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Rate Schedule 4

Payments for Supplying Operating Reserves

This Rate Schedule applies to payments to Suppliers that provide Operating Reserves to the ISO. Transmission Customers will purchase Operating Reserves from the ISO under Rate Schedule 5 of the ISO OATT.

1.0 General Responsibilities and Requirements

1.1 ISO Responsibilities

The ISO shall procure on behalf of its Customers a sufficient quantity of ~~each~~ Operating Reserve ~~product~~products to comply with the Reliability Rules and with other applicable reliability standards. These quantities shall be established under Section 7.0 of this Rate Schedule. To the extent that the ISO enters into Operating Reserve sharing agreements with neighboring Control Areas its Operating Reserves requirements shall be adjusted accordingly.

The ISO shall define requirements for Spinning Reserve, which may be met only by Suppliers that are eligible, under Section 1.2 of this Rate Schedule, to provide Spinning Reserve; 10-Minute Reserve, which may be met by Suppliers that are eligible to provide either Spinning Reserve or 10-Minute Non-Synchronized Reserve; and 30-Minute Reserve, which may be met by Suppliers that are eligible to provide any Operating Reserve product. The ISO shall also define locational requirements for Spinning Reserve, 10-Minute Reserve, and 30-Minute Reserve located East of Central East and on Long Island. In addition to being subject to the preceding limitations on Suppliers that can meet each of

these requirements, the requirements for Operating Reserve located East of Central East may only be met by eligible Suppliers that are located East of Central East, and requirements for Operating Reserve located on Long Island may only be met by eligible Suppliers located on Long Island. Each of these Operating Reserve requirements shall be defined consistent with the Reliability Rules and other applicable reliability standards. The ISO shall select Suppliers of Operating Reserves products to meet these requirements, including the locational Operating Reserves requirements, as part of its overall co-optimization process.

The ISO shall select Operating Reserves Suppliers that are properly located electrically so that all locational Operating Reserves requirements ~~are determined consistent~~ consistently with the requirements of Section 7.0 of this Rate Schedule are satisfied, and so that transmission constraints resulting from either the commitment or dispatch of Generators do not limit the ISO's ability to deliver Energy to Loads in the case of a Contingency . The ISO will ensure that Suppliers that ~~counted~~ are compensated for using Capacity to provide one Operating Reserve product are not simultaneously compensated for providing another Operating Reserve product, or Regulation Service, using the same Capacity (consistent with the additive ~~Market Clearing Price~~ market clearing price calculation formulae in Sections 5.1 and 6.1 of this Rate Schedule.).

1.2 Supplier Eligibility Criteria

The ISO shall enforce the following criteria, which define which types of ~~Suppliers~~ Generators or Demand Side Resources are eligible to supply particular Operating Reserve products.

- a. **Spinning Reserve:** Generators that are ISO Committed Flexible or Self-Committed Flexible, are operating within the dispatchable portion of their operating

range, are capable of responding to ISO instructions to change their output level within ten minutes, and are capable of producing Energy for at least thirty minutes shall be eligible to supply Spinning Reserve.

- b. 10-Minute Non-Synchronized Reserve:** Off-line Generators that are capable of starting, synchronizing, and increasing their output level within ten (10) minutes and that meet the criteria set forth in the ISO Procedures, and, when the ISO has the capability to support their participation, Demand- Side Resources that are capable of reducing their Energy usage within ten (10) minutes and that meet the criteria set forth in the ISO Procedures, shall be eligible, provided that they are capable of providing Energy for at least thirty minutes, to supply 10-Minute Non-Synchronized Reserve.
- c. 30-Minute Reserve:** (i) Generators that are ISO Committed Flexible or Self-Committed Flexible and operating within the dispatchable portion of their operating range shall be eligible to supply ~~synchronous~~synchronized 30-Minute Reserves; (ii) Off-line Generators that are capable of starting, synchronizing, and increasing their output level within thirty (30) minutes and that meet the criteria set forth in the ISO Procedures, and, when the ISO has the capability to support their participation, Demand- Side Resources that are capable of reducing their Energy usage within thirty (30) minutes and that meet the criteria set forth in the ISO Procedures, shall be eligible to supply non-~~synchronous~~synchronized 30-Minute Reserves.
- d. Self-Committed Fixed and ISO-Committed Fixed Generators:** Shall not be eligible to provide any kind of Operating Reserve.

1.3 Other Supplier Requirements

All Suppliers of Operating Reserve must be located within the NYCA and must be under ISO Operational Control. Each Supplier bidding to supply Operating Reserve or reduce demand must be able to provide Energy or reduce demand consistent with the Reliability Rules and the ISO Procedures when called upon by the ISO. All Suppliers that are selected to provide Operating Reserves shall ensure that their Resources maintain and deliver the appropriate quantity of Energy, or reduce the appropriate quantity of demand, when called upon by the ISO during any interval in which they have been selected.

Generators or Demand- Side Resources that are selected to provide Operating Reserve in the Day-Ahead Market or any supplemental commitment may not increase their Energy Bids or Demand Reduction Bids for portions of their Resources that have been scheduled through those processes, or reduce their commitments, in real-time except to the extent that they are directed to do so by the ISO. Generators and Demand Side Resources may enter into alternate sales arrangements utilizing any Capacity that has not been scheduled to provide Operating Reserve.

2.0 General Day-Ahead Market Rules

2.1 Bidding and Bid Selection

Resources capable of providing Spinning Reserve, 10-Minute Non-Synchronized Reserve and/or 30-Minute Reserve, in the Day-Ahead commitment may submit Availability Bids for each hour of the upcoming day. If a Supplier offers Resources that are capable, based on their indicated commitment status, of providing Operating Reserves but does not submit an Availability Bid, it will be assigned a Day-Ahead Availability bid of \$0/MWh. The same rules shall apply to Demand Side Resources capable of providing 10-Minute Non-Synchronized Reserve and/or non-synchronized 30-Minute Reserve when the ISO has the capability to support their participation in Operating Reserves

market.

The ISO may schedule ~~Resources~~Suppliers that ~~makes~~make themselves available to provide Operating Reserves up to the following maximum Operating Reserve levels: (i) for Spinning Reserves, the Resource's emergency response rate multiplied by ten; (ii) for 10-Minute Non-Synchronized Reserves, or for non-synchronized 30-Minute Reserves, the Resource's UOL_N or UOL_E, ~~which~~ everwhichever is applicable at the relevant time (the Resource may offer one product or the other depending on the time required for it to start-up and synchronize to the grid); and (iii) for ~~synchronous~~synchronized 30-Minute Reserves, the Resource's emergency response rate multiplied by twenty; ~~and (iv) for non-synchronous 30-Minute Reserves, (?????).~~ However, the sum of the amount of Energy or Demand Reduction each Resource is scheduled to provide, the amount of Regulation Service it is scheduled to provide, and the amount of each Operating Reserves product it is scheduled to provide shall not exceed its UOL_N or UOL_E, ~~which~~ everwhichever is applicable.

The ISO shall select Operating Reserve Suppliers for each hour of the upcoming day through a co-optimized Day-Ahead commitment process that minimizes the total cost of Energy, Operating Reserves and Regulation Service, using Bids submitted pursuant to Article 4.2 of, and Attachment D to, this ISO Services Tariff. As part of the co-optimization process, the ISO shall determine how much of each ~~Operating Reserves~~ product particular Suppliers will be required to provide in light of the Reliability Rules and other applicable reliability standards, including the locational Operating Reserves requirements specified above.

2.2 ISO Notice Requirement

The ISO shall notify each Operating Reserve Supplier that has been selected in the Day-Ahead ~~Schedule~~Market of the amount of each Operating Reserve product that it has been scheduled to

provide.

2.3 Real-Time Market Responsibilities of Suppliers Scheduled to Provide Operating Reserves in the Day-Ahead Market

Suppliers that are scheduled Day-Ahead to provide ~~Spinning Reserve~~Operating Reserves shall either provide ~~Spinning~~Operating Reserve, ~~or generate Energy, or, when the ISO has the capability to support demand side participation, reduce demand~~ in real-time when they are scheduled by the ISO in all hours for which they have been selected to provide ~~Spinning~~Operating Reserve and are physically capable of doing so. However, Suppliers of ~~Spinning Reserve~~ that are scheduled Day-Ahead to provide Operating Reserves and have startup periods of two hours or less may advise the ISO no later than three hours prior to the first hour of their Day-Ahead schedule that they will not be available to provide ~~Spinning~~Operating Reserves or Energy in real-time under normal conditions. Such Suppliers will be required to settle their Day-Ahead schedule at real-time prices pursuant to Section 6.2 of this Rate Schedule. The only restriction on Suppliers' ability to exercise this option is that all Suppliers with Day-Ahead ~~Spinning~~Operating Reserves schedules must make the scheduled amount of Capacity available to the ISO for dispatch in the RTD if the ISO initiates a Supplemental Resource Evaluation.

~~Suppliers of 10 Minute Non-Synchronized Reserve and/or 30 Minute Reserve scheduled Day-Ahead shall provide 10 Minute Non-Synchronized Reserve and/or 30 Minute Reserve or shall generate Energy (or reduce demand) in real-time for all hours in which they have been scheduled to provide 10 Minute Non-Synchronized Reserve and/or 30 Minute Reserve.~~

3.0 General Real-Time Market Rules

3.1 Bid Selection

The ISO will automatically select Operating Reserves Suppliers in real-time from eligible

Resources, and when the ISO has the capability to support their participation, Demand Side Resources,
that submit Real-Time Bids pursuant to Section 4.4 of, and Attachment D to, this ISO Services Tariff.
All Suppliers will automatically be assigned a real-time Operating Reserves Availability bid of \$0/MW.
The ISO may schedule Suppliers that make themselves available to provide Operating Reserves up to
the following maximum Operating Reserve levels: (i) for Spinning Reserves, the Resource's emergency
response rate multiplied by ten; (ii) for 10-Minute Non-Synchronized Reserves, or for non-
synchronized 30-Minute Reserves, the Resource's UOL_N or UOL_E, whichever is applicable at the
relevant time (the Resource may offer one product or the other depending on the time required for it to
start-up and synchronize to the grid); and (iii) for synchronized 30-Minute Reserves, the Resource's
emergency response rate multiplied by twenty. However, the sum of the amount of Energy, or, when
the ISO has the capability to support demand side participation, Demand Reduction, that each
Resource is scheduled to provide, the amount of Regulation Service it is scheduled to provide, and the
amount of each Operating Reserves product it is scheduled to provide shall not exceed its UOL_N or
UOL_E, whichever is applicable.

Suppliers will thus be selected on the basis of their response rates, their applicable upper operating limit, and their Energy Bid (which will reflect their opportunity costs) through a co-optimized real-time commitment process that minimizes the total cost of Energy, Regulation Service and Operating Reserves. As part of the process, the ISO shall determine how much of each Operating Reserves product particular Suppliers will be required to provide in light of the Reliability Rules and other applicable reliability standards, including the locational Operating Reserves requirements specified above.

3.2 ISO Notice Requirement

The ISO shall notify each Supplier of Operating Reserve that has been ~~selected in the real-time~~ scheduled dispatch scheduled by RTD of the amount of Operating Reserve that it must provide.

3.3 Obligation to Make Resources Available to Provide Operating Reserves

Any Resource that is eligible to supply Operating Reserves and that is made available to the ISO for dispatch in Real-Time must also make itself available to provide Operating Reserves.

3.4 Activation of Operating Reserves

All Resources that are selected by the ISO to provide Operating Reserves shall respond to the ISO's directions to activate in real-time.

3.5 Performance Tracking and Supplier Disqualifications

When a Generator selected to supply Operating Reserves is activated, the ISO shall measure and track its actual Energy production against its expected performance in real-time. The ISO may disqualify Generators that consistently fail to provide Energy when called upon to do so in real-time from providing Operating Reserves in the future. If a Resource has been disqualified, the ISO shall require it to pass a re-qualification test before accepting any additional Bids to supply Operating Reserves from it. Disqualification and re-qualification criteria shall be set forth in the ISO Procedures.

4.0 Operating Reserves Settlements – General Rules

4.1 Establishing Locational Reserve Prices

Except as noted below, the ISO shall calculate separate Day-Ahead Market and Real-Time Market prices for each of the three Operating Reserve products for each of three locations: (i) West of Central-East (“West” or “Western”); (ii) East of Central-East Excluding Long Island (“East” or “Eastern”); and (iii) Long Island (“L.I.”). The ISO will thus calculate nine different locational Operating Reserve prices in both the Day-Ahead Market and the Real-Time Market. Day-Ahead locational

reserve prices shall be calculated pursuant to Section 5.0 of this Rate Schedule. Real-Time locational reserve prices shall be calculated pursuant to Section 6.0 of this Rate Schedule.

4.2 Settlements Involving Suppliers of Operating Reserves Located on Long Island

Suppliers of Operating Reserves located on Long Island shall receive settlement payments as if they were providing Operating Reserves located in the East. The ISO will calculate separate locational Long Island Operating Reserves prices but will not post them or use them for settlement purposes.

4.3 “Cascading” of Operating Reserves

The ISO will deem Spinning Reserve to be the “highest quality” Operating Reserve, followed by 10-Minute Non-Synchronized Reserve and by 30-Minute Reserve. The ISO shall substitute higher quality Operating Reserves in place of lower quality Operating Reserves, when doing so lowers the total as-bid cost, *i.e.*, when the marginal cost for the higher quality Operating Reserve product is lower than the marginal cost for the lower quality Operating Reserve product, and the substitution of a higher quality for the lower quality product does not cause locational Operating Reserve requirements to be violated. To the extent, however, that reliability standards require the use of higher quality Operating Reserves, substitution cannot be made in the opposite direction.

The price of higher quality Operating Reserves will not be set at a price below the price of lower quality Operating Reserves in the same location. Thus, the price of Spinning Reserves will not be below the price for 10-Minute Non-Synchronized Reserves or 30-Minute Reserves and the clearing price for 10-Minute Non-Synchronized Reserves will not be below the clearing price for 30-Minute Reserves.

5.0 Operating Reserve Settlements – Day-Ahead Market

5.1 Calculation of Day-Ahead Market Clearing Prices

The ISO shall calculate hourly Day-Ahead Market ~~Clearing Prices~~clearing prices for each Operating Reserve product at each location. Each Day-Ahead Market ~~Clearing Price~~clearing price shall equal the sum of the relevant Day-Ahead locational Shadow Prices for that product in that hour, subject to the restriction described in Section 4.3 of this Rate Schedule.

The Day-Ahead Market ~~Clearing Price~~clearing price for a particular Operating Reserve product in a particular location shall reflect the Shadow Prices associated with all of the Operating Reserve requirements, including locational requirements, that a particular Operating Reserves product from a particular location may be used to satisfy in a given hour. The ISO shall calculate Day-Ahead Market ~~Clearing Prices~~clearing prices using the following formulae:

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Western 30-Minute Reserves} = \text{SP1}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Western 10-Minute-Non-Synchronized Reserves} = \text{SP1} + \text{SP2}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Western Spinning Reserves} = \text{SP1} + \text{SP2} + \text{SP3}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Eastern 30-Minute Reserves} = \text{SP1} + \text{SP4}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Eastern 10-Minute Non-Synchronized Reserves} = \text{SP1} + \text{SP2} + \text{SP4} + \text{SP5}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for Eastern Spinning Reserves} = \text{SP1} + \text{SP2} + \text{SP3} + \text{SP4} + \text{SP5} + \text{SP6}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for L.I. 30-Minute Reserves} = \text{SP1} + \text{SP4} + \text{SP7}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for L.I. 10-Minute Non-Synchronized Reserves} = \text{SP1} + \text{SP2} + \text{SP4} + \text{SP5} + \text{SP7} + \text{SP8}$$

$$\text{Market } \del{\text{Clearing Price}}\text{clearing price for L.I. Spinning Reserves} = \text{SP1} + \text{SP2} + \text{SP3} + \text{SP4} + \text{SP5} + \text{SP6} + \text{SP7} + \text{SP8} + \text{SP9}$$

Where:

- SP1 = Shadow Price for total 30-Minute Reserve requirement constraint for the hour
- SP2 = Shadow Price for total 10-Minute Reserve requirement constraint for the hour
- SP3 = Shadow Price for total Spinning Reserve requirement constraint for the hour
- SP4 = Shadow Price for Eastern or L.I. 30-Minute Reserve requirement constraint for the hour
- SP5 = Shadow Price for Eastern or L.I. 10-Minute Reserve requirement constraint for the hour
- SP6 = Shadow Price for Eastern or L.I. Spinning Reserve requirement constraint for the hour
- SP7 = Shadow Price for Long Island 30-Minute Reserve requirement constraint for the hour
- SP8 = Shadow Price for Long Island 10-Minute Reserve requirement constraint for the hour
- SP9 = Shadow Price for Long Island Spinning Reserve requirement constraint for the hour

Day-Ahead locational ~~shadow prices~~ Shadow Prices will be calculated by the SCUC. Each hourly Day-Ahead Market Clearing Shadow Price shall equal the marginal cost of scheduling a Resource to provide the relevant Operating Reserves product in that hour. It will include the Lost Opportunity Costs and Availability Bids Bid and lost opportunity cost of the marginal Resource selected, and any impact on the Bid Production Cost of procuring Energy or Regulation Service that would result from procuring an increment of Operating Reserve in that hour, as calculated during the fifth SCUC pass; described in Section ___ of Attachment B to this ISO Services Tariff, and Section ___ of Attachment J to the ISO OATT, ~~that is selected to provide Operating Reserves in that hour.~~ Shadow Prices will also be consistent with the Operating Reserve Demand Curves described in Section 7.0 of this Rate Schedule, which will ensure that Operating Reserves are not scheduled by SCUC at a cost greater than the relevant Operating Reserve Demand Curve indicates should be paid. If more Operating Reserve of a particular quality than is needed is scheduled to meet a particular locational Operating Reserve requirement, the Shadow Price for that Operating Reserve requirement constraint shall be set at zero.

Each Supplier that is scheduled Day-Ahead to provide Operating Reserve shall be paid the applicable Day-Ahead Market ~~Clearing Price~~clearing price, based on its location and the quality of Operating Reserve scheduled, multiplied by the amount of Operating Reserve that the Supplier is scheduled to provide in each hour.

5.2. Other Day-Ahead Payments

As is provided in ~~Article~~Section 4.10 and Attachment C of ~~the~~this ISO Services Tariff, the ISO shall compensate each ISO-Committed Flexible ~~or Self-Committed Flexible Generator~~Resource providing Operating Reserves if its Bid Production Cost to provide the Energy and Ancillary Services it is scheduled to supply in the Day-Ahead Market, including start-up costs, minimum Load costs, and Availability Bids, exceeds the revenues it receives from the sale of Energy and Ancillary Services.

~~Notwithstanding anything to the contrary in this Rate Schedule, no Day Ahead Market payments shall be made to any Supplier providing Operating Reserves in excess of the amount of Operating Reserves scheduled by the ISO in the Day Ahead Market.~~

6.0 Operating Reserve Settlements – Real-Time Market

6.1 Calculation of Real-Time Market Clearing Prices

The ISO shall calculate Real-Time Market ~~Clearing Prices~~clearing prices for each Operating Reserve product for each location in every interval. ~~Each~~Except when the circumstances described below in Section 6.1A apply, each real-time ~~Market~~market-~~Clearing~~clearing Priceprice shall equal the sum of the relevant real-time locational Shadow Prices for ~~that~~a given product, subject to the restriction described in Section 4.3 of this Rate Schedule.

The Real-Time Market ~~Clearing Price~~clearing price for a particular Operating Reserve product for a particular location shall reflect the Shadow Prices associated with all of the Operating Reserve

requirements, including locational requirements, that a particular Operating Reserves product from ~~given~~that location may be used to satisfy in a given interval. The ISO shall calculate the Real-Time Market ~~Clearing Price~~clearing Price~~prices~~ using the following formulae:

$$\text{Market ~~Clearing Price~~clearing price for Western 30-Minute Reserves} = SP1$$

$$\text{Market ~~Clearing Price~~clearing price for Western 10-Minute-Non-Synchronized Reserves} = SP1 + SP2$$

$$\text{Market ~~Clearing Price~~clearing price for Western Spinning Reserves} = SP1 + SP2 + SP3$$

$$\text{Market ~~Clearing Price~~clearing price for Eastern 30-Minute Reserves} = SP1 + SP4$$

$$\text{Market ~~Clearing Price~~clearing price for Eastern 10-Minute Non-Synchronized Reserves} = SP1 + SP2 + SP4 + SP5$$

$$\text{Market ~~Clearing Price~~clearing price for Eastern Spinning Reserves} = SP1 + SP2 + SP3 + SP4 + SP5 + SP6$$

$$\text{Market ~~Clearing Price~~clearing price for L.I. 30-Minute Reserves} = SP1 + SP4 + SP7$$

$$\text{Market ~~Clearing Price~~clearing price for L.I. 10-Minute Non-Synchronized Reserves} = SP1 + SP2 + SP4 + SP5 + SP7 + SP8$$

$$\text{Market ~~Clearing Price~~clearing price for L.I. Spinning Reserves} = SP1 + SP2 + SP3 + SP4 + SP5 + SP6 + SP7 + SP8 + SP9$$

Where:

SP1 = Shadow Price for total 30-Minute Reserve requirement constraint for the interval

SP2 = Shadow Price for total 10-Minute Reserve requirement constraint for the interval

SP3 = Shadow Price for total Spinning Reserve requirement constraint for the interval

SP4 = Shadow Price for Eastern or L.I. 30-Minute Reserve requirement constraint for the interval

SP5 = Shadow Price for Eastern or L.I. 10-Minute Reserve requirement constraint for the interval

SP6 = Shadow Price for Eastern or L.I. Spinning Reserve requirement constraint for the interval

- SP7 = Shadow Price for Long Island 30-Minute Reserve requirement constraint for the interval
- SP8 = Shadow Price for Long Island 10-Minute Reserve requirement constraint for the interval
- SP9 = Shadow Price for Long Island Spinning Reserve requirement constraint for the interval

Real-time locational Shadow Prices will be calculated by the ISO’s RTD. Each real-time ~~Market Clearing~~ Shadow Price shall equal the marginal cost of scheduling a Resource to provide the relevant Operating Reserve product in that interval. It will include the ~~Lost Opportunity Costs~~lost opportunity cost of the marginal ResourceGenerator, basedand any impact on the Bid Production Cost of procuring Energy or Operating Reserves that would result from procuring an increment of Regulation Service, in the relevant interval as calculated during the third Real-Time Dispatch pass, described in Section ___ of Attachment B to this ISO Services Tariff, and Section ___ of Attachment J to the ISO OATT, that is selected to provide Operating Reserves in that interval. (realReal-time Availability Bid Prices will also be taken into account but they will always equal zero pursuant to Section 3.1 of this Rate Schedule.) Shadow Prices will also be consistent with the Operating Reserve Demand Curves described in Section 7.0 of this Rate Schedule, which will ensure that Operating Reserves are not scheduled by RTC at a cost greater than the relevant Operating Reserve Demand Curve indicates should be paid. If there is more Operating Reserve of the required quality than is needed to meet a particular locational Operating Reserve requirement then the Shadow Price for that Operating Reserve requirement constraint shall be zero.

Each Supplier that is scheduled in real-time to provide Operating Reserve shall be paid the applicable ~~real-time~~Real-Time Market Clearingclearing Priceprice, based on its location and the quality of Operating Reserve scheduled, multiplied by the amount of Operating Reserve that the Supplier is scheduled to provide in each interval.

6.1A Calculation of Real-Time Market Clearing Prices for Operating

Reserves During EDRP/SCR Activations

A. During Intervals When Scarcity Pricing Rule “A” Applies

During any interval in which the ISO is using scarcity pricing rule “A” to calculate LBMPs under Section I.A.2.a of Attachment B to this ISO Services Tariff, and Section of Attachment J to the ISO OATT, the real-time market clearing prices for Operating Reserves shall be recalculated by considering the lost opportunity costs of Resources that are scheduled to provide Spinning Reserves and synchronized 30-Minute Reserves in the manner described below. The ISO shall also consider the lost opportunity costs of Resources providing lower quality Operating Reserves to ensure that the requirements of Section 4.3 of this Rate Schedule are not violated. Specifically:

The Eastern Spinning Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of Spinning Reserve or synchronized 30-Minute Reserve that is scheduled by RTD and is not located on Long Island; (ii) the original market clearing price calculated under Section 6.1 above.

The Eastern 10-Minute Non-Synchronized Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of synchronized 30-Minute Reserve that is scheduled by RTD and is not located on Long Island; and (ii) the original market clearing price calculated under Section 6.1 above.

The Eastern 30-Minute Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of synchronized 30-Minute Reserve that is scheduled by RTD and is not located on Long Island; and (ii) the original market clearing price calculated under Section 6.1 above.

The Western Spinning Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of Western Spinning Reserve or synchronized 30- Minute Reserves that is scheduled by RTD; and (ii) the original market clearing price calculated under Section 6.1 above.

The Western 10-Minute Non-Synchronized Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of Western synchronized 30 Minute-Reserve that is scheduled by RTD; and (ii) the original market clearing price calculated under Section 6.1 above.

The Western 30-Minute Reserve market clearing price shall be the higher of: i) the highest lost opportunity cost of any provider of Western synchronized 30-Minute Reserve that is scheduled by RTD; and (ii) the original market clearing price calculated under Section 6.1 above.

B. During Intervals When Scarcity Pricing Rule “B” Applies

During any interval in which the ISO is using scarcity pricing rule “B” to calculate LBMPs under Section I.A.2.b of Attachment B to this ISO Services Tariff, and Section of Attachment J to the ISO OATT, the real-time market clearing prices for Operating Reserves shall be recalculated by considering the lost opportunity costs of Resources scheduled to provide Spinning Reserve and synchronized 30-Minute Reserve in order to satisfy Eastern Operating Reserve requirements in the manner described below. The ISO shall also consider the lost opportunity costs of Resources providing lower quality Operating Reserves to ensure that the requirements of Section 4.3 of this Rate Schedule are not violated. Specifically:

The Eastern Spinning Reserve market clearing price shall be the higher of: (i) the highest lost opportunity cost of any provider of Eastern Spinning Reserve or synchronized 30-Minute Reserve that is scheduled by RTD and is not located on Long Island; and (ii) the original market clearing price calculated under Section 6.1 above.

The Eastern 10-Minute Non-Synchronized Reserve market clearing price shall be the higher of:
(i) the highest lost opportunity cost of any provider of Eastern synchronized 30-Minute Reserve that is
scheduled by RTD and is not located on Long Island; and (ii) the original market clearing price
calculated under Section 6.1 above.

The Eastern 30-Minute Reserve market clearing price shall be the higher of: (i) the highest lost
opportunity cost of any provider of Eastern synchronized 30-Minute Reserve that is scheduled by RTD
and is not located on Long Island; and (ii) the original market clearing price calculated under Section 6.1
above.

Real-Time Market clearing prices for Western Reserve shall not be affected under scarcity
pricing rule “B”.

6.2 Operating Reserve Balancing Payments

Any deviation in performance from a Supplier’s Day-Ahead schedule to provide Operating Reserves, including deviations that result from schedule modifications made by the ISO, shall be settled pursuant to the following rules.

- (a) When the Supplier’s real-time Operating Reserves schedule is less than its assigned Day-Ahead Operating Reserves schedule, the Supplier shall pay a charge for the imbalance equal to the product of: (i) the Real-Time Market ~~Clearing Price~~clearing price for the relevant Operating Reserves Product in the relevant location; and (ii) the difference between the Supplier’s Day-Ahead and real-time Operating Reserves schedules.
- (b) When the Supplier’s real-time Operating Reserves schedule is greater than its assigned Day-Ahead Operating Reserves schedule, the ISO shall pay the Supplier an amount to

compensate it for the imbalance equal to the product of: (i) the Real-Time Market ~~Clearing Price~~clearing price for the relevant Operating Reserve product in the relevant location; and (ii) the difference between the Supplier's Day-Ahead and real-time Operating Reserves schedules.

6.3. Other Real-Time Payments

The ISO shall pay Generators that are selected to provide Operating Reserves, but are directed to convert to Energy production in real-time, the applicable Real-Time LBMP for all Energy they are directed to produce in excess of their Day-Ahead schedule. ~~Demand Side Resources that are instructed to "produce" Energy by reducing demand below their Day Ahead schedule shall be paid the applicable Real Time LBMP.~~

As is provided in ~~Article~~Section 4.10 and Attachment C of ~~the~~this ISO Services Tariff, the ISO shall compensate each ~~ISO Committed Flexible~~eligible Supplier providing Operating Reserves if its Bid Production Cost to provide the Energy and Ancillary Services it is scheduled to supply in the Real-Time Market, including ~~start-up costs,~~Minimum Generation Bid and ~~minimum~~Start-Up LoadBid costs ~~exceeds(?)~~ the revenues it receives from the sale of Energy and Ancillary Services. ~~These Bid~~Any Supplier that provides Energy during a large event reserve pickup or a maximum generation event, as described in Sections 4.4.4(A) (1) and (2) of this ISO Services Tariff shall be eligible for a Bid Production Cost guarantee payments shall not be offset against any other Bid Production Cost guarantee payments made to the Supplier during payment calculated, under Attachment C, solely for the dayduration of the large event reserve pickup or maximum generation pickup.

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Finally, whenever a Resource's real-time Operating Reserves schedule is reduced by

the ISO to a level lower than its Day-Ahead schedule for that product, the Resource's Day-Ahead Margin shall be protected after accounting for any margin associated with additional MWs of other products that the Resource is scheduled to provide in real-time. The rules governing the calculation of these Day-Ahead Margin Assurance Payments are set forth in Attachment J to this ISO Services Tariff.

~~Notwithstanding anything to the contrary in this Rate Schedule, no Real Time Market payments shall be made to any Supplier providing Operating Reserves in excess of the amount of Operating Reserves scheduled by the ISO in the Real Time Market.~~

7.0 Operating Reserve Demand Curves

The ISO shall establish nine Operating Reserve Demand Curves, one for each Operating Reserves requirement. Specifically, there shall be a demand curve for: (i) Total Spinning Reserves; (ii) Eastern or Long Island Spinning Reserves, (iii) Long Island Spinning Reserves; (iv) Total 10-Minute Non-Synchronized Reserves; (v) Eastern or Long Island 10-Minute Non-Synchronized Reserves; (vi) Long Island 10-Minute Non-Synchronized Reserves; (vii) Total 30-Minute Reserves; (viii) Eastern or Long Island 30-Minute Reserves; and (ix) Long Island 30-Minute Reserves. Each Operating Reserve Demand Curve will apply to both the Day-Ahead Market and the Real-Time Market for the relevant product and location.

~~The Market Clearing Prices~~market clearing prices for Operating Reserves shall be calculated pursuant to Sections 5.1 and 6.1 of this Rate Schedule and in a manner consistent with the demand curves established in this Section so that Operating Reserves are not purchased at a cost higher than the relevant demand curve indicates should be paid.

The ISO Procedures shall establish a target level for each Operating Reserves requirement for each hour, which will be the number of MW of Operating Reserves meeting that requirement that the

ISO would seek to maintain in that hour if cost were not a consideration. The ISO will then define an Operating Reserves demand curve for that hour corresponding to each Operating Reserves requirement as follows:

- (a) Total Spinning Reserves: For quantities of Operating Reserves meeting the total Spinning Reserves requirement that are less than or equal to the target level for that requirement, the price on the total Spinning Reserves demand curve shall be \$500/MW. For all other quantities, the price on the total Spinning Reserves demand curve shall be \$0/MW.
- (b) Eastern or Long Island Spinning Reserves: For quantities of Operating Reserves meeting the Eastern or Long Island Spinning Reserves requirement that are less than or equal to the target level for that requirement, the price on the Eastern or Long Island Spinning Reserves demand curve shall be \$25/MW. For all other quantities, the price on the Eastern or Long Island Spinning Reserves demand curve shall be \$0/MW.
- (c) Long Island Spinning Reserves. For quantities of Operating Reserves meeting the Long Island Spinning Reserves requirement that are less than or equal to the target level for that requirement, the price on the Long Island Spinning Reserves demand curve shall be \$25/MW. For all other quantities, the price on the Long Island Spinning Reserves demand curve shall be \$0/MW.
- (d) Total 10-Minute Reserves. For quantities of Operating Reserves meeting the total 10-minute reserves requirement that are less than or equal to the target level for that requirement, the price on the total 10-minute reserves demand curve shall be

\$150/MW. For all other quantities, the price on the total 10-minute reserves demand curve shall be \$0/MW.

- (e) Eastern or Long Island 10-Minute Reserves. For quantities of Operating Reserves meeting the Eastern or Long Island 10-minute reserves requirement that are less than or equal to the target level for that requirement, the price on the Eastern or Long Island 10-minute reserves demand curve shall be \$500/MW. For all other quantities, the price on the Eastern or Long Island 10-Minute Reserves demand curve shall be \$0/MW.
- (f) Long Island 10-Minute Reserves. For quantities of Operating Reserves meeting the Long Island 10-minute reserves requirement that are less than or equal to the target level for that requirement, the price on the Long Island 10-minute reserves demand curve shall be \$25/MW. For all other quantities, the price on the Long Island 10-minute reserves demand curve shall be \$0/MW.
- (g) Total 30-Minute Reserves. For quantities of Operating Reserves meeting the total 30-Minute Reserves requirement that are less than or equal to the target level for that requirement minus 400 MW, the price on the total 30-Minute Reserves demand curve shall be \$200/MW. For quantities of Operating Reserves meeting the total 30-Minute Reserves requirement that are less than or equal to the target level for that requirement minus 200 MW but that exceed the target level for that requirement minus 400 MW, the price on the total 30-Minute Reserves demand curve shall be \$100/MW. For quantities of Operating Reserves meeting the total 30-Minute Reserves requirement that are less than or equal to the target level for that requirement but that exceed the target level for that requirement minus 200 MW, the price on the total 30-Minute Reserves

demand curve shall be \$50/MW. For all other quantities, the price on the total 30-Minute Reserves demand curve shall be \$0/MW. However, the ISO will not schedule more total 30-Minute Reserves than the level defined by the requirement for that hour.

- (h) Eastern or Long Island 30-Minute Reserves. For quantities of Operating Reserves meeting the Eastern or Long Island 30-Minute Reserves requirement that are less than or equal to the target level for that requirement, the price on the Eastern or Long Island 30-Minute Reserves demand curve shall be \$25/MW. For all other quantities, the price on the Eastern or Long Island 30-Minute Reserves demand curve shall be \$0/MW.
- (i) Long Island 30-Minute Reserves. For quantities of Operating Reserves meeting the Long Island 30-Minute Reserves requirement that are less than or equal to the target level for that requirement, the price on the Long Island 30-Minute Reserves demand curve shall be \$300/MW. For all other quantities, the price on the Long Island 30-Minute Reserves demand curve shall be \$0/MW.

In order to respond to operational or reliability problems that arise in real-time, the ISO may procure any Operating Reserve product at a quantity and/or price point different than those specified above. The ISO shall post a notice of any such purchase as soon as reasonably possible and shall report on the reasons for such purchases at the next meeting of its Business Issues Committee. The ISO shall also investigate whether it is necessary to modify the quantity and price points specified above to avoid future operational or reliability problems. The ISO will consult with its independent market advisor when it conducts this investigation.

If the ISO determines that it is necessary to modify the quantity and/or price points specified above in order to avoid future operational or reliability problems it may temporarily modify them for a

period of up to ~~one hundred and twenty~~ninety days. If circumstances reasonably allow, the ISO will consult with its independent market advisor, the Business Issues Committee, the Commission, and the PSC before implementing any such modification. In all circumstances, the ISO will consult with those entities as soon as reasonably possible after implementing a temporary modification.

A periodic independent review of the Operating Reserve Demand Curves will be performed in accordance with the ISO Procedures to determine whether the parameters of any Operating Reserve Demand Curve should be adjusted.

8.0 Self-Supply

Transactions may be entered into to provide for Self-Supply of Operating Reserves. Except as noted in the next paragraph, Customers seeking to Self-Supply Operating Reserves must place the Generator(s) supplying any one of the Operating Reserves under ISO control. The Generator(s) must meet ISO rules for acceptability. The amount that any such Customer will be charged for Operating Reserves will be reduced by the market value of the services provided by the specified Generator(s) as determined in the ISO Services Tariff.

Alternatively, Customers, including LSEs, may enter into Day-Ahead Bilateral financial Transactions, *e.g.*, contracts-for-differences, in order to hedge against price volatility in the Operating Reserves markets.

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