M-Flowgate-m)} = the PSF of each of the common PARs on M2M-Flowgate m;

RTO\_GTL\textsubscript{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\textsubscript{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:

$$C_{CM\_PAR\_IMP\_MFM2M\_Flowgate-m} = C_{CM\_PAR\_MF\textsubscript{M2M-Flowgate-m}} - C_{CM\_PAR\_Control\textsubscript{M2M-Flowgate-m}}$$

Where:

M2M-Flowgate-m = the relevant flowgate;
Cmn_PAR_Impact\textsubscript{M2M Flowgate-m} = potential flow on M2M Flowgate m that is affected by the operation of the common PARs;

Cmn_PAR_MF\textsubscript{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\textsubscript{M2M Flowgate-m} = the flow deviation on each of the common PARs.

\textbf{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_{M2M Flowgate-m} = the sum of flow on M2M Flowgate m after accounting for the operation of non-common PARs;

PSF\textsubscript{nc_par,M2M Flowgate-m} = the PSF of each of the non-common PARs on M2M Flowgate m; and

PAR\_Control_{nc\_par} = 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:

\[
NC\_PAR\_MF_{M2M Flowgate-m} = \sum_{nc\_par=1}^{all} \left( PSF_{nc\_par,M2M Flowgate-m} \times \left( RTO\_GTL_{nc\_par} + Parallel\_Transfers_{nc\_par} \right) \right)
\]
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_M2M_Flowgate-m | = | the sum of flow on M2M-Flowgate m due to the generation to load flows and interchange schedules on the non-common PARs; |
| PSF(nc_par,M2M_Flowgate-m) | = | the outage transfer distribution factor of each of the non-common PARs on M2M-Flowgate m; |
| RTO_GTL nc_par | = | 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_Transfersnc_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:

\[
\text{NC}_\text{PAR}_\text{Impact}_{\text{M2M}_\text{Flowgate-m}} = \text{NC}_\text{PAR}_\text{MF}_{\text{M2M}_\text{Flowgate-m}} - \text{NC}_\text{PAR}_\text{Control}_{\text{M2M}_\text{Flowgate-m}}
\]

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:
\[ \text{PAR\_Impact}_{\text{M2M\_Flowgate\_m}} = \text{Cmn\_PAR\_Impact}_{\text{M2M\_Flowgate\_m}} + \text{NC\_PAR\_Impact}_{\text{M2M\_Flowgate\_m}} \]

Where:

\[ \text{M2M\_Flowgate\_m} \] = the relevant flowgate;

\[ \text{PAR\_Impact}_{\text{M2M\_Flowgate\_m}} \] = the flow on M2M Flowgate m that is affected after accounting for the operation of both common and non-common PARs;

\[ \text{Cmn\_PAR\_Impact}_{\text{M2M\_Flowgate\_m}} \] = potential flow on M2M Flowgate m that is affected by the operation of the common PARs; and

\[ \text{NC\_PAR\_Impact}_{\text{M2M\_Flowgate\_m}} \] = 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 \( \text{RTO\_GTL} \) and \( \text{PAR\_IMPACT} \) known, we can now compute the \( \text{RTO\_MF} \) for all M2M Flowgates as:

\[
\text{RTO\_MF}_{\text{M2M\_Flowgate\_m}} = \text{RTO\_GTL}_{\text{M2M\_Flowgate\_m}} + \text{Parallel\_Transfers}_{\text{M2M\_Flowgate\_m}} + \text{Shared\_Transfers}_{\text{M2M\_Flowgate\_m}} - \text{PAR\_Impact}_{\text{M2M\_Flowgate\_m}}
\]

Where:

\[ \text{M2M\_Flowgate\_m} \] = the relevant flowgate;

\[ \text{RTO\_MF}_{\text{M2M\_Flowgate\_m}} \] = 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;

\[ \text{RTO\_GTL}_{\text{M2M\_Flowgate\_m}} \] = the generation to load flow for the entire RTO footprint on M2M Flowgate m;

\[ \text{Parallel\_Transfers}_{\text{M2M\_Flowgate\_m}} \] = the flow on M2M Flowgate m caused by interchange schedules that are not jointly scheduled by the participating RTOs;

\[ \text{Shared\_Transfers}_{\text{M2M\_Flowgate\_m}} \] = the flow on M2M Flowgate m caused by interchange schedules that are jointly scheduled by the participating RTOs; and
PAR_{Impact_{\text{M2M-Flowgate-m}}} = \text{the flow on M2M-Flowgate m that is affected after accounting for the operation of both the common and non-common PARs.}

6 \quad \textbf{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 \quad \textbf{M2M Entitlement Topology Model and Impact Calculation}

The M2M Entitlement calculation shall use both RTOs’ static topological models to determine the Non-Monitoring RTO’s mutually agreed upon share of a M2M Flowgate’s total capacity based on historic dispatch patterns. Both RTOs’ models 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 models except the PARs at the Michigan-Ontario border;
5. new or upgraded Transmission Facilities; and

Each Party 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 this 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 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 models 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 of this Schedule D.

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 of this Schedule D 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.


This Section sets forth the rules for incorporating new or upgraded Transmission Facilities, and Transmission Facility retirements, 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 new or upgraded Transmission Facility, or Transmission Facility retirement, 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 new or upgraded Transmission Facilities, or Transmission Facility retirements, 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.

The Parties will mutually perform an analysis to determine if new or upgraded Transmission Facilities, or Transmission Facility retirements, will have an impact on any of the non-building RTO’s M2M Flowgates. If the new or upgraded Transmission Facilities, or Transmission Facility retirements, are determined to have a 5% or less impact on each of the non-building RTO’s M2M Flowgates, calculated individually for each M2M Flowgate, then the non-building RTO is not required to update its operational models to incorporate the new, upgraded or retired Transmission Facilities. If the new or upgraded Transmission Facilities, or
Transmission Facility retirements, are determined to have greater than a 5% impact, but less than a 10% impact on each of the non-building RTO’s M2M Flowgates, calculating the impact individually for each M2M Flowgate, then the Parties may mutually agree not to require the non-building RTO to update its operational models.

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 models 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 or retired Transmission Facilities when new Transmission Facilities are built or existing Transmission Facilities are upgraded or retired. 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 new or upgraded Transmission Facilities, or removing retired Transmission Facilities.

Second, account for new or upgraded Transmission Facilities or Transmission Facility retirements in order from the first completed new/upgraded/retired facility to the last (most recently completed) new/upgraded/retired facility. Reflect the new/upgraded/retired 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 (after adding new or upgraded Transmission Facilities and/or removing retired 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:**

\[
\begin{align*}
\text{TotPost} &= \sum_{f \in F} \text{Post}_f \\
\text{TotPre} &= \sum_{f \in E} \text{Pre}_f
\end{align*}
\]
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 $f \in F$:

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

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 $f \in F$:

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

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, upgraded or retired Transmission Facilities (which may not be M2M Flowgates) in the relevant (building or non-building) RTO.

- $N$ represents the new, upgraded or retired 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 $N$.

- $\text{Pre}_f$ is pre-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated.

- $\text{Post}_f$ is the post-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated, and all new, upgraded or retired Transmission Facilities
whose impact on M2M Entitlements is being evaluated in the current evaluation step. For Transmission Facility retirements, $P_{m,t}$ shall equal zero.

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 and Transmission Facility retirements 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 or Transmission Facility retirement 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 or Transmission Facility retirement 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 NY-NJ PARs and redispatch are used by the Parties in real-time operations to effectuate this M2M coordination process. Operation of the NY-NJ 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 NY-NJ PARs to manage transmission congestion requires cooperation between the NYISO and PJM. Operation of the NY-NJ PARs shall be coordinated by the RTOs.

When a M2M Redispetch Flowgate or Other Coordinated Flowgate that is under the operational control of either NYISO or PJM and that is eligible for redispetch 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 redispetch 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 redispetch 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 10.

7.1 Real-Time Redispatch Coordination Procedures

The following procedure will apply for managing redispatch for M2M Redispatch Flowgates and Other Coordinated 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, for a M2M Redispatch Flowgate, or (iii) the Non-Monitoring RTO agrees to initiate and to continue coordination for a M2M Redispatch Flowgate or Other Coordinated Flowgate, 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 for M2M Redispatch Flowgates:

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 Redispatch 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 Redispatch 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-redispatch coordination process for the constrained M2M Redispatch Flowgate.

When any of 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 Redispch Flowgate. The rules for determining which Market Flow (unadjusted or adjusted) to compare to the Non-Monitoring RTO M2M Entitlement when any of the PARs at the Michigan-Ontario border are in-service are set forth below.


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:

$$MICH-OH_{PAR-Impact}_{M2M-Flowgate-m} = \sum_{MICH-OH\ Path=1}^{4} \left( \frac{PSF_{(MICH-OH\ Path,M2M-Flowgate-m)}}{(RTO_{MF_{MICH-OH\ Path}} - LEC/4)} \right)$$

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.

\[
LEC\ Adjusted\ Market\ Flow_{M2M\_Flowgate-m} = RTO_{MF_{M2M\_Flowgate-m}} - MICH\_OH\_PAR\_Impact_{M2M\_Flowgate-m}
\]

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
- 
- $LEC\ Adjusted\ Market\ Flow_{M2M\_Flowgate-m}$ = 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 Redispatch 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 Redispatch 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 Redispatch 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 Redispatch 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 Redispatch 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 Redispatch 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 Redispatch Flowgate.

7.1.3 The Monitoring RTO initiates M2M Redispatch coordination, notifies the Non-Monitoring RTO of the M2M Redispatch Flowgates or Other Coordinated Flowgates that are 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 redispatch coordination:
   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 redispatch coordination:
   i. Such an agreement shall be considered an initiation of the M2M redispatch process for operational and settlement purposes; and
   ii. The M2M State is set to “Activated”.

   iii. If the Non-Monitoring RTO later withdraws its agreement to activate redispatch coordination at a Flowgate, then the Non-Monitoring RTO notifies the Monitoring RTO of the reason for its decision and the Monitoring RTO shall terminate the redispatch coordination process and set the M2M State to “Refused”.

7.1.5 The Parties have agreed to transmit information required for the administration of this procedure, as per Section 35.7.1 of this 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 redispatch process. Current and forecasted future system conditions shall be considered.

   Termination of redispatch coordination may be requested by either RTO in the event of a system emergency.

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

---

*Termination of M2M redispatch may be requested by either RTO in the event of a system emergency.*
the Monitoring RTO Shadow Price, then the Monitoring RTO may terminate the M2M coordination process.

7.1.7 Upon termination of M2M redispatch coordination, the Monitoring RTO shall

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 redispatch process for operational and where applicable, settlement purposes.

7.2 Real-Time NY-NJ PAR Coordination

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

PJM and the NYISO have operational control of the NY-NJ PARs and direct the operation of the NY-NJ PARs, while Public Service Electric and Gas Company (“PSE&G”) and Consolidated Edison Company of New York (“Con Edison”) have physical control of the NY-NJ PARs. The Con Edison dispatcher sets the PAR taps for the ABC PARs and Ramapo PARs at the direction of the NYISO. The PSE&G dispatchers set the PAR taps for the Waldwick PARs at the direction of PJM.

PJM and the NYISO have the responsibility to direct the operation of the NY-NJ PARs to maintain compliance with the requirements of this Agreement. PJM and the NYISO shall make reasonable efforts to minimize movement of the NY-NJ PARs while implementing the NY-NJ PAR target flows and the NY-NJ PAR coordination process. PJM and the NYISO will employ a +/- 50 MW operational bandwidth around each NY-NJ PAR’s target flow to limit tap movements and to maintain actual flows at acceptable levels. This operational bandwidth shall not impact or change the NY-NJ PAR Settlement rules in Section 8.3 of this Agreement. The operational bandwidth provides a guideline to assist the RTOs’ efforts to avoid unnecessary NY-NJ PAR tap movements.

In order to preserve the long-term availability of the NY-NJ PARs, a maximum number of 20 PAR tap changes per NY-NJ PAR per day, and a maximum number of 400 PAR tap changes per NY_NJ PAR per calendar month will normally be observed. If the number of PAR tap changes exceed these limits, then the operational bandwidth shall be increased in 50 MW increments until the total number of PAR tap changes no longer exceed 400 PAR tap changes per NY-NJ PAR per month, unless PJM and the NYISO mutually agree otherwise.

In order to implement the NY-NJ PAR coordination process, including the establishment and continuation of the initial and any future OBF as defined in this Section and Section 35.2 of
this Agreement, on the ABC PARs and the Waldwick PARs, the facilities comprising the ABC Interface and JK Interface shall be functional and operational at all times, consistent with Good Utility Practice, except when they are taken out-of-service to perform maintenance or are subject to a forced outage.

### 7.2.1 NY-NJ PAR Target Values

A Target Value for flow between the NYISO and PJM shall be determined for each NY-NJ PAR based on the net interchange schedule between the Parties. These Target Values shall be used for settlement purposes as:

\[
\text{Target}_{\text{PARx}} = (\text{InterchangeFactor}_{\text{PARx}}) + (\text{Operational Base Flow}_{\text{PARx}}) + (\text{RECo Load}_{\text{PARx}})
\]

Where:

\[
\text{Target}_{\text{PARx}} = \text{Calculated Target Value for the flow on each NY-NJ PAR For purposes of this equation, a positive value* indicates a flow from PJM to the NYISO.}
\]

* The sign conventions apply to the formulas used in this Agreement. The Parties may utilize different sign conventions in their market software so long as the software produces results that are consistent with the rules set forth in this Agreement.

\[
\text{InterchangeFactor}_{\text{PARx}} = \text{The MW value of the net interchange schedule between PJM and NYISO over the AC tie lines distributed across each in-service NY-NJ PAR calculated as net interchange schedule times the interchange percentage. The interchange percentage for each NY-NJ PAR is listed in Table 5.}
\]

If a NY-NJ PAR is out-of-service or is bypassed, or if the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange, the percentage of net interchange normally assigned to that NY-NJ PAR will be transferred over the western AC tie lines between the NYISO and PJM. The remaining in-service NY-NJ PARs will continue to be assigned the interchange percentages specified in Table 5.

\[
\text{OperationalBaseFlow}_{\text{PARx}} = \text{The MW value of OBF distributed across each of the in-service ABC PARs and Waldwick PARs.}
\]

Either Party may establish a temporary OBF to address a reliability issue until a long-term solution to the identified reliability issue can be implemented. Any temporary OBF that is established shall be at a level that both Parties can reliably support. The Party that establishes the OBF shall:
(1) explain the reliability need to the other Party; (2) describe how the OBF addresses the identified reliability need; and (3) identify the expected long-term solution to address the reliability need.

The initial 400 MW OBF, effective on May 1, 2017, is expected to be reduced to zero MW by June 1, 2021.

The Parties may mutually agree to modify an established OBF value that normally applies when all of the ABC PARs and Waldwick PARs are in service. Modification of the normally applied OBF value will be implemented no sooner than two years after mutual agreement on such modification has been reached, unless NYISO and PJM mutually agree to an earlier implementation date.

The NYISO and PJM shall post the OBF values, in MW, normally applied to each ABC PAR and Waldwick PAR when all of the ABC PARs and Waldwick PARs are in service, on their respective websites. The NYISO and PJM shall also post the methodology used to reduce the OBF under certain outage conditions on their respective websites. The NYISO and PJM shall review the OBF MW value at least annually.

\[ RECo_{Load_{PARx}} = \]

The MW value of the telemetered real-time Rockland Electric Company Load to be delivered over a NY-NJ PAR shall be calculated as real-time RECo Load times the RECo Load percentage listed in Table 5. RECo Load is the portion of Orange and Rockland load that is part of PJM. The primary objective of the NY-NJ PARs is the delivery of scheduled interchange. Deliveries to serve RECo Load over the Ramapo PARs will only be permitted to the extent there is unused transfer capability on the Ramapo PARs after accounting for interchange. Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load percentage (80%) will be applied to the in-service Ramapo PAR. The RECo Load percentage ordinarily used for each NY-NJ PAR is listed in Table 5:

Table 5
### Table

<table>
<thead>
<tr>
<th>PAR Name</th>
<th>Description</th>
<th>Interchange Percentage</th>
<th>RECo Load Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>RAMAPO PAR3500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>4500</td>
<td>RAMAPO PAR4500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>E</td>
<td>WALDWICK E2257</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>F</td>
<td>WALDWICK F2258</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>O</td>
<td>WALDWICK O2267</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>A</td>
<td>GOETHSLN BK_1N</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>B</td>
<td>FARRAGUT TR11</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>C</td>
<td>FARRAGUT TR12</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

^ Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load Percentage (80%) will be applied to the in-service Ramapo PAR.

### 7.2.2 Determination of the Cost of Congestion at each NY-NJ PAR

The incremental cost of congestion relief provided by each NY-NJ 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 NY-NJ PAR Coordinated Flowgates by the PSF for each NY-NJ PAR for the relevant M2M NY-NJ PAR Coordinated Flowgates.

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

\[
\text{Congestion}^\$((P_{ARx,RTO}) = \sum_{M2M_{NY-NJ \text{ PAR Coordinated Flowgates}} \left(PSF(M2M_{NY-NJ \text{ PAR Coordinated Flowgate}}) \times Shadow^\$_{M2M_{NY-NJ \text{ PAR Coordinated Flowgate}}}ight)}
\]

Where:

\[\text{Congestion}^\$((P_{ARx,RTO}) = \text{Cost of congestion at each NY-NJ PAR for the relevant participating RTO, where a negative cost of congestion indicates taps in the direction of the relevant participating RTO would alleviate that RTO’s congestion;}\]
NY – NJ PAR Coordinated Flowgates_{RTO} = Set of M2M-NY-NJ PAR Coordinated Flowgates for the relevant participating RTO;

$PSF_{M2M\text{-NY-NJ PAR Coordinated Flowgate}_m, PAR} =$ The PSF for each NY-NJ PAR on M2M-NY-NJ PAR Coordinated Flowgate–m; and

$ShadowPrice_{M2M\text{-NY-NJ PAR Coordinated Flowgate}_m} =$ The Shadow Price on the relevant participating RTO’s M2M-NY-NJ PAR Coordinated Flowgate m.

7.2.3 Desired PAR Changes

Consistent with the congestion cost calculation established in Section 7.2.2 above, if the NYISO congestion costs associated with a NY-NJ PAR are less than the PJM congestion costs associated with the same NY-NJ PAR, then hold or take taps into NYISO.

Similarly, if the PJM congestion costs associated with a NY-NJ PAR are less than NYISO congestion costs associated with the same NY-NJ PAR, then hold or take taps into PJM.

Any action on the NY-NJ 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 NY-NJ PAR 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 Redispatch Flowgate compared to its M2M Entitlement for M2M Redispatch Flowgates eligible for redispatch on each M2M Redispatch Flowgate; and

2. the ex-ante Shadow Price at each M2M Redispatch Flowgate.

When determining M2M settlements for a M2M Redispatch Flowgate, each Party will use the M2M Entitlement that corresponds to the period/group for which the real-time Market Flow is being calculated except for the following scenarios:
1. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is greater than or equal to zero the M2M Entitlement will be set to zero.

2. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is also negative, but exceeds the M2M Entitlement, both the M2M Entitlement and market flow will be set to zero.

Redispatch coordination for Other Coordinated Flowgates is not subject to redispatch settlement under Section 8.2 of this Schedule D. NY-NJ PAR coordination for Other Coordinated Flowgates is subject to NY-NJ PAR coordination settlement under Section 8.3 of this Schedule D.

For the NY-NJ 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 NY-NJ PARs compared to its target flow (Target\text{PAR}_x);
2. PSF for each NY-NJ PAR onto each M2M Flowgate; and
3. the ex-ante Shadow Price at each M2M Flowgate.

Either or both of the Parties shall be excused from paying an M2MPAR\text{Settlement} (described in Section 8.3 of this Schedule D) to the other Party at times when a Storm Watch is in effect in New York and the operating requirements and other criteria set forth in Section 8.3.1 below are satisfied.

### 8.2 Real-Time Redispatch Settlement

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

When \(RT\text{\_MktFlow}_{M2M \text{\_Redispatch Flowgate} - m_i} > M2M\text{\_Ent}_{M2M \text{\_Redispatch Flowgate} - m_i}\),

\[
\text{MonRTO\_Payment}_{M2M \text{\_Redispatch Flowgate} - m_i} = \text{Mon\_Shadow \$_{M2M \text{\_Redispatch Flowgate} - m_i}} \times \left( \text{RT\_MktFlow}_{M2M \text{\_Redispatch Flowgate} - m_i} - M2M\text{\_Ent}_{M2M \text{\_Redispatch Flowgate} - m_i} \right) \times \frac{S_i}{3600 \text{sec}}
\]

When \(RT\text{\_MktFlow}_{M2M \text{\_Redispatch Flowgate} - m_i} < M2M\text{\_Ent}_{M2M \text{\_Redispatch Flowgate} - m_i}\),

\[
\text{Non\_MonRTO\_Payment}_{M2M \text{\_Redispatch Flowgate} - m_i} = \text{Non\_Mon\_Shadow \$_{M2M \text{\_Redispatch Flowgate} - m_i}} \times \left( M2M\text{\_Ent}_{M2M \text{\_Redispatch Flowgate} - m_i} - RT\text{\_MktFlow}_{M2M \text{\_Redispatch Flowgate} - m_i} \right) \times \frac{S_i}{3600 \text{sec}}
\]
Where:

\[ \text{Non}_\text{MonRTO Payment}_{M2M \ Redisp \ Flowgate=m_i} = \text{M2M redispatch settlement, in the form of a payment to the Non-Monitoring RTO from the Monitoring RTO, for M2M Redisp Flowgate m and interval } i; \]

\[ \text{MonRTO Payment}_{M2M \ Redisp \ Flowgate=m_i} = \text{M2M redispatch settlement, in the form of a payment to the Monitoring RTO from the Non-Monitoring RTO, for M2M Redisp Flowgate m and interval } i; \]

\[ \text{RT}_\text{MktFlow}_{M2M \ Redisp \ Flowgate=m_i} = \text{real-time RTO_MF, determined for settlement in accordance with Section 7.1 above, for M2M Redisp Flowgate m and interval } i; \]

\[ \text{M2M Ent}_{M2M \ Redisp \ Flowgate=m_i} = \text{Non-Monitoring RTO M2M Entitlement for M2M Redisp Flowgate m and interval } i; \]

\[ \text{Mon Shadow$}_{M2M \ Redisp \ Flowgate=m_i} = \text{Monitoring RTO’s Shadow Price for M2M Redisp Flowgate m and interval } i; \]

\[ \text{Non Mon Shadow$}_{M2M \ Redisp \ Flowgate=m_i} = \text{Non-Monitoring RTO’s Shadow Price for M2M Redisp Flowgate m and interval } i; \]

\[ s_i = \text{number of seconds in interval } i. \]

### 8.3 NY-NJ PARs Settlements

Compute the real-time NY-NJ PARs settlement for each interval as specified below.

When

\[ \text{Actual}_{\text{PARx}_i} > \text{Target}_{\text{PARx}_i}, \]

\[ \text{NYImpact}_{\text{PARx}_i} \]

\[ = \text{Max} \left( \text{Congestion$}_{(\text{PARx}, \text{NY})_i} \times \left( \text{Target}_{\text{PARx}_i} - \text{Actual}_{\text{PARx}_i} \right) \right), 0) \times s_i/3600\text{sec} \]
\[ \text{PJMImpact}_{\text{PARx}_i} = \left( \text{Congestion}^{(\text{PARx, PJM})}_i \times (\text{Actual}_{\text{PARx}_i} - \text{Target}_{\text{PARx}_i}) \right) \times \frac{s_i}{3600 \text{sec}} \]

When \( \text{Actual}_{\text{PARx}_i} < \text{Target}_{\text{PARx}_i} \),

\[ \text{NYImpact}_{\text{PARx}_i} = \left( \text{Congestion}^{(\text{PARx, NY})}_i \times (\text{Target}_{\text{PARx}_i} - \text{Actual}_{\text{PARx}_i}) \right) \times \frac{s_i}{3600 \text{sec}} \]

\[ \text{PJMImpact}_{\text{PARx}_i} = \max\left( \text{Congestion}^{(\text{PARx, PJM})}_i \times (\text{Actual}_{\text{PARx}_i} - \text{Target}_{\text{PARx}_i}), 0 \right) \times \frac{s_i}{3600 \text{sec}} \]

\[ \text{M2MPARSettlement} = \left( \min\left( \sum_{\text{All NY-NJ PARs}} \text{NYImpact}_{\text{PARx}_i}, 0 \right) - \min\left( \sum_{\text{All NY-NJ PARs}} \text{PJMImpact}_{\text{PARx}_i}, 0 \right) \right) \times \frac{s_i}{3600 \text{sec}} \]

\[ \text{M2MPARSettlement}_{i} = \left( \min\left( \sum_{\text{All NY-NJ PARs}} \text{NYImpact}_{\text{PARx}_i}, 0 \right) - \min\left( \sum_{\text{All NY-NJ PARs}} \text{PJMImpact}_{\text{PARx}_i}, 0 \right) \right) \]

Where:

\( \text{Actual}_{\text{PARx}_i} = \)

Measured real-time actual flow on each of the NY-NJ PARs for interval \( i \). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\( \text{Target}_{\text{PARx}_i} = \)

Calculated Target Value for the flow on each NY-NJ PAR as described in Section 7.2.1 above for interval \( i \). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;
PJM Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on PJM’s system congestion for interval $i$. For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing PJM’s system congestion, whereas a negative value indicates that the PAR flow relative to target flow is increasing PJM’s system congestion.

NYISO Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on NYISO’s system congestion for interval $i$. For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing NYISO’s system congestion, whereas a negative value indicates that the PAR flow relative to the target flow is increasing NYISO’s system congestion system.

Cost of congestion at each NY-NJ PAR for PJM, calculated in accordance with Section 7.2.2 above for interval $i$; Cost of congestion at each NY-NJ PAR for NYISO, calculated in accordance with Section 7.2.2 above for interval $i$, and M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval $i$.

$s_i = \text{number of seconds in interval } i$.

8.3.1 NY-NJ PAR Settlements During Storm Watch Events

PJM shall not be required to pay a M2M PAR Settlement (calculated in accordance with Section 8.3 of this Schedule D) to NYISO when a Storm Watch is in effect and PJM has taken the actions required below to assist the NYISO, or when NYISO has not taken the actions required below to address power flows resulting from the redispatch of generation to address the Storm Watch.

NYISO shall not be required to pay a M2M PAR Settlement to PJM when a Storm Watch is in effect and NYISO has taken the actions required of it below to address power flows resulting from the redispatch of generation to address the Storm Watch.

When a Storm Watch is in effect, the RTOs will determine whether PJM and/or NYISO are required to pay a M2M PAR Settlement to the other RTO based on three Storm Watch
compliance requirements that address the operation of (a) the JK transmission lines and associated Waldwick PARs, (b) the ABC transmission lines and associated ABC PARs, and (c) the 5018 transmission line and associated Ramapo PARs. Compliance shall be determined as follows:

a. **JK Storm Watch compliance**: Subject to the exceptions that follow, PJM will be “Compliant” at the JK interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

   i. Flow on the JK interface was at or above the sum of the Target flows for each Available Waldwick PAR at any point in the trailing (rolling) 15-minutes\(^2\); or

   ii. PJM took at least two taps on each Available Waldwick PAR in the direction to reduce flow into PJM at any point in the trailing (rolling) 15-minutes.

If NYISO denies PJM’s request to take one or more taps at a Waldwick PAR to reduce flow into PJM and achieve compliance at the JK interface, then PJM shall be considered “Compliant” at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at an ABC PAR increasing flow into New York, and flow on the ABC interface is not at or above the sum of the Target flows for each Available ABC PAR, then PJM may request that NYISO take a tap at an ABC PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not take the requested tap within five minutes of receiving PJM’s request. “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at a Ramapo PAR increasing flow into New York, and flow on the 5018 interface is not at or above the sum of the Target flows for each Available Ramapo PAR, then PJM may request that NYISO take a tap at a Ramapo PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not either (i) take the requested tap within five minutes of receiving PJM’s request, or (ii) inform PJM that NYISO is unable to take the requested tap at Ramapo because the change would result in an actual or post-contingency overload on the 5018 lines, or on either of the Ramapo PARs.

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\(^2\) For example, if the sum of the Target flows for Available Waldwick PARs is +200 MW, then PJM will be “Compliant” if flow into PJM on JK was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
NYISO will be responsible for demonstrating both the occurrence and duration of the condition). “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change would result in an actual or post-contingency overload on either or both of the JK lines, or on any of the Waldwick PARs, and the overload cannot be addressed through NYISO taking taps at ABC or Ramapo, then PJM will be considered “Compliant” at the JK interface until the condition is resolved. PJM will be responsible for demonstrating both the occurrence and duration of the condition.

b. **ABC Storm Watch compliance**: Subject to the exceptions that follow, NYISO will be “Compliant” at the ABC interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

   i. Flow on the ABC interface was at or above the sum of the Target values for each Available ABC PAR at any point in the trailing (rolling) 15-minutes; or

   ii. NYISO took at least two taps on each Available ABC PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at an ABC PAR to increase flow into New York and achieve compliance at the ABC interface, then NYISO shall be considered “Compliant” at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the ABC interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the ABC interface.

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3 For example, if the sum of the Target values for each Available ABC PAR is +200 MW, then NYISO will be “Compliant” if flow into New York on ABC was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
If NYISO cannot take a required tap at an ABC PAR because the change would result in an actual or post-contingency overload on one or more of the ABC lines, or on any of the ABC PARs, and the overload cannot be addressed through NYISO taking taps at Ramapo or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the ABC interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

5018 Storm Watch compliance: Subject to the exceptions that follow, NYISO will be “Compliant” at the 5018 interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the 5018 interface was at or above the sum of the Target values for each Available Ramapo PAR described in Section 7.2.1 of this Schedule D at any point in the trailing (rolling) 15-minutes; or

ii. NYISO took at least two taps on each Available Ramapo PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at a Ramapo PAR to increase flow into New York and achieve compliance at the 5018 interface, then NYISO shall be considered “Compliant” at the 5018 interface.

If NYISO cannot take a required tap at a Ramapo PAR because it will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the 5018 interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the Ramapo interface.

If NYISO cannot take a required tap at a Ramapo PAR because the change would result in an actual or post-contingency overload on the 5018 line, or on either of the Ramapo PARs, and the overload cannot be addressed through NYISO taking taps at ABC or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the 5018 interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

When a Storm Watch is in effect in New York, PJM shall only be required to pay a M2MPARSettlement to NYISO when PJM is “Non-compliant” at the JK interface, while
NYISO is “Compliant” at both the ABC and 5018 interfaces. Otherwise, PJM shall not be required to pay a M2MPARSettlement to NYISO at times when a Storm Watch is in effect in New York.

When a Storm Watch is in effect in New York, NYISO shall only be required to pay a M2MPARSettlement to PJM when NYISO is “Non-compliant” at the ABC interface or the 5018 interface, or both of those interfaces. When NYISO is “Compliant” at both the ABC and 5018 interfaces, NYISO shall not be required to pay a M2MPARSettlement to PJM at times when a Storm Watch is in effect in New York.

When all three interfaces (JK, ABC, 5018) are “Compliant,” or during the first 15-minutes in which a Storm Watch is in effect, this Section 8.3.1 excuses the Parties from paying a M2MPARSettlement to each other at times when a Storm Watch is in effect in New York.

Compliance and Non-compliance shall be determined for each interval of the NYISO settlement cycle (normally, every 5-minutes) that a Storm Watch is in effect.

8.4 Calculating a Combined M2M Settlement

The M2M settlement shall be the sum of the real-time redispatch settlement for each M2M Flowgate and M2MPARSettlement for each interval

\[
Redispatch\ NY\ Settlement_i = \left( \sum_{all\ NY\ M2M\ \text{Redispatch\ Flowgates}} \left( MonRTO\ Payment_{M2M\ \text{Redispatch\ Flowgate} m_i} - Non\ MonRTO\ Payment_{M2M\ \text{Redispatch\ Flowgate} m_i} \right) \right)
\]

\[
Redispatch\ PJM\ Settlement_i = \left( \sum_{all\ PJM\ M2M\ \text{Redispatch\ Flowgates}} \left( MonRTO\ Payment_{M2M\ \text{Redispatch\ Flowgate} m_i} - Non\ MonRTO\ Payment_{M2M\ \text{Redispatch\ Flowgate} m_i} \right) \right)
\]

Where:

\[
Redispatch\ NY\ Settlement_i = \text{M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval } i;
\]

\[
Redispatch\ PJM\ Settlement_i = \text{M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval } i;
\]
Non MonRTO Payment_{M2M Redisp Flowgate m_i} = Monitoring RTO payment to Non-Monitoring RTO for congestion on M2M Redisp Flowgate m for interval \(i\); and

Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Redisp Flowgate m for interval \(i\).

\[ M2M\ Settlement_i = \text{Redisp PJM Settlement}_i - \text{Redisp NY Settlement}_i + M2MPAR\ Settlement_i \]

Where:

\[ M2M\ Settlement_i = \]

M2M settlement, defined as a payment from the NYISO to PJM when the value is positive, and a payment from PJM to the NYISO when the value is negative for interval \(i\);

\[ \text{Redisp NY Settlement}_i = \]

M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval \(i\);

\[ \text{Redisp PJM Settlement}_i = \]

M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval \(i\);

\[ M2MPAR\ Settlement_i = \]

M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval \(i\).

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

\[ M2M\ Settlement_h = \sum_{i=1}^{n} M2M\ Settlement_i \]

Where:

\[ M2M\ Settlement_h = \]

M2M settlement for hour \(h\) and

\[ n = \]

Number of intervals in hour \(h\).
Section 10.1 of this Schedule D 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

It is possible that sufficient redispatch for a M2M Redispatch Flowgate or Other Coordinated Flowgate may not be available to the Monitoring RTO. In these scenarios, the Monitoring RTO will price the flowgate using rules specific to that RTO’s Tariff language.

However, subject to Section 10.1.2 of this Schedule D, if the Non-Monitoring RTO cannot provide sufficient relief to reach the shadow price of the Monitoring RTO, any 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 Redispatch Flowgate shadow prices being the same in both RTOs, their resulting bus LMPs will converge in a consistent price profile. 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.

Subject to Section 10.1.2 of this Schedule D, 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 Coordination 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 NY-NJ 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 NY-NJ 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. 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.

   b. Either Party may temporarily suspend an active M2M coordination process or delay implementation of the M2M coordination process if a Party is experiencing, or acting in good faith suspects it may be experiencing, (1) a failure or outage of the data link between the Parties prevents the exchange of accurate or timely real-time data necessary to implement the M2M coordination process; or (2) a failure or outage of any computational or data systems preventing the actual or accurate calculation of data necessary to implement the M2M coordination process. The Parties shall resolve the issue causing the failure or outage of the data link, computational systems, or data systems as soon as possible in accordance with Good Utility Practice. The Parties shall resume implementation of the M2M coordination process following the successful testing of the data link or relevant system(s) after the failure or outage condition 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 this Agreement.

10.1.8 Suspension of M2M Settlement when a Request for Taps on NY-NJ PARs to Prevent Overuse is Refused. If a Party requests that taps be taken on any NY-NJ 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 NY-NJ PAR settlement component of M2M (see Section 8.3 above) being suspended until the tap request is granted.

10.1.9 Suspension of NY-NJ PAR Settlement due to Transmission Facility Outage(s). The Parties shall suspend PAR settlements for a NY-NJ PAR when that NY-NJ PAR is out of service, is bypassed, or the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange.

No other Transmission Facility outage(s) will trigger suspension of NY-NJ PAR settlements under this Section 10.1.9.

10.1.10 Suspension of NY-NJ PAR Settlement due to a Stuck PAR The Parties shall suspend PAR settlements for a NY-NJ PAR when the NY-NJ PAR cannot be adjusted due to physical or SCADA failure and either of the following two conditions occur.
1. The failure is on one of the A, B, C, 3500, or 4500 PARs, the flow on the PAR is below the Target flow for that PAR, or
2. The failure is on one of the E, F or O PARs, the flow on the PAR is above the Target flow for that PAR.

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 M2M coordination 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. The Parties will cooperate to review the data exchanged and used to determine M2M settlements and will mutually identify and resolve errors and anomalies in the calculations that determine the M2M settlements.

If the data exchanged for the M2M redispatch process was relied on by the Non-Monitoring RTO’s dispatch to determine the shadow cost the Non-Monitoring RTO was dispatching to when providing relief at an M2M Flowgate, the data transmitted by the Monitoring RTO that was used to determine the Non-Monitoring RTO’s shadow cost shall not be modified except by mutual agreement prior to calculating M2M settlements. Any necessary corrections to the data exchange shall be made for future M2M coordination.

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 this 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 11.1, 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 11.3,
below.

11.3 Objection to Change

Within ten business days after receipt of the Notice described in Section 11.1 (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 11.3 expires, or (c) completion of any dispute resolution process initiated
pursuant to this Agreement.
Attachment III
1 Overview of the Market-to-Market Coordination Processes
2 Flowgates
3 Flowgate Studies
4 Removal of Flowgates from M2M Coordination Processes
5 Market Flow Determination
   5.1 Determine Shift Factors for M2M Redispatch Flowgates and Other Coordinated Flowgates
   5.2 Compute RTO Load Served by RTO Generation
   5.3 Compute RTO Generation Serving RTO Load
   5.4 Compute the RTO GTL for all Flowgates
   5.5 Compute the RTO Interchange Scheduling Impacts for all Flowgates
   5.6 Compute the PAR Effects for all Flowgates
   5.7 Compute the RTO Aggregate Market Flow for all Flowgates
6 M2M Entitlement Determination Method
   6.1 M2M Entitlement Topology Model and Impact Calculation
   6.2 M2M Entitlement Calculation
7 Real-Time Energy Market Coordination
   7.1 Real-Time Redispatch Coordination Procedures
   7.2 Real-Time NY-NJ PAR Coordination
8 Real-Time Energy Market Settlements
   8.1 Information Used to Calculate M2M Settlements
   8.2 Real-Time Redispatch Settlement
8.3 NY-NJ PAR Settlements

8.4 Calculating a Combined M2M Settlement

9 When One of the RTOs Does Not Have Sufficient Redispatch

10 Appropriate Use of the M2M Coordination Process

10.1 Qualifying Conditions for M2M Settlement

10.2 After-the-Fact Review to Determine M2M Settlement

10.3 Access to Data to Verify Market Flow Calculations

11 M2M Change Management Process

11.1 Notice

11.2 Opportunity to Request Additional Information

11.3 Objection to Change

11.4 Implementation of Change
1 **Overview of the Market-to-Market Coordination Processes**

The purpose of the M2M coordination processes are 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 processes are 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 processes focuses on real-time market coordination to manage transmission limitations that occur on the 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 NY-NJ 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 Redispatch 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 **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 Flowgates. For the purposes of the M2M coordination process (in addition to the studies described in Section 3 of this Schedule D) the following will be used in determining Flowgates.

2.1 NYISO and PJM will only be performing redispatch or NY-NJ PAR coordination on Flowgates that are under the operational control of NYISO or PJM. NYISO and PJM will not be performing redispatch or NY-NJ PAR coordination 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 NY-NJ 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 is not an additional criterion for determination of Flowgates.

2.3 For the purpose of determining whether a monitored element Flowgate is eligible for redispatch or NY-NJ PAR coordination, a threshold for determining a significant GLDF or NY-NJ PARs PSF will take into account the number of
monitored elements. Implementation of Flowgates will ordinarily occur through mutual agreement.

2.4 M2M Redispatch Flowgates and Other Coordinated Flowgates that are eligible for redispatch coordination are also eligible for coordinated operation of the NY-NJ PARs. Flowgates that are eligible for coordinated operation of the NY-NJ PARs are not necessarily also eligible for redispatch coordination.

2.5 The NYISO shall post a list of all of the Flowgates located in the New York Control Area (“NYCA”) on its web site. PJM shall post a list of all of the Flowgates located in its Control Area on its web site.

3 Flowgate Studies

To identify Flowgates the Parties will perform an off-line study to determine if there is a significant GLDF for at least one generator within the Non-Monitoring RTO, or significant PSF for at least one NY-NJ PAR, on a potential Flowgate within the Monitoring RTO that 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 Flowgate studies will be based on the same assumptions used for determining M2M Entitlements in Section 6 of this Schedule D.

3.1 Either Party may propose that a new Flowgate be added at any time. The Parties will work together to perform the necessary studies within a reasonable timeframe.

3.2 The GLDF thresholds for a Other Coordinated Flowgate with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF on any resource;

ii. Two monitored elements, 7.5% GLDF on any resource; and

iii. Three or more monitored elements, 10% GLDF on any resource.

For potential Other Coordinated Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.3 The GLDF thresholds for a M2M Redispatch Flowgate with one or more monitored elements are defined as:

i. Single monitored element, 5% GLDF on any Qualified Resource;

ii. Two monitored elements, 7.5% GLDF on any Qualified Resource; and
iii. Three or more monitored elements, 10% GLDF on any Qualified Resource.

For potential M2M Redispach Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.4 The NY-NJ PARs PSF thresholds for NY-NJ PAR Coordinated Flowgates with one or more monitored elements are defined as:

1. Single monitored element, 5% NY-NJ PARs PSF;
2. Two monitored elements, 7.5% NY-NJ PARs PSF; and
3. Three or more monitored elements, 10% NY-NJ PARs PSF.

For potential Flowgates that pass the above NY-NJ PARs PSF criteria, the Parties must still mutually agree to add each Flowgate for coordinated operation of the NY-NJ PARs.

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

4 Removal of Flowgates from M2M Coordination Processes

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

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

4.2 A M2M Redispach Flowgate that does not satisfy the criteria set forth in Section 3.3 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 Notice to the other Party that it withdraws its agreement to the M2M Redispach Flowgate, or at a later or earlier date that the Parties mutually agree upon. The Notice must include an explanation of the reason(s) why the agreement to the M2M Redispach Flowgate was withdrawn.

4.3 A Other Coordinated Flowgate shall be removed two weeks after either Party provides a Notice to the other party that it withdraws its agreement to the Other Coordinated Flowgate, or at a later or earlier date that the Parties mutually agree
upon. The Notice must include an explanation of the reason(s) why the agreement to the Other Coordinated Flowgate was withdrawn.

4.4 The Parties can mutually agree to remove a Flowgate whether or not it passes the coordination tests. A Flowgate should be removed when the Parties agree that the relevant coordination processes are 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated Flowgates

The first step to determining the Market Flow on a Flowgate is to calculate generator, load and PAR shift factors for each of the Flowgates. For real-time 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, of this Schedule D.

\[ Zonal\ Total\ Load_{zone} = Load_{zone} + Losses_{zone} \]

Where:
zone = the relevant RTO load zone;

Zonal_Total_Loadzone = the sum of the RTO’s load and transmission losses for the zone;

Loadzone = the load within the zone; and

Losseszone = 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:

\[ Zonal\_Reduced\_Loadzone = Zonal\_Total\_Loadzone - \sum_{\text{scheduled_lines}=1}^{\text{all}} Import\_Schedules_{\text{scheduled\_line,zone}} \]

Where:

zone = the relevant RTO load zone;

scheduled_line = each of the Transmission Facilities identified in Table 1 below;

Zonal_REduced_Loadzone = 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_Loadzone = the sum of the RTO’s load and transmission losses for the zone; and

Import_Schedules_{scheduled\_line,zone} = 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>
<thead>
<tr>
<th>Scheduled Line</th>
<th>NYISO Load Zone</th>
<th>PJM Load Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennison Scheduled Line</td>
<td>North</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Cross-Sound Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
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*

<table>
<thead>
<tr>
<th>Proxy</th>
<th>Balancing Authorities Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>PJM</td>
</tr>
<tr>
<td>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 or deleted proxies prior to implementing such changes in its M2M software.</td>
<td>NYISO</td>
</tr>
</tbody>
</table>

*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).

\[
RTO_{Net\ Load} = \sum_{zone=1}^{all} Zonal\ Reduced\ Load_{\text{zone}}
\]

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
\text{Zonal\_Reduced\_Load}_{\text{zone}} = \text{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.}

\text{RTO\_Final\_Load} = \text{RTO\_Net\_Load} - \sum_{\text{proxy}=1}^{\text{all}} \text{Import\_Schedules}_{\text{proxy}}

\text{Where:}

\text{proxy} = \text{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;}

\text{RTO\_Final\_Load} = \text{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;}

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

\text{Import\_Schedules}_{\text{proxy}} = \text{the sum of import schedules at a given proxy.}

\text{Next, calculate the Zonal Load weighting factor for each RTO load zone:}

\text{Zonal\_Weighting}_{\text{zone}} = \left(\frac{\text{Zonal\_Reduced\_Load}_{\text{zone}}}{\text{RTO\_Net\_Load}}\right)

\text{Where:}

\text{zone} = \text{the relevant RTO load zone;}

\text{Zonal\_Weighting}_{\text{zone}} = \text{the percentage of the RTO’s load contained within the zone;}

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

\text{Zonal\_Reduced\_Load}_{\text{zone}} = \text{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:

\[
Zonal\_\text{Final\_Load}_{\text{zone}} = Zonal\_\text{Weighting}_{\text{zone}} \times RTO\_\text{Final\_Load}
\]

Where:

- \(\text{zone} =\) the relevant RTO load zone;
- \(Zonal\_\text{Final\_Load}_{\text{zone}} =\) the final RTO load served by internal RTO generation in the zone;
- \(Zonal\_\text{Weighting}_{\text{zone}} =\) the percentage of the RTO’s load contained within the zone; and
- \(RTO\_\text{Final\_Load} =\) 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 Flowgate as:

\[
RTO\_\text{LSF}_{\text{Flowgate}\_m} = \sum_{\text{zone}=1}^{all} \left( LSF\_{(\text{zone},\text{Flowgate}\_m)} \times \left( \frac{Zonal\_\text{Final\_Load}_{\text{zone}}}{RTO\_\text{Final\_Load}} \right) \right)
\]

Where:

- \(\text{Flowgate}\_m =\) the relevant flowgate;
- \(\text{zone} =\) the relevant RTO load zone;
- \(RTO\_\text{LSF}_{\text{Flowgate}\_m} =\) the load shift factor for the entire RTO footprint on Flowgate m;
- \(LSF\_{(\text{zone},\text{Flowgate}\_m)} =\) the load shift factor for the RTO zone on Flowgate m;
- \(Zonal\_\text{Final\_Load}_{\text{zone}} =\) the final RTO load served by internal RTO generation in the zone; and
- \(RTO\_\text{Final\_Load} =\) 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;
\( \text{Gen}_{\text{unit,zone}} = \) the real-time output of the unit in a given zone;
\( \text{Reduced Gen}_{\text{unit}} = \) each unit’s real-time output after reducing the RTO_Net_Gen by the real-time export schedules over scheduled lines;
\( \text{RTO}_{\text{Reduced Gen}}_{\text{zone}} = \) the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone; and
\( \text{RTO}_{\text{Gen}}_{\text{zone}} = \) 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.

\[
\text{RTO}_{\text{Net}}_{\text{Gen}} = \sum_{\text{zone}=1}^{\text{all}} \text{RTO}_{\text{Reduced Gen}}_{\text{zone}}
\]

Where:
zone = the relevant RTO load zone;
\( \text{RTO}_{\text{Net}}_{\text{Gen}} = \) the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines; and
\( \text{RTO}_{\text{Reduced Gen}}_{\text{zone}} = \) the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone.

\[
\text{RTO}_{\text{Final}}_{\text{Gen}} = \text{RTO}_{\text{Net}}_{\text{Gen}} - \sum_{\text{proxy}=1}^{\text{all}} \text{Export Schedules}_{\text{proxy}}
\]

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;

\[ RTO_{\text{Final Gen}} = \text{the sum of the RTO’s generation output for the entire RTO footprint, sequentially reduced by (i) the sum of export schedules over all scheduled lines, and (ii) the sum of all proxy export schedules;} \]

\[ RTO_{\text{Net Gen}} = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines;} \] and

\[ \text{Export Schedules}_{\text{proxy}} = \text{the sum of export schedules at a given proxy.} \]

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

\[
Gen_{\text{Final } \text{unit}} = Reduced \text{ Gen}_{\text{unit}} \times \frac{RTO_{\text{Final Gen}}}{RTO_{\text{Net Gen}}} 
\]

Where:

unit = the relevant generator;

\[ Gen_{\text{Final } \text{unit}} = \text{the portion of each unit’s output that is serving the RTO Net Load;} \]

\[ Reduced \text{ Gen}_{\text{unit}} = \text{each unit’s real-time output after reducing the RTO Net Gen by the real-time export schedules over scheduled lines;} \]

\[ RTO_{\text{Final Gen}} = \text{the sum of the RTO’s generation output for the entire RTO footprint, sequentially reduced by (i) the sum of export schedules over all scheduled lines, and (ii) the sum of all proxy export schedules;} \] and

\[ RTO_{\text{Net Gen}} = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines.} \]

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

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

\[
RTO_{\text{GTL}}_{\text{Flowgate } - m} = \sum_{\text{unit}=1}^{\text{all}} (Gen_{\text{Final } \text{unit}} \times (GSF_{\text{unit, Flowgate } - m} - RTO_{\text{LSF}}_{\text{Flowgate } - m})) 
\]

Where:
Flowgate-m = the relevant flowgate; 
unit = the relevant generator; 
RTO\_GTL\_Flowgate-m = the generation to load flow for the entire RTO footprint on Flowgate m; 
Gen\_Final\_unit = the portion of each unit’s output that is serving RTO Net Load; 
GSF\_unit,Flowgate-m = the generator shift factor for each unit on Flowgate m; and 
RTO\_LSF\_Flowgate-m = the load shift factor for the entire RTO footprint on Flowgate m.

5.5 Compute the RTO Interchange Scheduling Impacts for all 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>
<thead>
<tr>
<th>Scheduling Point</th>
<th>Scheduling Point Type</th>
<th>Participating RTO(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYISO-PJM</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>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.</td>
<td>non-common</td>
<td>PJM</td>
</tr>
<tr>
<td>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</td>
<td>non-common</td>
<td>NYISO</td>
</tr>
</tbody>
</table>
provide to PJM notice of any new or deleted non-common scheduling points prior to implementing such changes in its M2M software.

\[ RTO_{Transfers}_{sched\_pt} = \text{Imports}_{sched\_pt} + \text{WheelsIn}_{sched\_pt} - \text{Exports}_{sched\_pt} - \text{WheelsOut}_{sched\_pt} \]

Where:

- \( \text{sched\_pt} = \) 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;
- \( \text{Imports}_{sched\_pt} = \) the import component of the interchange schedule at a scheduling point;
- \( \text{WheelsIn}_{sched\_pt} = \) the injection of wheels-through component of the interchange schedule at a scheduling point;
- \( \text{Exports}_{sched\_pt} = \) the export component of the interchange schedule at a scheduling point; and
- \( \text{WheelsOut}_{sched\_pt} = \) 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.

\[ Parallel\_Transfers_{Flowgate-m} = \sum_{\text{nc\_sched\_pt}=1}^{all} RTO_{Transfers\_nc\_sched\_pt} \times PTDF_{(nc\_sched\_pt,Flowgate-m)} \]

Where:

- \( Flowgate-m = \) the relevant flowgate;
- \( \text{nc\_sched\_pt} = \) 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_{Flowgate-m} = the flow on 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, Flowgate-m)} = the power transfer distribution factor of the non-common scheduling point on 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.

\[
\text{Shared_Transfers}_{Flowgate-m} = \sum_{cmn\_sched\_pt=1}^{a\text{ll}} RTO\_Transfers_{cmn\_sched\_pt} \times PTDF_{(cmn\_sched\_pt,Flowgate-m)}
\]

Where:

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_{Flowgate-m} = the flow on 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,Flowgate-m)} = the generation shift factor of the common scheduling point on 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 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

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

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

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

\[
PAR\_Control_{\text{par}} = Actual\_MW_{\text{par}} - Target\_MW_{\text{par}}
\]

Where:

- \(par\) = each of the phase angle regulators listed in Table 4, above;
- \(PAR\_Control_{\text{par}}\) = the flow deviation on each of the PARs;
- \(Actual\_MW_{\text{par}}\) = the actual flow on each of the PARs, determined consistent with Table 4 above; and
- \(Target\_MW_{\text{par}}\) = 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 \textit{PAR\_Control} will equal zero.

\textbf{Common PARs}

In the equations below, the Non-Monitoring RTO is credited for or responsible for \textit{PAR\_Impact} resulting from the common PAR effect on the Monitoring RTO’s 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 Flowgate m based on the PAR\_Control\_par MWs calculated above:

\[
C_{\text{cmn}\_\text{PAR\_Control}_{\text{Flowgate}-m}} = \sum_{\text{cmn\_par}=1}^{\text{all}} (PSF_{(\text{cmn\_par,Flowgate}-m)} \times PAR\_\text{Control}_{\text{cmn\_par}})
\]

Where:

Flowgate-m = the relevant flowgate;

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

\text{Cmn\_PAR\_Control}_{\text{Flowgate}-m} = the sum of flow on Flowgate m after accounting for the operation of common PARs;

\text{PSF}_{(\text{cmn\_par,Flowgate-m})} = the PSF of each of the common PARs on Flowgate m; and

\text{PAR\_Control}_{\text{cmn\_par}} = the flow deviation on each of the common PARs.

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

\[
C_{\text{cmn\_PAR\_MF}_{\text{Flowgate}-m}} = \sum_{\text{cmn\_par}=1}^{\text{all}} \left( PSF_{(\text{cmn\_par,Flowgate}-m)} \times \left( RTO\_GTL_{\text{cmn\_par}} + \text{Parallel\_Transfers}_{\text{cmn\_par}} \right) \right)
\]

Where:

Flowgate-m = the relevant flowgate;

\text{cmn\_par} = the set of common phase angle regulators, modeled as Flowgates, identified in Table 4 above;
Cmn\textsubscript{PAR \_MF}Flowgate-m = the sum of flow on Flowgate m due to the generation to load flows and interchange schedules on the common PARs;

PSF_{(cmn\_par,Flowgate-m)} = the PSF of each of the common PARs on 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 Flowgates in Section 5.4 above; and

Parallel\_Transfer_{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 Flowgate m as:

\[
Cmn\_PAR\_Impact_{Flowgate-m} = Cmn\_PAR\_MF_{Flowgate-m} - Cmn\_PAR\_Control_{Flowgate-m}
\]

Where:

Flowgate-m = the relevant flowgate;

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

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

Cmn\_PAR\_Control_{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 \textit{PAR Impact} on all 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 Flowgate m based on the PAR control MW above:

\[
NC\_PAR\_Control_{Flowgate-m} = \sum_{nc\_par=1}^{\text{all}} PSF_{(nc\_par,Flowgate-m)} \times PAR\_Control_{nc\_par}
\]

Where:

Flowgate-m = the relevant flowgate;
nc_par = each of the non-common phase angle regulators, modeled as Flowgates, identified in Table 4 above;

\[ NC\_PAR\_Control_{Flowgate-m} = \text{the sum of flow on Flowgate } m \text{ after accounting for the operation of non-common PARs;} \]

\[ PSF_{(nc\_par,Flowgate-m)} = \text{the PSF of each of the non-common PARs on Flowgate } m; \]

\[ \text{and} \]

\[ \text{PAR\_Control}_{nc\_par} = \text{the flow deviation on each of the non-common PARs.} \]

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

\[ NC\_PAR\_MF_{Flowgate-m} = \sum_{all\, nc\_par=1} \left( \text{PSF}_{nc\_par,Flowgate-m} \times \text{RTO\_GTL}_{nc\_par} + \text{Parallel\_Transfers}_{nc\_par} \right) \]

Where:

Flowgate-m = the relevant flowgate;

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

\[ NC\_PAR\_MF_{Flowgate-m} = \text{the sum of flow on Flowgate } m \text{ due to the generation to load flows and interchange schedules on the non-common PARs;} \]

\[ PSF_{(nc\_par,Flowgate-m)} = \text{the outage transfer distribution factor of each of the non-common PARs on Flowgate } m; \]

\[ \text{RTO\_GTL}_{nc\_par} = \text{the generation to load flow for each non-common par, computed in the same manner as the generation to load flow is computed for Flowgates in Section 5.4 above; and} \]

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

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

\[ NC\_PAR\_Impact_{Flowgate-m} = NC\_PAR\_MF_{Flowgate-m} - NC\_PAR\_Control_{Flowgate-m} \]
Where:

Flowgate-m = the relevant flowgate;

NC_PAR_ImpactFlowgate-m = the potential flow on Flowgate m that is affected by the operation of non-common PARs;

NC_PAR_MFFlowgate-m = the sum of flow on Flowgate m due to the generation to load and interchange schedules on the non-common PARs; and

NC_PAR_ControlFlowgate-m = the sum of flow on Flowgate m after accounting for the operation of non-common PARs.

Aggregate all PAR Effects for Each Flowgate

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

\[ PAR_{Impact}^{Flowgate-m} = Cmn_{PAR_Impact}^{Flowgate-m} + NC_{PAR_Impact}^{Flowgate-m} \]

Where:

Flowgate-m = the relevant flowgate;

PAR_ImpactFlowgate-m = the flow on Flowgate m that is affected after accounting for the operation of both common and non-common PARs;

Cmn_PAR_ImpactFlowgate-m = potential flow on Flowgate m that is affected by the operation of the common PARs; and

NC_PAR_ImpactFlowgate-m = the potential flow on Flowgate m that is affected by the operation of non-common PARs.

5.7 Compute the RTO Aggregate Market Flow for all Flowgates

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

\[ RTO_{MF}^{Flowgate-m} = RTO\_GTL^{Flowgate-m} + Parallel\_Transfers^{Flowgate-m} + Shared\_Transfers^{Flowgate-m} - PAR_{Impact}^{Flowgate-m} \]

Where:

Flowgate-m = the relevant flowgate;
RTO_MFFlowgate\textsubscript{m} = the Market Flow caused by RTO generation dispatch and transaction scheduling on Flowgate \textsubscript{m} after accounting for the operation of both the common and non-common PARs;

RTO\_GTLFlowgate\textsubscript{m} = the generation to load flow for the entire RTO footprint on Flowgate \textsubscript{m};

Parallel\_Transfers\textsubscript{Flowgate-m} = the flow on Flowgate \textsubscript{m} caused by interchange schedules that are not jointly scheduled by the participating RTOs;

Shared\_Transfers\textsubscript{Flowgate-m} = the flow on Flowgate \textsubscript{m} caused by interchange schedules that are jointly scheduled by the participating RTOs; and

PAR\_Impact\textsubscript{Flowgate-m} = the flow on Flowgate \textsubscript{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 Redispatch Flowgate and compare the results at least once a year on a mutually agreed upon schedule. This frequency ensures that the impact of upgrades on both parties systems are incorporated into the M2M Entitlement calculation. The parties may mutually agree to not recalculate M2M Entitlements in a given year.

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

The M2M Entitlement calculation shall use both RTOs’ static topological models to determine the Non-Monitoring RTO’s mutually agreed upon share of a M2M Redispatch Flowgate’s total capacity based on historic dispatch patterns. Both RTOs’ models 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 the most recently completed three calendar years;
4. a PAR impact assumption that the PAR control is perfect for all PARs within the transmission models except the PARs at the Michigan-Ontario border;
5. new or upgraded Transmission Facilities; and

Each Party 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 Redispatch 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 twelve periods (“M2M Entitlement Periods”) for each M2M Redispatch Flowgate. The M2M Entitlement Periods are as follows:

1. M2M Entitlement Period 1: January;
2. M2M Entitlement Period 2: February;
3. M2M Entitlement Period 3: March;
4. M2M Entitlement Period 4: April;
5. M2M Entitlement Period 5: May;
6. M2M Entitlement Period 6: June;
7. M2M Entitlement Period 7: July;
8. M2M Entitlement Period 8: August;
9. M2M Entitlement Period 9: September;
10. M2M Entitlement Period 10: October;
11. M2M Entitlement Period 11: November;
12. M2M Entitlement Period 12: December;

For each of the M2M Entitlement Periods listed above the Non-Monitoring RTO will calculate its M2M Entitlement on each M2M Redispatch Flowgate for four groups of hours, the grouping is described below.

1. M2M Entitlement Group 1: Hour beginning 0 through hour beginning 5;
2. M2M Entitlement Group 2: Hour beginning 9 through hour beginning 14;
3. M2M Entitlement Group 3: Hour beginning 15 through hour beginning 20 and;
4. M2M Entitlement Group 4: Hour beginning 6 through hour beginning 8 and hour beginning 21 through hour beginning 23.

The M2M Entitlement for each period/group, for each M2M Redispatch Flowgate will be calculated by averaging the Non-Monitoring RTO’s Market Flow on an M2M Redispatch
Flowgate for each particular period/group. The Non-Monitoring RTO shall use the Market Flow data for all of the like period/groups, in each year contained within the three year period to calculate the Non-Monitoring RTO’s average Market Flow on each M2M Redispatch Flowgate. The data within the three year period will be weighted as follows: most recent year 20%, middle year 30%, and oldest year 50%. In addition, the M2M Entitlement values should never extend beyond a facility’s rating. If the calculation derives an entitlement that is above the facility’s rating the parties will cap the entitlement value to remain within the facility’s rating.

If either of the below upgrade scenarios occur the Parties may mutually agree to adjust the M2M Entitlement calculation method to account for the impacts of the upgrade(s):

1. If the Non-Monitoring RTO upgrades the Monitoring RTO’s system resulting in a rating increase; or
2. If the Non-Monitoring RTO’s market flow on the Monitoring RTO’s system decreases due to a Non-Monitoring RTO upgrade on the Non-Monitoring RTO’s system.

6.2 M2M Entitlement Calculation

Each Party shall independently calculate the Non-Monitoring RTO’s M2M Entitlement for all M2M Redispatch 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 this 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 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 models 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 of this Schedule D.
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 all M2M Entitlement Groups in each M2M Entitlement Period using the method established in Section 6.1 above.

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.
7 Real-Time Energy Market Coordination

Operation of the NY-NJ PARs and redispatch are used by the Parties in real-time operations to effectuate this M2M coordination process. Operation of the NY-NJ 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 NY-NJ PARs to manage transmission congestion requires cooperation between the NYISO and PJM. Operation of the NY-NJ PARs shall be coordinated by the RTOs.

When a M2M Redispatch Flowgate or Other Coordinated Flowgate begins 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 Flowgate that requires redispatch assistance. The Monitoring and Non-Monitoring RTOs will provide the economic value of the 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 Flowgate constraint; the Monitoring RTO will evaluate the actual loading of the 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 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 10.

7.1 Real-Time Redispatch Coordination Procedures

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

7.1.1 Flowgates shall be monitored per each RTO’s internal procedures.

a. When (i) a 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 for a M2M Redispatch Flowgate, or (iii) the Non-Monitoring RTO agrees to initiate and to continue coordination for a M2M Redispatch Flowgate or Other Coordinated Flowgate, then the Monitoring RTO shall reflect the monitored Flowgate as constrained.
b. 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 for M2M Redispatch Flowgates:

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

When any of 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 Redispatch Flowgate. The rules for determining which Market Flow (unadjusted or adjusted) to compare to the Non-Monitoring RTO M2M Entitlement when any of the PARs at the Michigan-Ontario border are in-service are set forth below.


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:

\[
\text{MICH} - \text{OH PAR Impact}_{Flowgate-m} = \sum_{\text{MIC}H-\text{OH Path}=1}^{4} \left( \frac{\text{PSF}_{(\text{MIC}H-\text{OH Path,Flowgate-m})} \times (RTO\_MF_{\text{MIC}H-\text{OH Path}} - \text{LEC}/4)}{RTO\_MF_{\text{MIC}H-\text{OH Path}} - \text{LEC}/4} \right)
\]

Where:

\( \text{Flowgate-m} \) = the relevant Flowgate;
MICH-OH Path = each of the four PAR paths connecting Michigan to Ontario, Canada;

MICH-OH_PAR_Impact_{Flowgate-m} = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on Flowgate m;

PSF_{(MICH-OH Path,Flowgate-m)} = the PSF of each of the four Michigan-Ontario PAR paths on 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 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.

\[
LEC \text{ Adjusted Market Flow}_{Flowgate-m} = RTO_MF_{Flowgate-m} - MICH-OH_PAR_Impact_{Flowgate-m}
\]

Where:

Flowgate-m = the relevant flowgate;

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

MICH-OH_PAR_Impact_{Flowgate-m} = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on Flowgate m;

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

LEC Adjusted Market Flow_{Flowgate-m} = the Market Flow caused by RTO generation dispatch and transaction scheduling on Flowgate m after accounting for the operation of the common PARs, the
b. Determining Whether to Use Unadjusted Market Flow or LEC Adjusted Market Flow; Determining if Applicable 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 Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the coordination process for the constrained M2M Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the coordination process for the constrained M2M Redispatch Flowgate.

7.1.3 The Monitoring RTO initiates redispatch coordination, notifies the Non-Monitoring RTO of the M2M Redispatch Flowgates or Other Coordinated Flowgates that are 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 redispatch coordination:
   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 redispatch coordination:
   i. Such an agreement shall be considered an initiation of the redispatch process; and
   ii. The M2M State is set to “Activated”.
   iii. If the Non-Monitoring RTO later withdraws its agreement to activate redispatch coordination at a Flowgate, then the Non-Monitoring RTO notifies the Monitoring RTO of the reason for its decision and the Monitoring RTO shall terminate the redispatch coordination process and set the M2M State to “Refused”.

7.1.5 The Parties have agreed to transmit information required for the administration of this procedure, as per Section 35.7.1 of this 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 redispatch process. Current and forecasted future system conditions shall be considered. Termination of redispatch coordination may be requested by either RTO in the event of a system emergency.
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 redispatch coordination, the Monitoring RTO shall

   a. Notify the Non-Monitoring RTO; and

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

7.2 **Real-Time NY-NJ PAR Coordination**

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

PJM and the NYISO have operational control of the NY-NJ PARs and direct the operation of the NY-NJ PARs, while Public Service Electric and Gas Company (“PSE&G”) and Consolidated Edison Company of New York (“Con Edison”) have physical control of the NY-NJ PARs. The Con Edison dispatcher sets the PAR taps for the ABC PARs and Ramapo PARs at the direction of the NYISO. The PSE&G dispatchers set the PAR taps for the Waldwick PARs at the direction of PJM.

PJM and the NYISO have the responsibility to direct the operation of the NY-NJ PARs to maintain compliance with the requirements of this Agreement. PJM and the NYISO shall make reasonable efforts to minimize movement of the NY-NJ PARs while implementing the NY-NJ PAR target flows and the NY-NJ PAR coordination process. PJM and the NYISO will employ a +/- 50 MW operational bandwidth around each NY-NJ PAR’s target flow to limit tap movements and to maintain actual flows at acceptable levels. This operational bandwidth shall not impact or change the NY-NJ PAR Settlement rules in Section 8.3 of this Agreement. The
operational bandwidth provides a guideline to assist the RTOs’ efforts to avoid unnecessary NY-NJ PAR tap movements.

In order to preserve the long-term availability of the NY-NJ PARs, a maximum number of 20 PAR tap changes per NY-NJ PAR per day, and a maximum number of 400 PAR tap changes per NY-NJ PAR per calendar month will normally be observed. If the number of PAR tap changes exceed these limits, then the operational bandwidth shall be increased in 50 MW increments until the total number of PAR tap changes no longer exceed 400 PAR tap changes per NY-NJ PAR per month, unless PJM and the NYISO mutually agree otherwise.

In order to implement the NY-NJ PAR coordination process, including the establishment and continuation of the initial and any future OBF as defined in this Section and Section 35.2 of this Agreement, on the ABC PARs and the Waldwick PARs, the facilities comprising the ABC Interface and JK Interface shall be functional and operational at all times, consistent with Good Utility Practice, except when they are taken out-of-service to perform maintenance or are subject to a forced outage.

7.2.1 NY-NJ PAR Target Values

A Target Value for flow between the NYISO and PJM shall be determined for each NY-NJ PAR based on the net interchange schedule between the Parties. These Target Values shall be used for settlement purposes as:

\[
Target_{PARx} = (InterchangeFactor_{PARx}) + (Operational\ Base\ Flow_{PARx}) + (REC_{Load_{PARx}})
\]

Where:

\[Target_{PARx} = \text{Calculated Target Value for the flow on each NY-NJ PAR For purposes of this equation, a positive value* indicates a flow from PJM to the NYISO.}\]

* The sign conventions apply to the formulas used in this Agreement. The Parties may utilize different sign conventions in their market software so long as the software produces results that are consistent with the rules set forth in this Agreement.

\[InterchangeFactor_{PARx} = \text{The MW value of the net interchange schedule between PJM and NYISO over the AC tie lines distributed across each in-service NY-NJ PAR calculated as net interchange schedule times the interchange percentage. The interchange percentage for each NY-NJ PAR is listed in Table 5.}\]

If a NY-NJ PAR is out-of-service or is bypassed, or if the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange, the percentage of net interchange normally assigned to that NY-NJ PAR will be transferred over the western AC tie lines between the NYISO and
PJM. The remaining in-service NY-NJ PARs will continue to be assigned the interchange percentages specified in Table 5.

The MW value of OBF distributed across each of the in-service ABC PARs and Waldwick PARs.

Either Party may establish a temporary OBF to address a reliability issue until a long-term solution to the identified reliability issue can be implemented. Any temporary OBF that is established shall be at a level that both Parties can reliably support. The Party that establishes the OBF shall: (1) explain the reliability need to the other Party; (2) describe how the OBF addresses the identified reliability need; and (3) identify the expected long-term solution to address the reliability need.

The initial 400 MW OBF, effective on May 1, 2017, is expected to be reduced to zero MW by June 1, 2021.

The Parties may mutually agree to modify an established OBF value that normally applies when all of the ABC PARs and Waldwick PARs are in service. Modification of the normally applied OBF value will be implemented no sooner than two years after mutual agreement on such modification has been reached, unless NYISO and PJM mutually agree to an earlier implementation date.

The NYISO and PJM shall post the OBF values, in MW, normally applied to each ABC PAR and Waldwick PAR when all of the ABC PARs and Waldwick PARs are in service, on their respective websites. The NYISO and PJM shall also post the methodology used to reduce the OBF under certain outage conditions on their respective websites. The NYISO and PJM shall review the OBF MW value at least annually.

The MW value of the telemetered real-time Rockland Electric Company Load to be delivered over a NY-NJ PAR shall be calculated as real-time RECo Load times the RECo Load percentage listed in Table 5. RECo Load is the portion of Orange and Rockland load that is part of PJM.
The primary objective of the NY-NJ PARs is the delivery of scheduled interchange. Deliveries to serve RECo Load over the Ramapo PARs will only be permitted to the extent there is unused transfer capability on the Ramapo PARs after accounting for interchange. Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load percentage (80%) will be applied to the in-service Ramapo PAR. The RECo Load percentage ordinarily used for each NY-NJ PAR is listed in Table 5:

Table 5

<table>
<thead>
<tr>
<th>PAR Name</th>
<th>Description</th>
<th>Interchange Percentage</th>
<th>RECo Load Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>RAMAPO PAR3500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>4500</td>
<td>RAMAPO PAR4500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>E</td>
<td>WALDWICK E2257</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>F</td>
<td>WALDWICK F2258</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>O</td>
<td>WALDWICK O2267</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>A</td>
<td>GOETHSLN BK_1N</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>B</td>
<td>FARRAGUT TR11</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>C</td>
<td>FARRAGUT TR12</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load Percentage (80%) will be applied to the in-service Ramapo PAR.

7.2.2 Determination of the Cost of Congestion at each NY-NJ PAR

The incremental cost of congestion relief provided by each NY-NJ 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 NY-NJ PAR Coordinated Flowgates by the PSF for each NY-NJ PAR for the relevant NY-NJ PAR Coordinated Flowgates.

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

\[
Congestion^S_{(PAR_RTO)} =
\]
\[
\sum_{NY-NJ \text{ PAR Coordinated Flowgate} - m \in NY-NJ \text{ PAR Coordinated Flowgate}_{RTO}} \left( PSF_{(NY-NJ \text{ PAR Coordinated Flowgate} - m, PARx)} \times Shadow$_{NY-NJ \text{ PAR Coordinated Flowgate} - m}\right)
\]

Where:

\[\text{Congestion}$_{(PAR,x,RTO)}\] = Cost of congestion at each NY-NJ PAR for the relevant participating RTO, where a negative cost of congestion indicates taps in the direction of the relevant participating RTO would alleviate that RTO’s congestion;

\[NY - NJ \text{ PAR Coordinated Flowgate}_{RTO} = \] Set of NY-NJ PAR Coordinated Flowgates for the relevant participating RTO;

\[PSF_{(NY-NJ \text{ PAR Coordinated Flowgate} - m, PARx)} = \] The PSF for each NY-NJ PAR on NY-NJ PAR Coordinated Flowgate—m; and

\[Shadow$_{NY-NJ \text{ PAR Coordinated Flowgate} - m} = \] The Shadow Price on the relevant participating RTO’s NY-NJ PAR Coordinated Flowgate m.

### 7.2.3 Desired PAR Changes

Consistent with the congestion cost calculation established in Section 7.2.2 above, if the NYISO congestion costs associated with a NY-NJ PAR are less than the PJM congestion costs associated with the same NY-NJ PAR, then hold or take taps into NYISO.

Similarly, if the PJM congestion costs associated with a NY-NJ PAR are less than NYISO congestion costs associated with the same NY-NJ PAR, then hold or take taps into PJM.

Any action on the NY-NJ 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 Flowgate there are two components of the M2M settlement, a redispatch component and a NY-NJ PAR 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 Redispach Flowgate compared to its M2M Entitlement for M2M Redispach Flowgates eligible for redispach on each M2M Redispach Flowgate; and

2. the *ex-ante* Shadow Price at each M2M Redispach Flowgate.

When determining M2M settlements for a M2M Redispach Flowgate, each Party will use the M2M Entitlement that corresponds to the period/group for which the real-time Market Flow is being calculated except for the following scenarios:

1. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is greater than or equal to zero the M2M Entitlement will be set to zero.

2. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is also negative, but exceeds the M2M Entitlement, both the M2M Entitlement and market flow will be set to zero.

Redispach coordination for Other Coordinated Flowgates is not subject to redispach settlement under Section 8.2 of this Schedule D. NY-NJ PAR coordination for Other Coordinated Flowgates is subject to NY-NJ PAR coordination settlement under Section 8.3 of this Schedule D.

For the NY-NJ 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 NY-NJ PARs compared to its target flow \((\text{Target}_{\text{PAR}_x})\);
2. PSF for each NY-NJ PAR onto each M2M Flowgate; and
3. the *ex-ante* Shadow Price at each M2M Flowgate.

Either or both of the Parties shall be excused from paying an *M2MPARSettlement* (described in Section 8.3 of this Schedule D) to the other Party at times when a Storm Watch is in effect in New York and the operating requirements and other criteria set forth in Section 8.3.1 below are satisfied.

### 8.2 Real-Time Redispach Settlement

For each M2M Redispach Flowgate compute the real-time redispach settlement for each interval as specified below.

When \(RT\_MktFlow_{\text{M2M Redispach Flowgate} - m_1} > M2M\_Ent_{\text{M2M Redispach Flowgate} - m_1}\),
When \( RT_{MktFlow}^{M2M \text{ Redisp. Flowgate} - m_i} < M2M_{Ent}^{M2M \text{ Redisp. Flowgate} - m_i} \),

\[
\text{Non}_\text{MonRTO Payment}_{M2M \text{ Redisp. Flowgate} - m_i} = Non_{Mon Shadow}^{M2M \text{ Redisp. Flowgate} - m_i} \times \left( M2M_{Ent}^{M2M \text{ Redisp. Flowgate} - m_i} - RT_{MktFlow}^{M2M \text{ Redisp. Flowgate} - m_i} \right) \times \frac{S_i}{3600 \text{ sec}}
\]

Where:

- \( M2M_{Ent}^{M2M \text{ Redisp. Flowgate} - m_i} = \) M2M redispatch settlement, in the form of a payment to the Non-Monitoring RTO from the Monitoring RTO, for M2M Redisp. Flowgate m and interval \( i \);
- \( RT_{MktFlow}^{M2M \text{ Redisp. Flowgate} - m_i} = \) real-time RTO MF, determined for settlement in accordance with Section 7.1 above, for M2M Redisp. Flowgate m and interval \( i \);
- \( Non_{Mon Shadow}^{M2M \text{ Redisp. Flowgate} - m_i} = \) Monitoring RTO’s Shadow Price for M2M Redisp. Flowgate m and interval \( i \);
- \( Non_{Mon Shadow}^{M2M \text{ Redisp. Flowgate} - m_i} = \) Non-Monitoring RTO’s Shadow Price for M2M Redisp. Flowgate m and interval \( i \); and

\( s_i = \) number of seconds in interval \( i \).

8.3 NY-NJ PARs Settlements

Compute the real-time NY-NJ PARs settlement for each interval as specified below.

When
When \( \text{Actual}_{PARx_i} > \text{Target}_{PARx_i} \),

\[
\text{NYImpact}_{PARx_i} = \text{Max}(\text{Congestion}\$_{(PARx, NY)_i} \times (\text{Target}_{PARx_i} - \text{Actual}_{PARx_i}), 0) \times \frac{s_i}{3600\sec}
\]

\[
\text{PJMImpact}_{PARx_i} = \left(\text{Congestion}\$_{(PARx, PJM)_i} \times (\text{Actual}_{PARx_i} - \text{Target}_{PARx_i})\right) \times \frac{s_i}{3600\sec}
\]

When \( \text{Actual}_{PARx_i} < \text{Target}_{PARx_i} \),

\[
\text{NYImpact}_{PARx_i} = \left(\text{Congestion}\$_{(PARx, NY)_i} \times (\text{Target}_{PARx_i} - \text{Actual}_{PARx_i})\right) \times \frac{s_i}{3600\sec}
\]

\[
\text{PJMImpact}_{PARx_i} = \text{Max}(\text{Congestion}\$_{(PARx, PJM)_i} \times (\text{Actual}_{PARx_i} - \text{Target}_{PARx_i}), 0) \times \frac{s_i}{3600\sec}
\]

\[
\text{M2MPARSettlement}_{i} = \left(\text{Min}\left(\sum_{\text{All NY-NJ PARs}} \text{NYImpact}_{PARx_i}, 0\right) - \text{Min}\left(\sum_{\text{All NY-NJ PARs}} \text{PJMImpact}_{PARx_i}, 0\right)\right)
\]

Where:

\( \text{Actual}_{PARx_i} = \) Measured real-time actual flow on each of the NY-NJ PARs for interval \( i \). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\( \text{Target}_{PARx_i} = \) Calculated Target Value for the flow on each NY-NJ PAR as described in Section 7.2.1 above for interval \( i \). For purposes of this
equation, a positive value indicates a flow from PJM to the NYISO;

\[ PJM_{\text{Impact}} p_{\text{PAR}_i} = \]

PJM Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on PJM’s system congestion for interval \( i \). For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing PJM’s system congestion, whereas a negative value indicates that the PAR flow relative to target flow is increasing PJM’s system congestion.

\[ NY_{\text{Impact}} p_{\text{PAR}_i} = \]

NYISO Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on NYISO’s system congestion for interval \( i \). For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing NYISO’s system congestion, whereas a negative value indicates that the PAR flow relative to the target flow is increasing NYISO’s system congestion system.

\[ \text{Congestion} s_{\text{(PAR, PJM)}_i} = \]

Cost of congestion at each NY-NJ PAR for PJM, calculated in accordance with Section 7.2.2 above for interval \( i \);

\[ \text{Congestion} s_{\text{(PAR, NY)}_i} = \]

Cost of congestion at each NY-NJ PAR for NYISO, calculated in accordance with Section 7.2.2 above for interval \( i \), and

\[ M2M_{\text{PAR Settlement}}_i = \]

M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval \( i \).

\( s_i = \) number of seconds in interval \( i \).

### 8.3.1 NY-NJ PAR Settlements During Storm Watch Events

PJM shall not be required to pay a \( M2M_{\text{PAR Settlement}} \) (calculated in accordance with Section 8.3 of this Schedule D) to NYISO when a Storm Watch is in effect and PJM has taken the actions required below to assist the NYISO, or when NYISO has not taken the actions required below to address power flows resulting from the redispatch of generation to address the Storm Watch.

NYISO shall not be required to pay a \( M2M_{\text{PAR Settlement}} \) to PJM when a Storm Watch is in effect and NYISO has taken the actions required of it below to address power flows resulting from the redispatch of generation to address the Storm Watch.
When a Storm Watch is in effect, the RTOs will determine whether PJM and/or NYISO are required to pay a M2MPAR Settlement to the other RTO based on three Storm Watch compliance requirements that address the operation of (a) the JK transmission lines and associated Waldwick PARs, (b) the ABC transmission lines and associated ABC PARs, and (c) the 5018 transmission line and associated Ramapo PARs. Compliance shall be determined as follows:

a. **JK Storm Watch compliance:** Subject to the exceptions that follow, PJM will be “Compliant” at the JK interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the JK interface was at or above the sum of the Target flows for each Available Waldwick PAR at any point in the trailing (rolling) 15-minutes\(^1\); or

ii. PJM took at least two taps on each Available Waldwick PAR in the direction to reduce flow into PJM at any point in the trailing (rolling) 15-minutes.

If NYISO denies PJM’s request to take one or more taps at a Waldwick PAR to reduce flow into PJM and achieve compliance at the JK interface, then PJM shall be considered “Compliant” at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at an ABC PAR increasing flow into New York, and flow on the ABC interface is not at or above the sum of the Target flows for each Available ABC PAR, then PJM may request that NYISO take a tap at an ABC PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not take the requested tap within five minutes of receiving PJM’s request. “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at a Ramapo PAR increasing flow into New York, and flow on the 5018 interface is not at or above the sum of the Target flows for each Available Ramapo PAR, then PJM may request that NYISO take a tap at a Ramapo PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not either (i) take the requested tap within five minutes of receiving PJM’s request, or (ii) inform PJM that NYISO is unable to take the

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\(^1\) For example, if the sum of the Target flows for Available Waldwick PARs is +200 MW, then PJM will be “Compliant” if flow into PJM on JK was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
requested tap at Ramapo because the change would result in an actual or post-contingency overload on the 5018 lines, or on either of the Ramapo PARs (NYISO will be responsible for demonstrating both the occurrence and duration of the condition). “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change would result in an actual or post-contingency overload on either or both of the JK lines, or on any of the Waldwick PARs, and the overload cannot be addressed through NYISO taking taps at ABC or Ramapo, then PJM will be considered “Compliant” at the JK interface until the condition is resolved. PJM will be responsible for demonstrating both the occurrence and duration of the condition.

b. **ABC Storm Watch compliance**: Subject to the exceptions that follow, NYISO will be “Compliant” at the ABC interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the ABC interface was at or above the sum of the Target values for each Available ABC PAR at any point in the trailing (rolling) 15-minutes; or

ii. NYISO took at least two taps on each Available ABC PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at an ABC PAR to increase flow into New York and achieve compliance at the ABC interface, then NYISO shall be considered “Compliant” at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the ABC interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the

---

2 For example, if the sum of the Target values for each Available ABC PAR is +200 MW, then NYISO will be “Compliant” if flow into New York on ABC was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change would result in an actual or post-contingency overload on one or more of the ABC lines, or on any of the ABC PARs, and the overload cannot be addressed through NYISO taking taps at Ramapo or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the ABC interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

c. **5018 Storm Watch compliance**: Subject to the exceptions that follow, NYISO will be “Compliant” at the 5018 interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the 5018 interface was at or above the sum of the Target values for each Available Ramapo PAR described in Section 7.2.1 of this Schedule D at any point in the trailing (rolling) 15-minutes; or

ii. NYISO took at least two taps on each Available Ramapo PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at a Ramapo PAR to increase flow into New York and achieve compliance at the 5018 interface, then NYISO shall be considered “Compliant” at the 5018 interface.

If NYISO cannot take a required tap at a Ramapo PAR because it will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the 5018 interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the Ramapo interface.

If NYISO cannot take a required tap at a Ramapo PAR because the change would result in an actual or post-contingency overload on the 5018 line, or on either of the Ramapo PARs, and the overload cannot be addressed through NYISO taking taps at ABC or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the 5018 interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.
When a Storm Watch is in effect in New York, PJM shall only be required to pay a M2MPARSettlement to NYISO when PJM is “Non-compliant” at the JK interface, while NYISO is “Compliant” at both the ABC and 5018 interfaces. Otherwise, PJM shall not be required to pay a M2MPARSettlement to NYISO at times when a Storm Watch is in effect in New York.

When a Storm Watch is in effect in New York, NYISO shall only be required to pay a M2MPARSettlement to PJM when NYISO is “Non-compliant” at the ABC interface or the 5018 interface, or both of those interfaces. When NYISO is “Compliant” at both the ABC and 5018 interfaces, NYISO shall not be required to pay a M2MPARSettlement to PJM at times when a Storm Watch is in effect in New York.

When all three interfaces (JK, ABC, 5018) are “Compliant,” or during the first 15-minutes in which a Storm Watch is in effect, this Section 8.3.1 excuses the Parties from paying a M2MPARSettlement to each other at times when a Storm Watch is in effect in New York.

Compliance and Non-compliance shall be determined for each interval of the NYISO settlement cycle (normally, every 5-minutes) that a Storm Watch is in effect.

8.4 Calculating a Combined M2M Settlement

The M2M settlement shall be the sum of the real-time redispatch settlement for each M2M Flowgate and M2MPARSettlement for each interval

\[
\text{Redispatch NY Settlement}_i = \left( \sum_{\text{all NY M2M Redispatch Flowgates}} \left( \text{MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} - \text{Non MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} \right) \right) 
\]

\[
\text{Redispatch PJM Settlement} = \left( \sum_{\text{all PJM M2M Redispatch Flowgates}} \left( \text{MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} - \text{Non MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} \right) \right)
\]

Where:

\[
\text{Redispatch NY Settlement}_i = \quad \text{M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval } i;
\]
\[ \text{Redispatch PJM Settlement}_i = \] M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval \(i\);

\[ \text{Non MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} = \] Monitoring RTO payment to Non-Monitoring RTO for congestion on M2M Redispatch Flowgate \(m\) for interval \(i\); and

\[ \text{MonRTO Payment}_{\text{M2M Redispatch Flowgate } m_i} = \] Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Redispatch Flowgate \(m\) for interval \(i\).

\[ \text{M2M Settlement}_i = \text{Redispatch PJM Settlement}_i - \text{Redispatch NY Settlement}_i + \text{MPAR Settlement}_i \]

Where:

\[ \text{M2M Settlement}_i = \] M2M settlement, defined as a payment from the NYISO to PJM when the value is positive, and a payment from PJM to the NYISO when the value is negative for interval \(i\);

\[ \text{Redispatch NY Settlement}_i = \] M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval \(i\);

\[ \text{Redispatch PJM Settlement}_i = \] M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval \(i\);

\[ \text{MPAR Settlement}_i = \] M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval \(i\).

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

\[ M2M \text{Settlement}_h = \sum_{i=1}^{n} M2M \text{Settlement}_i \]
Where: 

\[
M2M_{Settlement_h} = \text{M2M settlement for hour } h; \text{ and}
\]

\[
n = \text{Number of intervals in hour } h.
\]

Section 10.1 of this Schedule D 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

It is possible that sufficient redispatch for a M2M Redispatch Flowgate or Other Coordinated Flowgate may not be available to the Monitoring RTO. In these scenarios, the Monitoring RTO will price the flowgate using rules specific to that RTO’s Tariff language.

However, subject to Section 10.1.2 of this Schedule D, if the Non-Monitoring RTO cannot provide sufficient relief to reach the shadow price of the Monitoring RTO, any 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 Redispatch 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 Coordination 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 NY-NJ 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 redispactch process will be initiated by the Monitoring RTO whenever an M2M Flowgate that is eligible for redispactch is constrained and therefore binding in its dispatch. Coordinated operation of the NY-NJ 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. 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.

   b. Either Party may temporarily suspend an active M2M coordination process or delay implementation of the M2M coordination process if a Party is experiencing, or acting in good faith suspects it may be experiencing, (1) a failure or outage of the data link between the Parties prevents the exchange of accurate or timely real-time data necessary to implement the M2M coordination process; or (2) a failure or outage of any computational or data systems preventing the actual or accurate calculation of data necessary to implement the M2M coordination process. The Parties shall resolve the issue causing the failure or outage of the data link, computational systems, or data systems as soon as possible in accordance with Good Utility Practice. The Parties shall resume implementation of the M2M coordination process following the successful testing of the data link or relevant system(s) after the failure or outage condition 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 this Agreement.

10.1.8 Suspension of M2M Settlement when a Request for Taps on NY-NJ PARs to Prevent Overuse is Refused. If a Party requests that taps be taken on any NY-NJ 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 NY-NJ PAR settlement component of M2M (see Section 8.3 above) being suspended until the tap request is granted.

10.1.9 Suspension of NY-NJ PAR Settlement due to Transmission Facility Outage(s). The Parties shall suspend PAR settlements for a NY-NJ PAR when that NY-NJ PAR is out of service, is bypassed, or the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange.

No other Transmission Facility outage(s) will trigger suspension of NY-NJ PAR settlements under this Section 10.1.9.

10.1.10 Suspension of NY-NJ PAR Settlement due to a Stuck PAR
The Parties shall suspend PAR settlements for a NY-NJ PAR when the NY-NJ PAR cannot be adjusted due to physical or SCADA failure and either of the following two conditions occur:

1. The failure is on one of the A, B, C, 3500, or 4500 PARs, the flow on the PAR is below the Target flow for that PAR, or
2. The failure is on one of the E, F or O PARs, the flow on the PAR is above the Target flow for that PAR.

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 M2M coordination 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. The Parties will cooperate to review the data exchanged and used to determine M2M settlements and will mutually identify and resolve errors and anomalies in the calculations that determine the M2M settlements.
If the data exchanged for the M2M redispatch process was relied on by the Non-Monitoring RTO’s dispatch to determine the shadow cost the Non-Monitoring RTO was dispatching to when providing relief at an M2M Flowgate, the data transmitted by the Monitoring RTO that was used to determine the Non-Monitoring RTO’s shadow cost shall not be modified except by mutual agreement prior to calculating M2M settlements. Any necessary corrections to the data exchange shall be made for future M2M coordination.

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 this 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 11.1, 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 11.3, below.
11.3 Objection to Change

Within ten business days after receipt of the Notice described in Section 11.1 (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 11.3 expires, or (c) completion of any dispute resolution process initiated pursuant to this Agreement.
Attachment IV
NYISO & PJM
Market-to-Market Coordination Schedule
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11 M2M Change Management Process

11.1 Notice

11.2 Opportunity to Request Additional Information

11.3 Objection to Change

11.4 Implementation of Change
1 Overview of the Market-to-Market Coordination Processes

The purpose of the M2M coordination processes are 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 processes are 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 processes focuses on real-time market coordination to manage transmission limitations that occur on the 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 NY-NJ 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 Redispatch 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 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 Flowgates. For the purposes of the M2M coordination process (in addition to the studies described in Section 3 of this Schedule D) the following will be used in determining Flowgates.

2.1 NYISO and PJM will only be performing redispatch or NY-NJ PAR coordination on Flowgates that are under the operational control of NYISO or PJM. NYISO and PJM will not be performing redispatch or NY-NJ PAR coordination 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 NY-NJ 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 is not an additional criterion for determination of Flowgates.

2.3 For the purpose of determining whether a monitored element Flowgate is eligible for redispatch or NY-NJ PAR coordination, a threshold for determining a significant GLDF or NY-NJ PARs PSF will take into account the number of
monitored elements. Implementation of Flowgates will ordinarily occur through mutual agreement.

2.4 M2M Redispatch Flowgates and Other Coordinated Flowgates that are eligible for redispatch coordination are also eligible for coordinated operation of the NY-NJ PARs. Flowgates that are eligible for coordinated operation of the NY-NJ PARs are not necessarily also eligible for redispatch coordination.

2.5 The NYISO shall post a list of all of the Flowgates located in the New York Control Area (“NYCA”) on its web site. PJM shall post a list of all of the Flowgates located in its Control Area on its web site.

3 Flowgate Studies

To identify Flowgates the Parties will perform an off-line study to determine if there is a significant GLDF for at least one generator within the Non-Monitoring RTO, or significant PSF for at least one NY-NJ PAR, on a potential Flowgate within the Monitoring RTO that 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 Flowgate studies will be based on the same assumptions used for determining M2M Entitlements in Section 6 of this Schedule D.

3.1 Either Party may propose that a new Flowgate be added at any time. The Parties will work together to perform the necessary studies within a reasonable timeframe.

3.2 The GLDF thresholds for a Other Coordinated Flowgate with one or more monitored elements are defined as:

   i. Single monitored element, 5% GLDF on any resource;

   ii. Two monitored elements, 7.5% GLDF on any resource; and

   iii. Three or more monitored elements, 10% GLDF on any resource.

For potential Other Coordinated Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispatch coordination.

3.3 The GLDF thresholds for a M2M Redispatch Flowgate with one or more monitored elements are defined as:

   i. Single monitored element, 5% GLDF on any Qualified Resource;

   ii. Two monitored elements, 7.5% GLDF on any Qualified Resource; and
iii. Three or more monitored elements, 10% GLDF on any Qualified Resource.

For potential M2M Redispach Flowgates that pass the above GLDF criteria, the Parties must still mutually agree to add each Flowgate for NY-NJ PAR and redispach coordination.

3.4 The NY-NJ PARs PSF thresholds for NY-NJ PAR Coordinated Flowgates with one or more monitored elements are defined as:

1. Single monitored element, 5% NY-NJ PARs PSF;
2. Two monitored elements, 7.5% NY-NJ PARs PSF; and
3. Three or more monitored elements, 10% NY-NJ PARs PSF.

For potential Flowgates that pass the above NY-NJ PARs PSF criteria, the Parties must still mutually agree to add each Flowgate for coordinated operation of the NY-NJ PARs.

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

4 Removal of Flowgates from M2M Coordination Processes

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

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

4.2 A M2M Redispach Flowgate that does not satisfy the criteria set forth in Section 3.3 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 Notice to the other Party that it withdraws its agreement to the M2M Redispach Flowgate, or at a later or earlier date that the Parties mutually agree upon. The Notice must include an explanation of the reason(s) why the agreement to the M2M Redispach Flowgate was withdrawn.

4.3 A Other Coordinated Flowgate shall be removed two weeks after either Party provides a Notice to the other party that it withdraws its agreement to the Other Coordinated Flowgate, or at a later or earlier date that the Parties mutually agree
upon. The Notice must include an explanation of the reason(s) why the agreement to the Other Coordinated Flowgate was withdrawn.

4.4 The Parties can mutually agree to remove a Flowgate whether or not it passes the coordination tests. A Flowgate should be removed when the Parties agree that the relevant coordination processes are 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated 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 Redispatch Flowgates and Other Coordinated Flowgates

The first step to determining the Market Flow on a Flowgate is to calculate generator, load and PAR shift factors for each of the Flowgates. For real-time 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, of this Schedule D.

\[ Zonal_{Total\ Load_{zone}} = Load_{zone} + Losses_{zone}, \text{ for each RTO load zone} \]

Where:
zone = the relevant RTO load zone;

Zonal_Total_Loadzone = the sum of the RTO’s load and transmission losses for the zone;

Loadzone = the load within the zone; and

Losseszone = 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:

\[ Zonal\_Reduced\_Loadzone = Zonal\_Total\_Loadzone - \sum_{scheduled\_lines=1}^{all} Import\_Schedules\_{scheduled\_line,zone} \]

Where:

zone = the relevant RTO load zone;

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

Zonal\_Reduced\_Loadzone = 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\_Loadzone = the sum of the RTO’s load and transmission losses for the zone; and

Import\_Schedules\_{scheduled\_line,zone} = 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>
<thead>
<tr>
<th>Scheduled Line</th>
<th>NYISO Load Zone</th>
<th>PJM Load Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennison Scheduled Line</td>
<td>North</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Cross-Sound Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>New York City</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>New York City</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>Long Island</td>
<td>Mid-Atlantic Control Zone</td>
</tr>
<tr>
<td>Northport – Norwalk Scheduled Line</td>
<td>Long Island</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

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***

<table>
<thead>
<tr>
<th>Proxy</th>
<th>Balancing Authorities Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>PJM</td>
</tr>
<tr>
<td>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 or deleted proxies prior to implementing such changes in its M2M software.</td>
<td>NYISO</td>
</tr>
</tbody>
</table>

*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).

\[
\text{RTO Net Load} = \sum_{\text{zone}=1}^{\text{all}} \text{Zonal Reduced Load}_{\text{zone}}
\]

Where:

\(\text{RTO Net Load} = \) 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\textsubscript{zone} = 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 all proxy 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\_proxy = the sum of import schedules at a given proxy.

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

\[
Zonal\_Weighting\textsubscript{zone} = \left( \frac{Zonal\_Reduced\_Load\textsubscript{zone}}{RTO\_Net\_Load} \right)
\]

Where:

zone = the relevant RTO load zone;

Zonal_Weighting\textsubscript{zone} = 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\textsubscript{zone} = 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:

\[
Zonal_{\text{Final Load}}_{\text{zone}} = Zonal_{\text{Weighting}}_{\text{zone}} \times RTO_{\text{Final Load}}
\]

Where:

- \( \text{zone} = \) the relevant RTO load zone;
- \( Zonal_{\text{Final Load}}_{\text{zone}} = \) the final RTO load served by internal RTO generation in the zone;
- \( Zonal_{\text{Weighting}}_{\text{zone}} = \) the percentage of the RTO’s load contained within the zone; and
- \( RTO_{\text{Final Load}} = \) 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 Flowgate as:

\[
RTO_{\text{LSF}}_{\text{Flowgate-m}} = \sum_{\text{zone}=1}^{\text{all}} \left( LSF_{\text{zone,Flowgate-m}} \times \left( \frac{Zonal_{\text{Final Load}}_{\text{zone}}}{RTO_{\text{Final Load}}} \right) \right)
\]

Where:

- \( \text{Flowgate-m} = \) the relevant flowgate;
- \( \text{zone} = \) the relevant RTO load zone;
- \( RTO_{\text{LSF}}_{\text{Flowgate-m}} = \) the load shift factor for the entire RTO footprint on Flowgate m;
- \( LSF_{\text{zone,Flowgate-m}} = \) the load shift factor for the RTO zone on Flowgate m;
- \( Zonal_{\text{Final Load}}_{\text{zone}} = \) the final RTO load served by internal RTO generation in the zone; and
- \( RTO_{\text{Final Load}} = \) 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:

\[
RTO_{\text{Gen}_{\text{zone}}} = \sum_{\text{unit}=1}^{\text{all}} Gen_{\text{unit,zone}}, \text{ for each RTO load zone}
\]

Where:
- \( \text{zone} \) = the relevant RTO load zone;
- \( \text{unit} \) = the relevant generator;
- \( RTO_{\text{Gen}_{\text{zone}}} \) = the sum of the RTO’s generation in a zone; and
- \( Gen_{\text{unit,zone}} \) = 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:

\[
RTO_{\text{Reduced Gen}_{\text{zone}}} = RTO_{\text{Gen}_{\text{zone}}} - \sum_{\text{scheduled line}=1}^{\text{all}} Export_{\text{Schedules}_{\text{scheduled line,zone}}}
\]

Where:
- \( \text{zone} \) = the relevant RTO load zone;
- \( \text{scheduled line} \) = each of the Transmission Facilities identified in Table 1 above;
- \( RTO_{\text{Reduced Gen}_{\text{zone}}} \) = the sum of the RTO’s generation in a zone reduced by the sum of export schedules over scheduled lines from the zone;
- \( RTO_{\text{Gen}_{\text{zone}}} \) = the sum of the RTO’s generation in a zone; and
- \( Export_{\text{Schedules}_{\text{scheduled line,zone}}} \) = 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.

\[
Reduced Gen_{\text{unit}} = Gen_{\text{unit,zone}} \left( \frac{RTO_{\text{Reduced Gen}_{\text{zone}}}}{RTO_{\text{Gen}_{\text{zone}}}} \right)
\]

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;

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

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

\[ \text{Export\_Schedules}_{\text{proxy}} = \text{the sum of export schedules at a given proxy.} \]

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

\[ Gen\_Final_{\text{unit}} = \frac{\text{Reduced \text{Gen}_{\text{unit}}} \times RTO\_Final\_Gen}{RTO\_Net\_Gen} \]

Where:

\[ \text{unit} = \text{the relevant generator;} \]

\[ \text{Gen\_Final}_{\text{unit}} = \text{the portion of each unit’s output that is serving the RTO Net Load;} \]

\[ \text{Reduced \text{Gen}_{\text{unit}}} = \text{each unit’s real-time output after reducing the RTO Net Gen by the real-time export schedules over scheduled lines;} \]

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

\[ RTO\_Net\_Gen = \text{the sum of the RTO’s generation reduced by the sum of export schedules over all scheduled lines.} \]

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

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

\[ RTO\_GTL_{\text{Flowgate} - m} = \sum_{\text{unit}=1}^{\text{all}} \left( Gen\_Final_{\text{unit}} \times \left( GSF_{\text{unit,flowgate} - m} - RTO\_LSF_{\text{Flowgate} - m} \right) \right) \]

Where:
Flowgate-m = the relevant flowgate;

unit = the relevant generator;

RTO_GTL_{Flowgate-m} = the generation to load flow for the entire RTO footprint on Flowgate m;

Gen_Final_{unit} = the portion of each unit’s output that is serving RTO Net Load;

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

RTO_LSF_{Flowgate-m} = the load shift factor for the entire RTO footprint on Flowgate m.

5.5 **Compute the RTO Interchange Scheduling Impacts for all 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>
<thead>
<tr>
<th>Scheduling Point</th>
<th>Scheduling Point Type</th>
<th>Participating RTO(s) Responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>NYISO-PJM</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>HTP Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Linden VFT Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>Neptune Scheduled Line</td>
<td>common</td>
<td>NYISO and PJM</td>
</tr>
<tr>
<td>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.</td>
<td>non-common</td>
<td>PJM</td>
</tr>
<tr>
<td>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</td>
<td>non-common</td>
<td>NYISO</td>
</tr>
</tbody>
</table>
provide to PJM notice of any new or deleted non-common scheduling points prior to implementing such changes in its M2M software.

\[ RTO_{Transfers}^{sched_{pt}} = \text{Imports}^{sched_{pt}} + \text{WheelsIn}^{sched_{pt}} - \text{Exports}^{sched_{pt}} - \text{WheelsOut}^{sched_{pt}} \]

Where:

- \( \text{sched}_{pt} \) = 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;
- \( \text{Imports}^{sched_{pt}} \) = the import component of the interchange schedule at a scheduling point;
- \( \text{WheelsIn}^{sched_{pt}} \) = the injection of wheels-through component of the interchange schedule at a scheduling point;
- \( \text{Exports}^{sched_{pt}} \) = the export component of the interchange schedule at a scheduling point; and
- \( \text{WheelsOut}^{sched_{pt}} \) = 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.

\[ Parallel\_Transfers^{Flowgate-m} = \sum_{nc\_sched\_pt=1}^{all} RTO_{Transfers}^{nc\_sched\_pt} \times PTDF^{(nc\_sched\_pt,Flowgate-m)} \]

Where:

- \( \text{Flowgate-m} \) = the relevant flowgate;
- \( \text{nc\_sched\_pt} \) = 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\_Flowgate-m = the flow on 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, Flowgate-m) = the power transfer distribution factor of the non-common scheduling point on 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.

\[
\text{Shared Transfers}_{\text{Flowgate-m}} = \sum_{\text{cmn_sched_pt}=1}^{\text{all}} \text{RTO Transfers}_{\text{cmn_sched_pt}} \times \text{PTDF}_{\text{(cmn_sched_pt,Flowgate-m)}}
\]

Where:

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\_Flowgate-m = the flow on 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,Flowgate-m) = the generation shift factor of the common scheduling point on 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 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

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

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

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;

\[
PAR_{Control_{par}} =
\]

the flow deviation on each of the PARs;

\[
Actual_{MW_{par}} =
\]

the actual flow on each of the PARs, determined consistent with Table 4 above; and

\[
Target_{MW_{par}} =
\]

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 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 Flowgate m based on the PAR_Controlpar MWs calculated above:

\[
C_{mn\_PAR\_ControlFlowgate-m} = \sum_{cmn\_par=1}^{all} \left( \text{PSF}(cmn\_par,Flowgate-m) \times \text{PAR\_Control}_{cmn\_par} \right)
\]

Where:

Flowgate-m = the relevant flowgate;

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

\(C_{mn\_PAR\_ControlFlowgate-m}\) = the sum of flow on Flowgate m after accounting for the operation of common PARs;

\(\text{PSF}(cmn\_par,Flowgate-m)\) = the PSF of each of the common PARs on Flowgate m; and

\(\text{PAR\_Control}_{cmn\_par}\) = the flow deviation on each of the common PARs.

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

\[
C_{mn\_PAR\_MFFlowgate-m} = \sum_{cmn\_par=1}^{all} \left( \left( \text{PSF}(cmn\_par,Flowgate-m) \right) \times \left( \text{RTO\_GTI}_{cmn\_par} + \text{Parallel\_Transfers}_{cmn\_par} \right) \right)
\]

Where:

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_{Flowgate-m} = \text{the sum of flow on Flowgate m due to the generation to load flows and interchange schedules on the common PARs;}

PSF_{(\text{cmn_par},Flowgate-m)} = \text{the PSF of each of the common PARs on Flowgate m;}

\text{RTO}_\text{GTL}_{\text{cmn_par}} = \text{the generation to load flow for each common par, computed in the same manner as the generation to load flow is computed for Flowgates in Section 5.4 above; and}

\text{Parallel_Transfer}_{\text{cmn_par}} = \text{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 Flowgate m as:

\[ C_{\text{cmn_PAR_ImpactFlowgate-m}} = C_{\text{cmn_PAR_MFFlowgate-m}} - C_{\text{cmn_PAR_ControlFlowgate-m}} \]

Where:

Flowgate-m = \text{the relevant flowgate;}

Cmn_PAR_Impact_{Flowgate-m} = \text{potential flow on Flowgate m that is affected by the operation of the common PARs;}

Cmn_PAR_MF_{Flowgate-m} = \text{the sum of flow on Flowgate m due to the generation to load and interchange schedules on the common PARs; and}

Cmn_PAR_Control_{Flowgate-m} = \text{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 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 Flowgate m based on the PAR control MW above:

\[ NC_{\text{PAR Control}}_{Flowgate-m} = \sum_{nc_{par}=1}^{alt} PSF_{(nc_{par},Flowgate-m)} \times PAR Control_{nc_{par}} \]

Where:

Flowgate-m = \text{the relevant flowgate;}
nc_par = each of the non-common phase angle regulators, modeled as Flowgates, identified in Table 4 above;

NC_PAR_Control_{Flowgate-m} = the sum of flow on Flowgate m after accounting for the operation of non-common PARs;

PSF_{nc_par,Flowgate-m} = the PSF of each of the non-common PARs on Flowgate m; and

PAR_Control_{nc_par} = 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 Flowgate m as the Market Flow across each PAR multiplied by that PAR’s shift factor on Flowgate m:

\[ NC_{PAR	ext{-}MFFlowgate-m} = \sum_{\text{all nc_par}} \left( \frac{\text{PSF}_{nc_par,Flowgate-m}}{\text{RTO\text{-}GTL}_{nc_par} + \text{Parallel\text{-}Transfers}_{nc_par}} \right) \times \text{Parallel\text{-}Transfers}_{nc_par} \]

Where:

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_MFFlowgate-m = the sum of flow on Flowgate m due to the generation to load flows and interchange schedules on the non-common PARs;

PSF_{nc_par,Flowgate-m} = the outage transfer distribution factor of each of the non-common PARs on Flowgate m;

RTO\text{-}GTL_{nc_par} = the generation to load flow for each non-common par, computed in the same manner as the generation to load flow is computed for Flowgates in Section 5.4 above; and

Parallel\text{-}Transfers_{nc_par} = the flow, as computed above where the 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 Flowgate m as:

\[ NC_{PAR\text{-}ImpactFlowgate-m} = NC_{PAR\text{-}MFFlowgate-m} - NC_{PAR\text{-}Control\text{Flowgate-m}} \]
Where:

Flowgate-m = the relevant flowgate;

**NC_PAR_Impact**\textsubscript{Flowgate-m} = the potential flow on Flowgate m that is affected by the operation of non-common PARs;

**NC_PAR_MF**\textsubscript{Flowgate-m} = the sum of flow on Flowgate m due to the generation to load and interchange schedules on the non-common PARs; and

**NC_PAR_Control**\textsubscript{Flowgate-m} = the sum of flow on Flowgate m after accounting for the operation of non-common PARs.

**Aggregate all PAR Effects for Each Flowgate**

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

\[
P_{PAR}\_I_{mpact}\_Flowgate-m = C_{mn}\_PAR\_I_{mpact}\_Flowgate-m + \text{NC}_\text{PAR}\_I_{mpact}\_Flowgate-m
\]

Where:

Flowgate-m = the relevant flowgate;

**PAR\_Impact**\textsubscript{Flowgate-m} = the flow on Flowgate m that is affected after accounting for the operation of both common and non-common PARs;

**Cmn\_PAR\_Impact**\textsubscript{Flowgate-m} = potential flow on Flowgate m that is affected by the operation of the common PARs; and

**NC\_PAR\_Impact**\textsubscript{Flowgate-m} = the potential flow on Flowgate m that is affected by the operation of non-common PARs.

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

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

\[
R_{TO}\_MF\_Flowgate-m = R_{TO}\_GTL\_Flowgate-m + Parallel\_Transfers\_Flowgate-m + Shared\_Transfers\_Flowgate-m - PAR\_Impact\_Flowgate-m
\]

Where:

Flowgate-m = the relevant flowgate;
RTO_MFFlowgate-m = the Market Flow caused by RTO generation dispatch and transaction scheduling on Flowgate m after accounting for the operation of both the common and non-common PARs;

RTO_GTLFlowgate-m = the generation to load flow for the entire RTO footprint on Flowgate m;

Parallel_TransfersFlowgate-m = the flow on Flowgate m caused by interchange schedules that are not jointly scheduled by the participating RTOs;

Shared_TransfersFlowgate-m = the flow on Flowgate m caused by interchange schedules that are jointly scheduled by the participating RTOs; and

PAR_ImpactFlowgate-m = the flow on 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 Redispatch Flowgate and compare the results at least once a year on a mutually agreed upon schedule. This frequency ensures that the impact of upgrades on both parties systems are incorporated into the M2M Entitlement calculation. The parties may mutually agree to not recalculate M2M Entitlements in a given year.

6.1 M2M Entitlement Topology Model and Impact Calculation

The M2M Entitlement calculation shall use both RTOs’ static topological models to determine the Non-Monitoring RTO’s mutually agreed upon share of a M2M Redispatch Flowgate’s total capacity based on historic dispatch patterns. Both RTOs’ models 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 the most recently completed three calendar years 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 models except the PARs at the Michigan-Ontario border;
5. new or upgraded Transmission Facilities; and

Each Party 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 Redispatch 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 twelve periods (“M2M Entitlement Periods”) for each M2M Redispatch 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;
4. M2M Entitlement Period 4: September, October, and November;
5. M2M Entitlement Period 5: May;
6. M2M Entitlement Period 6: June;
7. M2M Entitlement Period 7: July;
8. M2M Entitlement Period 8: August;
9. M2M Entitlement Period 9: September;
10. M2M Entitlement Period 10: October;
11. M2M Entitlement Period 11: November;
12. M2M Entitlement Period 12: December;

For each of the M2M Entitlement Periods listed above the Non-Monitoring RTO will calculate its M2M Entitlement on each M2M Redispatch Flowgate for four groups of hours, the grouping is described below:

1. M2M Entitlement Group 1: Hour beginning 0 through hour beginning 5;
2. M2M Entitlement Group 2: Hour beginning 9 through hour beginning 14;
3. M2M Entitlement Group 3: Hour beginning 15 through hour beginning 20 and;
4. M2M Entitlement Group 4: Hour beginning 6 through hour beginning 8 and hour beginning 21 through hour beginning 23.
The M2M Entitlement for each day/hour period/group, for each M2M Redispatch Flowgate will be calculated by averaging the Non-Monitoring RTO’s Market Flow on an M2M Redispatch Flowgate for each particular day/hour period/group of the week. The Non-Monitoring RTO shall use the Market Flow data for all of the like day/hour period/groups, 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 Redispatch Flowgate. The data within the three year period will be weighted as follows: most recent year 20%, middle year 30%, and oldest year 50%. In addition, the M2M Entitlement values should never extend beyond a facility’s rating. If the calculation derives an entitlement that is above the facility’s rating the parties will cap the entitlement value to remain within the facility’s rating. 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.

If either of the below upgrade scenarios occur the Parties may mutually agree to adjust the M2M Entitlement calculation method to account for the impacts of the upgrade(s):

1. If the Non-Monitoring RTO upgrades the Monitoring RTO’s system resulting in a rating increase; or
2. If the Non-Monitoring RTO’s market flow on the Monitoring RTO’s system decreases due to a Non-Monitoring RTO upgrade on the Non-Monitoring RTO’s system.

### 6.2 M2M Entitlement Calculation

Each Party shall independently calculate the Non-Monitoring RTO’s M2M Entitlement for all M2M Redispatch 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 this 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 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 models 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 of this Schedule D.

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 of all M2M Entitlement Groups 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 of this Schedule D 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.


This Section sets forth the rules for incorporating new or upgraded Transmission Facilities, and Transmission Facility retirements, 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 new or upgraded Transmission Facility, or Transmission Facility retirement, 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 new or upgraded Transmission Facilities, or Transmission Facility retirements, 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.

The Parties will mutually perform an analysis to determine if new or upgraded Transmission Facilities, or Transmission Facility retirements, will have an impact on any of the non-building RTO’s M2M Flowgates. If the new or upgraded Transmission Facilities, or Transmission Facility retirements, are determined to have a 5% or less impact on each of the non-building RTO’s M2M Flowgates, calculated individually for each M2M Flowgate, then the non-building RTO is not required to update its operational models to incorporate the new, upgraded or retired Transmission Facilities. If the new or upgraded Transmission Facilities, or Transmission Facility retirements, are determined to have greater than a 5% impact, but less than a 10% impact on each of the non-building RTO’s M2M Flowgates, calculating the impact individually for each M2M Flowgate, then the Parties may mutually agree not to require the non-building RTO to update its operational models.

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 models 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 or retired Transmission Facilities when new Transmission Facilities are built or existing Transmission Facilities are upgraded or retired. 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 new or upgraded Transmission Facilities, or removing retired Transmission Facilities.

Second, account for new or upgraded Transmission Facilities or Transmission Facility retirements in order from the first completed new/upgraded/retired facility to the last (most recently completed) new/upgraded/retired facility. Reflect the new/upgraded/retired 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 (after adding new or upgraded Transmission Facilities and/or removing retired 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:**

\[
\begin{align*}
\text{TotPost} &= \sum_{f \in E} \text{Post}_f \\
\text{TotPre} &= \sum_{f \in E} \text{Pre}_f \\
\text{NewPost} &= \sum_{f \in N} \text{Post}_f \\
\text{ExistPost} &= \sum_{f \in F} \text{Post}_f \\
\text{ExistPre} &= \sum_{f \in F} \text{Pre}_f
\end{align*}
\]

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

\[
\text{Ent}_{f} = \begin{cases} 
\frac{\text{Post}_f}{\text{TotPre}}, & \text{if } \text{Post}_f > \text{ExistPre} \\
\text{Post}_f, & \text{if } \text{Post}_f \leq \text{ExistPre} \text{ and } f \in F \\
\left(\text{Max}\{(\text{ExistPre} - \text{ExistPost}), 0\}\right) \frac{\text{Post}_f}{\text{NewPost}}, & \text{if } \text{ExistPost} \leq \text{ExistPre} \text{ and } f \in N.
\end{cases}
\]

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

\[
\text{Ent}_{f} = \begin{cases} 
\frac{\text{Post}_f}{\text{TotPre}}, & \text{if } \text{Post}_f > \text{ExistPre} \text{ and } f \in F \\
\text{Post}_f, & \text{if } \text{Post}_f \leq \text{ExistPre} \text{ and } f \in F \\
0, & \text{otherwise.}
\end{cases}
\]

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, upgraded or retired Transmission Facilities (which may not be M2M Flowgates) in the relevant (building or non-building) RTO.

\(N\) represents the new, upgraded or retired 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 \(N\).
is pre-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated.

Post, is the post-upgrade/retirement 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, upgraded or retired Transmission Facilities whose impact on M2M Entitlements has been previously evaluated and incorporated, and all new, upgraded or retired Transmission Facilities whose impact on M2M Entitlements is being evaluated in the current evaluation step. For Transmission Facility retirements, Post, shall equal zero.

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 and Transmission Facility retirements 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 or Transmission Facility retirement 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 or Transmission Facility retirement 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 NY-NJ PARs and redispatch are used by the Parties in real-time operations to effectuate this M2M coordination process. Operation of the NY-NJ 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 NY-NJ PARs to manage transmission congestion requires cooperation between the NYISO and PJM. Operation of the NY-NJ PARs shall be coordinated by the RTOs.

When a M2M Redispatch Flowgate or Other Coordinated Flowgate begins 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
Flowgate that requires redispatch assistance. The Monitoring and Non-Monitoring RTOs will provide the economic value of the 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 Flowgate constraint; the Monitoring RTO will evaluate the actual loading of the 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 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 10.

**7.1 Real-Time Redispatch Coordination Procedures**

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

**7.1.1 Flowgates shall be monitored per each RTO’s internal procedures.**

a. When (i) a 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 for a M2M Redispatch Flowgate, or (iii) the Non-Monitoring RTO agrees to initiate and to continue coordination for a M2M Redispatch Flowgate or Other Coordinated Flowgate, then the Monitoring RTO shall reflect the monitored Flowgate as constrained.

b. 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 for M2M Redispatch Flowgates:**

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

When any of 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 Redispatch Flowgate. The rules for determining which Market Flow (unadjusted or adjusted) to compare to the Non-Monitoring RTO M2M Entitlement when any of the PARs at the Michigan-Ontario border are in-service are set forth below.


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:

\[
MICH-OH\_PAR\_Impact_{Flowgate-m} = \sum_{MICH-OH\_Path=1}^{4} \left( PSF_{MICH-OH\_Path,Flowgate-m} \right) \times \left( RTO_{MF_{MICH-OH\_Path}} - LEC / 4 \right)
\]

Where:

- \( Flowgate-m \) = the relevant Flowgate;
- \( MICH-OH\_Path \) = each of the four PAR paths connecting Michigan to Ontario, Canada;
- \( MICH-OH\_PAR\_Impact_{Flowgate-m} \) = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on Flowgate \( m \);
- \( PSF_{MICH-OH\_Path,Flowgate-m} \) = the PSF of each of the four Michigan-Ontario PAR paths on Flowgate \( m \);
RTO_MFMICH-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 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.

\[
LEC \text{ Adjusted Market Flow}_{Flowgate-m} = RTO_MF_{Flowgate-m} - MICH-OH\_PAR\_Impact_{Flowgate-m}
\]

Where:

Flowgate-m = the relevant flowgate;

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

MICH-OH_PAR_Impact_{Flowgate-m} = the expected impact of the operation of the PARs at the Michigan-Ontario border on the flow on Flowgate m;

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

LEC Adjusted Market Flow_{Flowgate-m} = the Market Flow caused by RTO generation dispatch and transaction scheduling on 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 Applicable 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
Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the coordination process for the constrained M2M Redispatch 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 Redispatch 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 Redispatch Flowgate, the Monitoring RTO will assume that an appreciable amount of redispatch relief is available from the Non-Monitoring RTO and will engage the coordination process for the constrained M2M Redispatch Flowgate.
7.1.3 The Monitoring RTO initiates redispatch coordination, notifies the Non-Monitoring RTO of the M2M Redispatch Flowgates or Other Coordinated Flowgates that are 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 redispatch coordination:
   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 redispatch coordination:
   i. Such an agreement shall be considered an initiation of the redispatch process; and
   ii. The M2M State is set to “Activated”.
   iii. If the Non-Monitoring RTO later withdraws its agreement to activate redispatch coordination at a Flowgate, then the Non-Monitoring RTO notifies the Monitoring RTO of the reason for its decision and the Monitoring RTO shall terminate the redispatch coordination process and set the M2M State to “Refused”.

7.1.5 The Parties have agreed to transmit information required for the administration of this procedure, as per Section 35.7.1 of this 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 redispatch process. Current and forecasted future system conditions shall be considered. Termination of redispatch coordination may be requested by either RTO in the event of a system emergency.

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 redispatch coordination, the Monitoring RTO shall

a. Notify the Non-Monitoring RTO; and  

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

7.2 Real-Time NY-NJ PAR Coordination

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

PJM and the NYISO have operational control of the NY-NJ PARs and direct the operation of the NY-NJ PARs, while Public Service Electric and Gas Company (“PSE&G”) and Consolidated Edison Company of New York (“Con Edison”) have physical control of the NY-NJ PARs. The Con Edison dispatcher sets the PAR taps for the ABC PARs and Ramapo PARs at the direction of the NYISO. The PSE&G dispatchers set the PAR taps for the Waldwick PARs at the direction of PJM.

PJM and the NYISO have the responsibility to direct the operation of the NY-NJ PARs to maintain compliance with the requirements of this Agreement. PJM and the NYISO shall make reasonable efforts to minimize movement of the NY-NJ PARs while implementing the NY-NJ PAR target flows and the NY-NJ PAR coordination process. PJM and the NYISO will employ a +/- 50 MW operational bandwidth around each NY-NJ PAR’s target flow to limit tap movements and to maintain actual flows at acceptable levels. This operational bandwidth shall not impact or change the NY-NJ PAR Settlement rules in Section 8.3 of this Agreement. The operational bandwidth provides a guideline to assist the RTOs’ efforts to avoid unnecessary NY-NJ PAR tap movements.

In order to preserve the long-term availability of the NY-NJ PARs, a maximum number of 20 PAR tap changes per NY-NJ PAR per day, and a maximum number of 400 PAR tap changes per NY_NJ PAR per calendar month will normally be observed. If the number of PAR tap changes exceed these limits, then the operational bandwidth shall be increased in 50 MW increments until the total number of PAR tap changes no longer exceed 400 PAR tap changes per NY-NJ PAR per month, unless PJM and the NYISO mutually agree otherwise.
In order to implement the NY-NJ PAR coordination process, including the establishment and continuation of the initial and any future OBF as defined in this Section and Section 35.2 of this Agreement, on the ABC PARs and the Waldwick PARs, the facilities comprising the ABC Interface and JK Interface shall be functional and operational at all times, consistent with Good Utility Practice, except when they are taken out-of-service to perform maintenance or are subject to a forced outage.

### 7.2.1 NY-NJ PAR Target Values

A Target Value for flow between the NYISO and PJM shall be determined for each NY-NJ PAR based on the net interchange schedule between the Parties. These Target Values shall be used for settlement purposes as:

\[ Target_{PARx} = \left( \text{InterchangeFactor}_{PARx} \right) + \left( \text{Operational Base Flow}_{PARx} \right) + \left( \text{RECo_Load}_{PARx} \right) \]

Where:

- \( Target_{PARx} \) = Calculated Target Value for the flow on each NY-NJ PAR For purposes of this equation, a positive value* indicates a flow from PJM to the NYISO.

- \( \text{InterchangeFactor}_{PARx} \) = The MW value of the net interchange schedule between PJM and NYISO over the AC tie lines distributed across each in-service NY-NJ PAR calculated as net interchange schedule times the interchange percentage. The interchange percentage for each NY-NJ PAR is listed in Table 5.

- \( \text{Operational Base Flow}_{PARx} \) = The MW value of OBF distributed across each of the in-service ABC PARs and Waldwick PARs.

Either Party may establish a temporary OBF to address a reliability issue until a long-term solution to the identified
reliability issue can be implemented. Any temporary OBF that is established shall be at a level that both Parties can reliably support. The Party that establishes the OBF shall: (1) explain the reliability need to the other Party; (2) describe how the OBF addresses the identified reliability need; and (3) identify the expected long-term solution to address the reliability need.

The initial 400 MW OBF, effective on May 1, 2017, is expected to be reduced to zero MW by June 1, 2021.

The Parties may mutually agree to modify an established OBF value that normally applies when all of the ABC PARs and Waldwick PARs are in service. Modification of the normally applied OBF value will be implemented no sooner than two years after mutual agreement on such modification has been reached, unless NYISO and PJM mutually agree to an earlier implementation date.

The NYISO and PJM shall post the OBF values, in MW, normally applied to each ABC PAR and Waldwick PAR when all of the ABC PARs and Waldwick PARs are in service, on their respective websites. The NYISO and PJM shall also post the methodology used to reduce the OBF under certain outage conditions on their respective websites. The NYISO and PJM shall review the OBF MW value at least annually.

\[ \text{RECo Load}_{\text{PARx}} = \]

The MW value of the telemetered real-time Rockland Electric Company Load to be delivered over a NY-NJ PAR shall be calculated as real-time RECo Load times the RECo Load percentage listed in Table 5. RECo Load is the portion of Orange and Rockland load that is part of PJM. The primary objective of the NY-NJ PARs is the delivery of scheduled interchange. Deliveries to serve RECo Load over the Ramapo PARs will only be permitted to the extent there is unused transfer capability on the Ramapo PARs after accounting for interchange. Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load percentage (80%) will be applied to the in-service Ramapo PAR. The RECo Load percentage ordinarily used for each NY-NJ PAR is listed in Table 5:
Table 5

<table>
<thead>
<tr>
<th>PAR Name</th>
<th>Description</th>
<th>Interchange Percentage</th>
<th>RECo Load Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500</td>
<td>RAMAPO PAR3500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>4500</td>
<td>RAMAPO PAR4500</td>
<td>16%</td>
<td>40%^</td>
</tr>
<tr>
<td>E</td>
<td>WALDWICK E2257</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>F</td>
<td>WALDWICK F2258</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>O</td>
<td>WALDWICK O2267</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>A</td>
<td>GOETHSLN BK_1N</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>B</td>
<td>FARRAGUT TR11</td>
<td>7%</td>
<td>0%</td>
</tr>
<tr>
<td>C</td>
<td>FARRAGUT TR12</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

^ Subject to the foregoing limitation, when one of the Ramapo PARs is out of service the full RECo Load Percentage (80%) will be applied to the in-service Ramapo PAR.

7.2.2 Determination of the Cost of Congestion at each NY-NJ PAR

The incremental cost of congestion relief provided by each NY-NJ 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 NY-NJ PAR Coordinated Flowgates by the PSF for each NY-NJ PAR for the relevant NY-NJ PAR Coordinated Flowgates.

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

\[
Congestion_{(P_{ARx,RTO})} = \sum_{NY-NJ PAR Coordinated Flowgates\rightarrow m}^{NY-NJ PAR Coordinated Flowgates\rightarrow RTO} (PSF_{NY-NJ PAR Coordinated Flowgate\rightarrow m,PARx} \times Shadow_{NY-NJ PAR Coordinated Flowgate\rightarrow m})
\]

Where:

\[
Congestion_{(P_{ARx,RTO})} = \]

Cost of congestion at each NY-NJ PAR for the relevant participating RTO, where a negative cost of congestion indicates taps in the direction of the
relevant participating RTO would alleviate that 
RTO’s congestion;

NY – NJ PAR Coordinated Flowgates\textsubscript{RTO} = Set of NY-NJ PAR Coordinated Flowgates for the 
relevant participating RTO;

\(PSF_{(NY–NJ PAR Coordinated Flowgate–m, PARx)} =\) The PSF for each NY-NJ PAR on NY-NJ PAR 
Coordinated Flowgate–m; and

\(\text{Shadow}_\$\text{NY–NJ PAR Coordinated Flowgate}–m =\) The Shadow Price on the relevant participating 
RTO’s NY-NJ PAR Coordinated Flowgate m.

7.2.3 Desired PAR Changes

Consistent with the congestion cost calculation established in Section 7.2.2 above, if the 
NYISO congestion costs associated with a NY-NJ PAR are less than the PJM congestion costs 
associated with the same NY-NJ PAR, then hold or take taps into NYISO.

Similarly, if the PJM congestion costs associated with a NY-NJ PAR are less than 
NYISO congestion costs associated with the same NY-NJ PAR, then hold or take taps into PJM.

Any action on the NY-NJ 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 Flowgate there are two components of the M2M settlement, a redispatch 
component and a NY-NJ PAR 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 Redispatch Flowgate compared to its M2M Entitlement 
for M2M Redispatch Flowgates eligible for redispatch on each M2M Redispatch 
Flowgate; and
2. the \textit{ex-ante} Shadow Price at each M2M Redispatch Flowgate.

When determining M2M settlements for a M2M Redispatch Flowgate, each Party will 
use the M2M Entitlement that corresponds to the period/group for which the real-time Market 
Flow is being calculated except for the following scenarios:
1. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is greater than or equal to zero the M2M Entitlement will be set to zero.

2. When the Non-Monitoring RTO’s M2M Entitlement is negative and the net market flow of the Non-Monitoring RTO is also negative, but exceeds the M2M Entitlement, both the M2M Entitlement and market flow will be set to zero.

Redispatch coordination for Other Coordinated Flowgates is not subject to redispatch settlement under Section 8.2 of this Schedule D. NY-NJ PAR coordination for Other Coordinated Flowgates is subject to NY-NJ PAR coordination settlement under Section 8.3 of this Schedule D.

For the NY-NJ 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 NY-NJ PARs compared to its target flow (Target$_{PAR}$);
2. PSF for each NY-NJ PAR onto each M2M Flowgate; and
3. the ex-ante Shadow Price at each M2M Flowgate.

Either or both of the Parties shall be excused from paying an M2MPARSettlement (described in Section 8.3 of this Schedule D) to the other Party at times when a Storm Watch is in effect in New York and the operating requirements and other criteria set forth in Section 8.3.1 below are satisfied.

8.2 Real-Time Redispatch Settlement

For each M2M Redispatch Flowgate compute the real-time redispatch settlement for each interval as specified below.

When $RT_{MktFlow_{M2M Redispatch Flowgate}} - m_i > M2M_{Ent_{M2M Redispatch Flowgate}} - m_i$,

$$MonRTO\_Payment_{M2M Redispatch Flowgate} - m_i = Mon\_Shadow$_{M2M Redispatch Flowgate} - m_i \times (RT_{MktFlow_{M2M Redispatch Flowgate}} - m_i - M2M_{Ent_{M2M Redispatch Flowgate}} - m_i) \times \frac{s_i}{3600 \text{ sec}}$$

When $RT_{MktFlow_{M2M Redispatch Flowgate}} - m_i < M2M_{Ent_{M2M Redispatch Flowgate}} - m_i$,

$$Non\_MonRTO\_Payment_{M2M Redispatch Flowgate} - m_i = Non\_Mon\_Shadow$_{M2M Redispatch Flowgate} - m_i \times (M2M_{Ent_{M2M Redispatch Flowgate}} - m_i - RT_{MktFlow_{M2M Redispatch Flowgate}} - m_i) \times \frac{s_i}{3600 \text{ sec}}$$
Where:

\[ \text{Non\_MonRTO\_Payment}_{M2M\ Redi\_Flowgate-i} = \text{M2M redisp\_settlement, in the form of a payment to the Non-Monitoring RTO from the Monitoring RTO, for M2M Redi\_Flowgate m and interval } i; \]

\[ \text{MonRTO\_Payment}_{M2M\ Redi\_Flowgate-i} = \text{M2M redisp\_settlement, in the form of a payment to the Monitoring RTO from the Non-Monitoring RTO, for M2M Redi\_Flowgate m and interval } i; \]

\[ \text{RT\_MktFlow}_{M2M\ Redi\_Flowgate-i} = \text{real-time RTO\_MF, determined for settlement in accordance with Section 7.1 above, for M2M Redi\_Flowgate m and interval } i; \]

\[ \text{M2M\_Ent}_{M2M\ Redi\_Flowgate-i} = \text{Non-Monitoring RTO M2M Entitlement for M2M Redi\_Flowgate m and interval } i; \]

\[ \text{Mon\_Shadow\$}_{M2M\ Redi\_Flowgate-i} = \text{Monitoring RTO\’s Shadow Price for M2M Redi\_Flowgate m and interval } i; \]

\[ \text{Non\_Mon\_Shadow\$}_{M2M\ Redi\_Flowgate-i} = \text{Non-Monitoring RTO\’s Shadow Price for M2M Redi\_Flowgate m and interval } i, \text{ and} \]

\[ s_i = \text{number of seconds in interval } i. \]

### 8.3 NY-NJ PARs Settlements

Compute the real-time NY-NJ PARs settlement for each interval as specified below.

When \( \text{Actual}_{PARx_i} > \text{Target}_{PARx_i} \),

\[ \text{NYImpact}_{PARx_i} \]

\[ = \text{Max} \left( \left( \text{Congestion\$}_{PARx,NY_i} \times \left( \text{Target}_{PARx_i} - \text{Actual}_{PARx_i} \right) \right), 0 \right) \times \frac{s_i}{3600\text{sec}} \]

\[ \text{PJMImpact}_{PARx_i} \]

\[ = \left( \text{Congestion\$}_{PARx,PJM_i} \times \left( \text{Actual}_{PARx_i} - \text{Target}_{PARx_i} \right) \right) \times \frac{s_i}{3600\text{sec}} \]
When 
\(\text{Actual}_{\text{PAR}_i} < \text{Target}_{\text{PAR}_i}\),

\[
\text{NYImpact}_{\text{PAR}_i} = \left(\text{Congestion}^\dagger_{(\text{PAR}_i, \text{NY})} \times \left(\text{Target}_{\text{PAR}_i} - \text{Actual}_{\text{PAR}_i}\right)\right) \\
\times \frac{S_i}{3600\text{sec}}
\]

\[
\text{PJMImpact}_{\text{PAR}_i} = \text{Max}\left(\text{Congestion}^\dagger_{(\text{PAR}_i, \text{PJM})} \times \left(\text{Actual}_{\text{PAR}_i} - \text{Target}_{\text{PAR}_i}\right), 0\right) \times \frac{S_i}{3600\text{sec}}
\]

\[
M2MPARSettlement_{i} = \left(\text{Min}\left(\sum_{\text{All NY-JNJ PARs}} \text{NYImpact}_{\text{PAR}_i}, 0\right) - \text{Min}\left(\sum_{\text{All NY-JNJ PARs}} \text{PJMImpact}_{\text{PAR}_i}, 0\right)\right)
\]

Where:

\(\text{Actual}_{\text{PAR}_i}\) = Measured real-time actual flow on each of the NY-NJ PARs for interval \(i\). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\(\text{Target}_{\text{PAR}_i}\) = Calculated Target Value for the flow on each NY-NJ PAR as described in Section 7.2.1 above for interval \(i\). For purposes of this equation, a positive value indicates a flow from PJM to the NYISO;

\(\text{PJMImpact}_{\text{PAR}_i}\) = PJM Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on PJM’s system congestion for interval \(i\). For purposes of this equation, a positive value indicates that the PAR flow relative to target flow is reducing PJM’s system congestion, whereas a negative value indicates that the PAR flow relative to target flow is increasing PJM’s system congestion.

\(\text{NYImpact}_{\text{PAR}_i}\) = NYISO Impact, defined as the impact that the current NY-NJ PAR flow relative to target flow is having on NYISO’s system congestion for interval \(i\). For purposes of this
equation, a positive value indicates that the PAR flow relative to target flow is reducing NYISO’s system congestion, whereas a negative value indicates that the PAR flow relative to the target flow is increasing NYISO’s system congestion system.

\[ \text{Congestion}_{(\text{PAR}, \text{PJM})}^i = \] Cost of congestion at each NY-NJ PAR for PJM, calculated in accordance with Section 7.2.2 above for interval \( i \);

\[ \text{Congestion}_{(\text{PAR}, \text{NY})}^i = \] Cost of congestion at each NY-NJ PAR for NYISO, calculated in accordance with Section 7.2.2 above for interval \( i \), and

\[ \text{M2MPARSettlement}^i = \] M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval \( i \).

\[ s_i = \] number of seconds in interval \( i \).

8.3.1 NY-NJ PAR Settlements During Storm Watch Events

PJM shall not be required to pay a \( \text{M2MPARSettlement} \) (calculated in accordance with Section 8.3 of this Schedule D) to NYISO when a Storm Watch is in effect and PJM has taken the actions required below to assist the NYISO, or when NYISO has not taken the actions required below to address power flows resulting from the redispatch of generation to address the Storm Watch.

NYISO shall not be required to pay a \( \text{M2MPARSettlement} \) to PJM when a Storm Watch is in effect and NYISO has taken the actions required of it below to address power flows resulting from the redispatch of generation to address the Storm Watch.

When a Storm Watch is in effect, the RTOs will determine whether PJM and/or NYISO are required to pay a \( \text{M2MPARSettlement} \) to the other RTO based on three Storm Watch compliance requirements that address the operation of (a) the JK transmission lines and associated Waldwick PARs, (b) the ABC transmission lines and associated ABC PARs, and (c) the 5018 transmission line and associated Ramapo PARs. Compliance shall be determined as follows:

a. \( \text{JK Storm Watch compliance} \): Subject to the exceptions that follow, PJM will be “Compliant” at the JK interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:
i. Flow on the JK interface was at or above the sum of the Target flows for each Available Waldwick PAR at any point in the trailing (rolling) 15-minutes\(^1\); or

ii. PJM took at least two taps on each Available Waldwick PAR in the direction to reduce flow into PJM at any point in the trailing (rolling) 15-minutes.

If NYISO denies PJM’s request to take one or more taps at a Waldwick PAR to reduce flow into PJM and achieve compliance at the JK interface, then PJM shall be considered “Compliant” at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at an ABC PAR increasing flow into New York, and flow on the ABC interface is not at or above the sum of the Target flows for each Available ABC PAR, then PJM may request that NYISO take a tap at an ABC PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not take the requested tap within five minutes of receiving PJM’s request. “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change will result in an overload on PJM’s system unless NYISO first takes a tap at a Ramapo PAR increasing flow into New York, and flow on the 5018 interface is not at or above the sum of the Target flows for each Available Ramapo PAR, then PJM may request that NYISO take a tap at a Ramapo PAR increasing flow into New York. PJM will be “Compliant” at the JK interface if NYISO does not either (i) take the requested tap within five minutes of receiving PJM’s request, or (ii) inform PJM that NYISO is unable to take the requested tap at Ramapo because the change would result in an actual or post-contingency overload on the 5018 lines, or on either of the Ramapo PARs (NYISO will be responsible for demonstrating both the occurrence and duration of the condition). “Compliant” status achieved pursuant to this paragraph shall continue until NYISO takes the requested PAR tap, or the Parties agree that NYISO not taking the requested PAR tap is no longer preventing PJM from taking the PAR tap(s) (if any) PJM needs to achieve compliance at the JK interface.

If PJM cannot take a required tap at a Waldwick PAR because the change would result in an actual or post-contingency overload on either or both of the

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\(^1\) For example, if the sum of the Target flows for Available Waldwick PARs is +200 MW, then PJM will be “Compliant” if flow into PJM on JK was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
JK lines, or on any of the Waldwick PARs, and the overload cannot be addressed through NYISO taking taps at ABC or Ramapo, then PJM will be considered “Compliant” at the JK interface until the condition is resolved. PJM will be responsible for demonstrating both the occurrence and duration of the condition.

b. *ABC Storm Watch compliance*: Subject to the exceptions that follow, NYISO will be “Compliant” at the ABC interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the ABC interface was at or above the sum of the Target values for each Available ABC PAR at any point in the trailing (rolling) 15-minutes\(^2\); or

ii. NYISO took at least two taps on each Available ABC PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at an ABC PAR to increase flow into New York and achieve compliance at the ABC interface, then NYISO shall be considered “Compliant” at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the ABC interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the ABC interface.

If NYISO cannot take a required tap at an ABC PAR because the change would result in an actual or post-contingency overload on one or more of the ABC lines, or on any of the ABC PARs, and the overload cannot be addressed through NYISO taking taps at Ramapo or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the ABC interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

\(^2\) For example, if the sum of the Target values for each Available ABC PAR is +200 MW, then NYISO will be “Compliant” if flow into New York on ABC was at or above +200 MW during any six second measurement interval over the trailing (rolling) 15 minutes.
c. **5018 Storm Watch compliance:** Subject to the exceptions that follow, NYISO will be “Compliant” at the 5018 interface when either of the following two conditions are satisfied, otherwise it will be “Non-compliant”:

i. Flow on the 5018 interface was at or above the sum of the Target values for each Available Ramapo PAR described in Section 7.2.1 of this Schedule D at any point in the trailing (rolling) 15-minutes; or

ii. NYISO took at least two taps on each Available Ramapo PAR in the direction to increase flow into New York at any point in the trailing (rolling) 15-minutes.

If PJM denies NYISO’s request to take one or more taps at a Ramapo PAR to increase flow into New York and achieve compliance at the 5018 interface, then NYISO shall be considered “Compliant” at the 5018 interface.

If NYISO cannot take a required tap at a Ramapo PAR because it will result in an overload on NYISO’s system unless PJM first takes a tap at a Waldwick PAR reducing flow into PJM, and flow on the JK interface is not at or below the sum of the Target values for each Available Waldwick PAR, then NYISO may request that PJM take a tap at a Waldwick PAR reducing flow into PJM. NYISO will be “Compliant” at the 5018 interface if PJM does not take the requested tap within five minutes of receiving NYISO’s request. “Compliant” status achieved pursuant to this paragraph shall continue until PJM takes the requested PAR tap, or the Parties agree that PJM not taking the requested PAR tap is no longer preventing NYISO from taking the PAR tap(s) (if any) NYISO needs to achieve compliance at the Ramapo interface.

If NYISO cannot take a required tap at a Ramapo PAR because the change would result in an actual or post-contingency overload on the 5018 line, or on either of the Ramapo PARs, and the overload cannot be addressed through NYISO taking taps at ABC or PJM taking taps at Waldwick, then NYISO will be considered “Compliant” at the 5018 interface until the condition is resolved. NYISO will be responsible for demonstrating both the occurrence and duration of the condition.

When a Storm Watch is in effect in New York, PJM shall only be required to pay a M2MPARSettlement to NYISO when PJM is “Non-compliant” at the JK interface, while NYISO is “Compliant” at both the ABC and 5018 interfaces. Otherwise, PJM shall not be required to pay a M2MPARSettlement to NYISO at times when a Storm Watch is in effect in New York.

When a Storm Watch is in effect in New York, NYISO shall only be required to pay a M2MPARSettlement to PJM when NYISO is “Non-compliant” at the ABC interface or the 5018 interface, or both of those interfaces. When NYISO is “Compliant” at both the ABC and 5018
interfaces, NYISO shall not be required to pay a M2MPARSettlement to PJM at times when a Storm Watch is in effect in New York.

When all three interfaces (JK, ABC, 5018) are “Compliant,” or during the first 15-minutes in which a Storm Watch is in effect, this Section 8.3.1 excuses the Parties from paying a M2MPARSettlement to each other at times when a Storm Watch is in effect in New York.

Compliance and Non-compliance shall be determined for each interval of the NYISO settlement cycle (normally, every 5-minutes) that a Storm Watch is in effect.

8.4 Calculating a Combined M2M Settlement

The M2M settlement shall be the sum of the real-time redispatch settlement for each M2M Flowgate and M2MPARSettlement for each interval

\[
\text{Redispatch NY Settlement}_i = \left( \sum_{\text{all NY M2M Redispatch Flowgates}} (\text{MonRTO Payment}_{M2M \text{ Redispatch Flowgate } m_i} - \text{Non MonRTO Payment}_{M2M \text{ Redispatch Flowgate } m_i}) \right)
\]

\[
\text{Redispatch PJM Settlement}_i = \left( \sum_{\text{all PJM M2M Redispatch Flowgates}} (\text{MonRTO Payment}_{M2M \text{ Redispatch Flowgate } m_i} - \text{Non MonRTO Payment}_{M2M \text{ Redispatch Flowgate } m_i}) \right)
\]

Where:

\[\text{Redispatch NY Settlement}_i\] = M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval \(i\);

\[\text{Redispatch PJM Settlement}_i\] = M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval \(i\);

\[\text{Non MonRTO Payment}_{M2M \text{ Redispatch Flowgate } m_i}\] = Monitoring RTO payment to Non-Monitoring RTO for congestion on M2M Redispatch Flowgate \(m\) for interval \(i\); and
Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Redispacth Flowgate m for interval i.

\[ M_{\text{2M Redispacth Flowgate } m_i} = \text{Non-Monitoring RTO payment to Monitoring RTO for congestion on M2M Redispacth Flowgate m for interval i.} \]

Where:

\[ M_{\text{Settlement}_i} = \text{M2M settlement, defined as a payment from the NYISO to PJM when the value is positive, and a payment from PJM to the NYISO when the value is negative for interval i;} \]

\[ \text{Redispacth NY Settlement}_i = \text{M2M NYISO settlement, defined as a payment from PJM to NYISO when the value is positive, and a payment from the NYISO to PJM when the value is negative for interval i;} \]

\[ \text{Redispacth PJM Settlement}_i = \text{M2M PJM settlement, defined as a payment from NYISO to PJM when the value is positive, and a payment from the PJM to NYISO when the value is negative for interval i;} \]

\[ M_{\text{PAR Settlement}_i} = \text{M2M PAR Settlement across all NY-NJ PARs, defined as a payment from NYISO to PJM when the value is positive, and a payment from PJM to NYISO when the value is negative for interval i.} \]

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

\[ M_{\text{2M Settlement}_h} = \sum_{i=1}^{n} M_{\text{2M Settlement}_i} \]

Where:

\[ M_{\text{2M Settlement}_h} = \text{M2M settlement for hour } h; \text{ and} \]

\[ n = \text{Number of intervals in hour } h. \]

Section 10.1 of this Schedule D sets forth circumstances under which the M2M coordination process and M2M settlements may be temporarily suspended.
When One of the RTOs Does Not Have Sufficient Redispatch

It is possible that sufficient redispatch for a M2M Redispatch Flowgate or Other Coordinated Flowgate may not be available to the Monitoring RTO. In these scenarios, the Monitoring RTO will price the flowgate using rules specific to that RTO’s Tariff language.

However, subject to Section 10.1.2 of this Schedule D, if the Non-Monitoring RTO cannot provide sufficient relief to reach the shadow price of the Monitoring RTO, any 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 Redispatch Flowgate shadow prices being the same in both RTOs, their resulting bus LMPs will converge in a consistent price profile.

Appropriate Use of the M2M Coordination 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 NY-NJ 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 NY-NJ 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. 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.

b. Either Party may temporarily suspend an active M2M coordination process or
delay implementation of the M2M coordination process if a Party is experiencing,
or acting in good faith suspects it may be experiencing, (1) a failure or outage of
the data link between the Parties prevents the exchange of accurate or timely real-
time data necessary to implement the M2M coordination process; or (2) a failure
or outage of any computational or data systems preventing the actual or accurate
calculation of data necessary to implement the M2M coordination process. The
Parties shall resolve the issue causing the failure or outage of the data link,
computational systems, or data systems as soon as possible in accordance with
Good Utility Practice. The Parties shall resume implementation of the M2M
coordination process following the successful testing of the data link or relevant
system(s) after the failure or outage condition 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 this Agreement.

10.1.8 **Suspension of M2M Settlement when a Request for Taps on NY-NJ PARs to Prevent Overuse is Refused.** If a Party requests that taps be taken on any NY-NJ 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 NY-NJ PAR settlement component of M2M (see Section 8.3 above) being suspended until the tap request is granted.

10.1.9 **Suspension of NY-NJ PAR Settlement due to Transmission Facility Outage(s).** The Parties shall suspend PAR settlements for a NY-NJ PAR when that NY-NJ PAR is out of service, is bypassed, or the RTOs mutually agree that a NY-NJ PAR is incapable of facilitating interchange.

No other Transmission Facility outage(s) will trigger suspension of NY-NJ PAR settlements under this Section 10.1.9.

10.1.10 **Suspension of NY-NJ PAR Settlement due to a Stuck PAR**
The Parties shall suspend PAR settlements for a NY-NJ PAR when the NY-NJ PAR cannot be adjusted due to physical or SCADA failure and either of the following two conditions occur:

1. The failure is on one of the A, B, C, 3500, or 4500 PARs, the flow on the PAR is below the Target flow for that PAR, or
2. The failure is on one of the E, F or O PARs, the flow on the PAR is above the Target flow for that PAR.

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 M2M coordination 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. The Parties will cooperate to review the data exchanged and used to determine M2M settlements and will mutually identify and resolve errors and anomalies in the calculations that determine the M2M settlements.

If the data exchanged for the M2M redispatch process was relied on by the Non-Monitoring RTO’s dispatch to determine the shadow cost the Non-Monitoring RTO was dispatching to when providing relief at an M2M Flowgate, the data transmitted by the Monitoring RTO that was used to determine the Non-Monitoring RTO’s shadow cost shall not be modified except by mutual agreement prior to calculating M2M settlements. Any necessary corrections to the data exchange shall be made for future M2M coordination.

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 this 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 11.1, 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 11.3, below.

11.3 Objection to Change

Within ten business days after receipt of the Notice described in Section 11.1 (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 11.3 expires, or (c) completion of any dispute resolution process initiated pursuant to this Agreement.
Attachment V
NYISO-PJM JOINT OPERATING AGREEMENT
CERTIFICATE OF CONCURRENCE

This is to certify that PJM Interconnection, L.L.C. (“PJM”) assents to and concurs with the revisions to the Joint Operating Agreement Among and Between New York Independent System Operator, Inc. and PJM Interconnection, L.L.C. (“JOA”) described below, which the New York Independent System Operator, Inc. (“NYISO”) filed on June 28, 2019 (“June 28 JOA Filing”). PJM also assents and concurs with a compliance filing NYISO will submit at a future date in advance of the effective date that PJM and NYISO will mutually agree for revisions to Section 6 of Schedule D of the JOA as described in the June 28 JOA Filing.

NYISO is the designated filing party for the JOA. PJM hereby files this certificate of concurrence in lieu of filing the rate schedule specified below.

Tariff Designations:

New York Independent System Operator Inc.
NYISO OATT 35 Attachment CC

PJM Interconnection, L.L.C.
FERC Electric Tariff, Second Revised Rate Schedule FERC No. 45

Respectfully submitted,
PJM Interconnection, L.L.C.
By: /s/ Steven R. Pincus

Steven R. Pincus
Associate General Counsel
PJM Interconnection, L.L.C.

Dated: June 28, 2019