

lower quality Ancillary Services when doing so would result in an overall least bid cost solution.

For example, 10-Minute Non-Synchronized Reserve may be substituted for 30-Minute Reserve if doing so would reduce the total bid cost of providing Energy and Ancillary Services.

#### **4.10 Reliability Forecast**

In the SCUC program, system operation shall be optimized based on Bids over the Dispatch Day. However, to preserve system reliability, the ISO must ensure that there will be sufficient resources available to meet forecasted Load and reserve requirements over the seven (7)\_day period that begins with the next Dispatch Day. The ISO will perform a Supplemental Resource Evaluation (“SRE”) for days two (2) through seven (7) of the commitment cycle. If it is determined that a long start-up time Generator is needed for reliability, the ISO shall accept a Bid from the Generator and the Generator will begin its start-up sequence. During each day of the start-up sequence, the ISO will perform an SRE to determine if long start-up time Generators will still be needed as previously forecasted. If the Generator is still needed, it will continue to accrue start-up cost payments on a linear basis. If at any time it is determined that the Generator will not be needed as previously forecasted, the ISO shall order the Generator to abort its start-up sequence, and its start-up payment entitlement will cease at that point.

The ISO will commit to long start-up time Generators to preserve reliability. However, the ISO will not commit resources with long start-up times to reduce the cost of meeting Loads that it expects to occur in days following the next Dispatch Day. Supplemental payments to these Generators, if necessary, will be determined pursuant to the



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## 5.12 Requirements Applicable to Installed Capacity Suppliers

### 5.12.1 Installed Capacity Supplier Qualification Requirements

In order to qualify as an Installed Capacity Supplier in the NYCA, Energy Limited Resources, Generators, Installed Capacity Marketers, Interruptible Load Resources or System Resources rated 1 MW or greater, other than entities purchasing Installed Capacity from External System Resources located in External Control Areas that have agreed to certain curtailment conditions (see below), and other than Special Case Resources which are subject to the information requirements of Section 5.12.8 of this Tariff, must: (i) provide information reasonably requested by the ISO including the name and location of Generators and Interruptible Load Resources; (ii) provide documentation to the ISO, of DMNC testing for the previous like Capability Period, or historical production data for the previous like Capability Period, no more than twelve (12) months old, except in the case of new Generators, or, in the case of Interruptible Load Resources, documentation of sustained disconnection for one (1) hour or longer that is no more than one (1) year old, in accordance with ISO Procedures; (iii) abide by the ISO Generator maintenance coordination procedures; (iv) provide the expected return date from any outages (including partial outages) to the ISO; (v) provide documentation demonstrating that it will not utilize the same Installed Capacity for more than one (1) buyer at the same time; (vi) if the resource is an Energy Limited Resource, Generator or System Resource it must commit that it will either schedule it in Day-Ahead Bilateral Transactions to supply Load within the NYCA or bid it into the Day-Ahead Energy Market, unless the Energy Limited Resource, Generator or System Resource is unable to do so due to a maintenance or forced outage or due to temperature related de-ratings; (vii) if the resource is an Interruptible Load Resource, it must commit that it will bid, at the price at which it is willing to be interrupted, in the Day-Ahead Market, for both Energy and Operating Reserves; (viii) abide by ISO Procedures; and (ix) Providers of Installed Capacity to the NYCA located east of the Central-East constraint shall bid in the Day-Ahead and Real-Time Markets all capacity available for providing ~~Spinning Reserves or~~ 10-Minute NSR (unless the Generator is unable to meet its commitment because of a scheduled or forced outage), except for the generators described in subsections (a), (b), ~~(c)~~ and ~~(d)~~ below:

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- (a) Generators providing Energy under existing contracts (including PURPA contracts) in which the power purchasers does not control the operation of the supply source but would be responsible for penalties for being off-schedule, with the exception of Generators under existing must-take PURPA contracts who have not provided telemetering to their local TO and historically have not been eligible to participate in the NYPP market, which will continue to be treated as TO load modifiers under the ISO-administered markets;
- (b) Existing topping turbine Generators and extraction turbine Generators producing electric Energy resulting from the supply of steam to the district steam system located in New York City (LBMP Zone J) and/or topping or extraction turbine Generators utilized in replacing or repowering existing steam supplies from such units (in accordance with good engineering and economic design) that cannot follow schedules, up to a maximum total of 365 MW of such units; and
- (c) ~~(e)~~ Existing intermittent (i.e., non-schedulable) renewable resource Generators within the NYCA, plus up to an additional 50 MW of such Generators.
- (d) Units that have demonstrated to the NYISO that they are subject to environmental, contractual or other legal or physical requirements that would otherwise preclude them from providing 10-Minute NSR.

The ISO shall inform each potential Installed Capacity Supplier that is required to submit DMNC data of its approved DMNC ratings for the Summer Capability Period no later than February 15th, and for the Winter Capability Period no later than August 15th.

In the case of entities purchasing Installed Capacity from External System Resources located in External Control Areas that have agreed not to curtail the Installed Capacity or to afford it the same curtailment priority that they afford their own Control Area Load, the

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information submission requirements for certification as an Installed Capacity Supplier shall be established in the ISO Procedures.

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## Rate Schedule 4

### Payments for Supplying Operating Reserves

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

The ISO shall provide procedures to establish adequate Operating Reserves that comply with the Reliability Rules. Operating Reserves are classified as follows:

- (1) Spinning Reserve: Operating Reserves provided by generation facilities and Interruptible Load Resources located within the NYCA that are already synchronized to the NYS Power System and can respond to instructions to change output level within ten (10) minutes;
- (2) 10-Minute Non-Synchronized Reserve ("10-Minute NSR"): Operating Reserves provided by generation facilities that can be started, synchronized and loaded within ten (10) minutes; and
- (3) 30-Minute Reserve: Operating Reserves provided by generation facilities and Interruptible Load Resources that can respond to instructions to change output or consumption level within thirty (30) minutes.

The ISO shall satisfy at least fifty (50) percent of the applicable 10-Minute Reserve requirements with Spinning Reserve. If the ISO satisfies all of the 10-Minute Reserve

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requirement through Spinning Reserve, it does not have to maintain 10-Minute NSR. The ISO shall establish additional categories of Operating Reserves if necessary to ensure reliability.

### **Procedure for Setting Prices for Reserves**

The ISO's software design substitutes higher quality reserves in place of lower quality reserves, when doing so lowers the total bid cost, i.e., when the marginal bid for the higher quality reserve is lower than the marginal bid for the lower quality reserve. To the extent, however, that reliability standards require the use of higher quality reserves, substitution cannot be made in the opposite direction. In addition, if the total requirements for operating reserves are such that the marginal unit of operating reserves is a unit of higher priced lower quality reserves (e.g., 10-Minute NSR non-spinning as compared to 10-Minute spinning reserves), then the market-clearing price for operating reserves will be set by the higher priced lower quality reserves.

Accordingly, the price of higher quality reserves will not clear at a price below the price of lower quality reserves. For example, the clearing price of 10-Minute spinning reserves will not be below the clearing price for 10-Minute NSR and the clearing price for 10-Minute NSR will not be below the clearing price for 30-Minute Reserves.

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## **1.0 General Requirements**

The ISO shall ensure that providers of Operating Reserves are properly located electrically so that transmission constraints resulting from either commitment or dispatch of units do not limit the ability to deliver Energy to Loads in the case of a Contingency. The ISO will ensure that Capacity counted toward meeting Operating Reserve requirements is not also counted toward meeting Regulation and Frequency Response Service requirements.

## **2.0 Spinning Reserve-Requirements and Responsibilities**

### **2.1 Day-Ahead Market for Spinning Reserve**

Suppliers offering Generator or Demand Side Resources to provide Spinning Reserve in the Day-Ahead commitment shall submit Availability Bids for each hour of the upcoming day. ~~For Spinning Reserves Suppliers located east of the Central-East constraint not subject to a requirement to submit Availability Bids at a lower level, Availability Bids shall be limited to zero plus each Spinning Reserves Supplier's verifiable fuel commitment costs for providing Spinning Reserves for each hour.~~ The ISO shall select Spinning Reserve Suppliers for each hour of the upcoming day through its Day-Ahead commitment, using Bids and/or schedules provided by the Suppliers, including Availability Bids by both Class A Unit and Class B Unit Suppliers,

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and Energy Bids by Class A Unit Suppliers. The ISO shall notify each Supplier of Spinning Reserve that has been selected in the Day-Ahead Schedule of the amount of Spinning Reserve it has been scheduled to provide. Suppliers of Spinning Reserve scheduled Day-Ahead shall either

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provide Spinning Reserve or shall generate Energy when requested by the ISO to do so, in all hours for which they have been selected to provide Spinning Reserve.

## 2.2 Real-Time Market for Spinning Reserve

During each Dispatch Day, Suppliers whose Generators have not been scheduled to provide Spinning Reserve and which still have Capacity that has not been committed for use in any other way may submit Availability Bids to provide Spinning Reserve to the ISO.

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These Real-Time Availability Bids may differ from Availability Bids that were made by those Suppliers in the Day-Ahead commitment, ~~except that for Spinning Reserves Suppliers located east of the Central-East constraint not subject to a requirement to submit Availability Bids at a lower level, Availability Bids shall be limited to zero plus each Spinning Reserves Supplier's verifiable fuel commitment costs for providing Spinning Reserves for each hour.~~ If the ISO anticipates that it will require additional Spinning Reserves in an hour, it shall select additional Suppliers of Spinning Reserve from among those Suppliers that have submitted Real-Time Availability Bids to it for that hour. It shall make this selection with the objective of minimizing the cost of meeting Load and providing all necessary Ancillary Services in that hour. The ISO shall notify each Supplier of Spinning Reserve that has been selected in the Real-Time dispatch of the amount of Spinning Reserve it must provide. Any previously uncommitted Class A Unit whose Bid to provide Spinning Reserve is accepted by the ISO will be treated as a Generator on dispatch.

### 2.3 Suppliers' Responsibilities

All Generators selected by the ISO as Suppliers of Spinning Reserve must be located within the NYCA and must be under ISO Operational Control. All Suppliers of Spinning Reserves selected by the ISO shall ensure that their Generators maintain and deliver the

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appropriate quantity of Energy when called upon by the ISO in all hours in which they have been selected to provide Spinning Reserve. All Demand Side Resources selected by the ISO as Suppliers of Spinning Reserve shall reduce consumption of the appropriate quantity of Energy when called upon by the ISO in all hours in which they have been selected to provide Spinning Reserve. Each Generator bidding to supply Spinning Reserve must be able to provide Energy consistent with the Reliability Rules and the ISO Procedures when called upon by the ISO and shall specify in its Bid the amount of time for which it can supply such Energy. Each Demand Side Resource bidding to supply Spinning Reserve must be able to

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### **3.0 10-Minute NSR and 30-Minute Reserve Requirements and Responsibilities**

#### **3.1 Day-Ahead Market for 10-Minute NSR and 30-Minute Reserve**

Suppliers offering Generators or Demand Side Resources to provide 10-Minute NSR and/or 30-Minute Reserve in the Day-Ahead commitment shall submit Availability Bids for each hour of the upcoming day. For Suppliers located east of the Central-East constraint, Day-Ahead Availability Bids to provide 10-Minute NSR for each hour shall be limited to the incremental costs associated with the provision of 10-Minute NSR, not to exceed \$2.52/MW in each hour. The ISO shall select Suppliers of 10-Minute NSR and 30-Minute Reserve for each hour of the upcoming day through the Day-Ahead commitment, using Bids and/or schedules provided by the Suppliers. The ISO shall notify each Supplier of 10-Minute NSR and/or 30-Minute Reserve that has been selected in the Day-Ahead schedule of the amount of 10-Minute NSR and/or 30-Minute Reserve it has been scheduled to provide.

Suppliers of 10-Minute NSR and/or 30-Minute Reserve scheduled Day-Ahead shall provide 10-Minute NSR and/or 30-Minute Reserve for all hours in which they have been scheduled to provide 10-Minute and/or 30-Minute Reserve.

#### **3.2 Real-Time Markets for 10-Minute NSR and 30-Minute Reserve**

During the day, Suppliers that have not been scheduled to provide 10-Minute NSR or 30-Minute Reserve and which still have Capacity that has not been committed for use in any other way may submit Availability Bids to provide 10-Minute NSR and/or 30-Minute Reserve to the ISO. These Real-Time Availability Bids may differ from Availability Bids that were made by

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Suppliers in the Day-Ahead commitment, except that for Suppliers located east of the Central-East constraint, Real-Time Availability Bids to provide 10-Minute NSR for each hour shall be limited to the incremental costs associated with the provision of 10-Minute NSR, not to exceed \$2.52/MW in each hour. If the ISO anticipates that additional Suppliers of 10-Minute NSR or 30-Minute Reserve are needed in an hour, it shall select additional Suppliers of 10-Minute NSR or 30-Minute Reserve from among those Suppliers that have supplied Real-Time Availability Bids

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to it for that hour. It shall make this selection with the objective of minimizing the cost of meeting Load and providing all necessary Ancillary Services in that hour.

The ISO may perform multiple selections of Suppliers of 10-Minute NSR or 30-Minute Reserve for any given hour. Suppliers bidding to supply 10-Minute NSR or 30-Minute Reserve that have not already been scheduled to provide 10-Minute NSR or 30-Minute Reserve may change their Real-Time Bids from one hour to the next, except that for Suppliers located east of the Central-East Constraint, Real-Time Availability Bids to provide 10-Minute NSR for each hour shall be limited to the incremental costs associated with the provision of 10-Minute NSR, not to exceed \$2.52/MW in each hour. The ISO shall notify each Supplier of 10-Minute NSR or 30-Minute Reserve that has been scheduled in the Real-Time dispatch of the amount of 10-Minute NSR or 30-Minute Reserve it must provide. Any Supplier whose Bid to provide 10-Minute NSR or 30-Minute Reserve is accepted by the ISO in the Real-Time dispatch must make its Generators or Demand Side Resources available for dispatch by the ISO.

### **3.3 Suppliers' Responsibilities**

Subject to the ISO's locational requirements, Suppliers of 10-Minute NSR or 30-Minute Reserve may use Generators located within the NYCA or outside the NYCA. In order for a Supplier to provide 10-Minute NSR or 30-Minute Reserve using a Generator located outside the NYCA, the operator of that Generator's Control Area must have agreed to modify the DNI between the NYCA and that Control Area instantaneously upon notification by the ISO that the ISO is initiating a reserve pick-up for the area including that Generator. The amount of a 10-Minute NSR provided by Generators within any given External Control Area cannot exceed the

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maximum amount by which the operator of that Control Area will change the DNI from that Control Area into the NYCA within ten (10) minutes of the initiation of a reserve pick-up by the ISO. Likewise, the amount of 30-Minute

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provided Day-Ahead, if any. The ISO shall calculate separate Real-Time Availability prices for 10-Minute NSR for each hour. The Real-Time Availability price for 10-Minute NSR for each hour shall be equal to the highest Real-Time Availability Bid made by a Supplier providing 10-Minute NSR in that hour that is providing more 10-Minute NSR in that hour than it had been scheduled to provide in that hour in the Day-Ahead schedule.

Real-Time Availability Prices for 10-Minute NSR may change within an hour, if additional Suppliers are scheduled to begin providing this Service within an hour. In such cases, the price changes will apply only to the remaining portion of that hour. All Suppliers providing 10-Minute NSR that receive the Real-Time Availability price for 10-Minute NSR will be paid the Real-Time Availability price applicable to the portion of the hour preceding the price change for all 10-Minute NSR provided before the price change. All Suppliers providing 10-Minute NSR that receive the Real-Time Availability Price for 10-Minute NSR will be paid the Real-Time Availability price applicable to the portion of the hour following the price change for all 10-Minute NSR provided after the price change.

Acceptance of any Supplier's Bid to supply 10-Minute NSR in the Real-Time Market shall not affect the Availability price for 10-Minute NSR that was determined Day-Ahead.

### Lost Opportunity Cost Payments

A Supplier of 10-Minute NSR which produces less Energy in the Real-Time dispatch than it would have been economic for it to produce because it has been selected ~~(in the Day-Ahead or Real-Time Markets)~~ to provide 10-Minute NSR will be paid ~~its~~ for Lost

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Opportunity Costs. The Lost Opportunity Cost Payment ("LOCP") that each such Supplier receives in each SCD interval shall be computed by multiplying (i) the interval duration in seconds by the difference between (ii) the projected LBMP revenue that the Supplier would have received and (iii) the Generator's production cost, based on its energy bid, as follows:

$$MLOCP = \max_{i \in S_i} I * (P_i - B_i)$$

where:

I = the interval duration;  
B<sub>i</sub> = the production cost of Generator i based on its Day-Ahead energy bid if selected in the Day-Ahead market, or its hour-ahead energy bid if selected in the hour-ahead market; and  
P<sub>i</sub> = the projected LBMP revenue of Generator i based on the real-time LBMP.; ~~and~~  
S<sub>i</sub> = ~~Set of Generators whose Energy output in that interval has been reduced below the level that otherwise would have been economic, due to the fact that they have been selected (either Day-Ahead or Real-Time) to provide 10-Minute NSR.~~

If the foregoing calculation results in a negative LOCP, the LOCP shall be set to zero.

### Other Payments

The ISO shall pay the Real-Time LBMP for all Energy generated in accordance with the ISO's instructions by Suppliers of 10-Minute NSR. (Suppliers of 10-Minute NSR shall be paid for Energy produced during reserve pick-ups in accordance with the provisions of Article 4 related to Real-Time Market Settlement.)