NEW YORK INDEPENDENT SYSTEM OPERATOR

Manual 12

Transmission and Dispatch Operations Manual

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3. Operations Monitoring

This section describes the NYS Power System operations monitoring requirements and procedures.

3.1. Operations Monitoring Requirements

This section identifies the requirements for monitoring the operation of the NYCA. The conditions that are monitored include the following:

- Current Operating State
- System Load
- Operating Reserve
- Regulation
- NYISO Controlled Transmission System
- Ancillary Services
- Communications
- Weather Conditions
- Telemetered Data

Reliability Assessment

The NYISO performs a Real-Time assessment of the reliability of the NYISO Controlled Power System periodically upon status change, and upon operator demand. The main functions that are performed are:

- Real-Time Data Monitoring and Alarming
- DC Thermal Security Analysis
- Reserve Calculation
- Regulation Requirement

3.1.1. Real-Time Data Monitoring and Alarming

This function is executed, nominally every six (6) seconds for SCADA data and thirty (30) seconds for state estimated values.

NYISO Actions

The following are performed:

1. Determines whether to use: (1) metered values (2) state estimated values or (3) NYISO override/substitution values for:
   a. Switch status data
   b. Analog data

2. Checks the analog data against limits for voltage, flows on lines and transformer banks, and interface flows.
3. Finds and opens "modeled" breakers corresponding to non-metered outaged facilities, based on NYISO activation.
4. Executes the network configuration function, which processes the user switch data from (1) and (3) above.
5. Derives confirmation page alarms for NYISO review and validation.
6. Produces the following results:
    a. User analog data
    b. Audible alarms, text alarms, mimic board outputs
    c. Confirmed switch status
    d. Updated outage schedules

3.1.2. Security Assessment

The security assessment is triggered to execute on:

- Network configuration status change
- Periodic, nominally every 60 seconds
- Operator demand

NYISO Actions

The following are performed:

1. Executes the network configurator and state estimator functions based on confirmed switch status
2. Performs a contingency analysis based on the state estimator solution of the NYS Transmission System, using:
    a) Pre-defined single and multiple contingencies
    b) Facility Line ratings and interface transfer limits
3. Produces a list of potential transmission system violations for NYISO Operations review based on actual SCADA (actual violations only) or state-estimated values (contingency violations only).

3.1.3. Reserve Calculation

The NYISO monitors NYCA reserve through the use of the Reserve Monitor Program using actual generation). These reserve calculations indicate the reserve available for the NYCA. Corrective action is taken by the NYISO only if the NYCA is deficient in reserve. Reserve calculations and constraints are also performed by RTC and RTD.

Minimum Operating Reserve Requirement

The Minimum Operating Reserve Requirement of the NYCA is defined as:

1. Sufficient Synchronized Reserve Available in 10 minutes to replace one-half of the operating capability loss caused by the most severe contingency observed under Normal Transfer Criteria multiplied by the contingency reserve adjustment factor.
2. Sufficient Reserve Available in 10 minutes (which includes synchronous reserve available in 10 minutes) to replace the operating capability loss caused by the most severe contingency observed under Normal Transfer Criteria multiplied by the contingency reserve adjustment factor.
3. Sufficient Reserve Available in 30 minutes (which includes reserve available in 10 minutes) equal to one and one-half times the operating capability loss caused by the most severe contingency observed under Normal Transfer Criteria.
4. Sufficient Reserve in 10 minutes to return the system to a Normal State following the most severe transmission contingency multiplied by the contingency reserve adjustment factor.

At all times sufficient 10 Minute Reserve shall be maintained to cover 1) the energy loss due to the most severe Normal Transfer Criteria contingency within NYCA or 2) the energy loss associated with recallable import transactions from another control area, whichever is greater.

3.1.4. Regulation Requirement

The NYCA Regulation requirements, in MW/minute, are established by analyzing NYCA daily load patterns and actual operating conditions. The NYISO establishes the regulation and frequency response requirements consistent with criteria established by NERC, which may vary by hour and season.

This Manual describes the process by which the NYCA regulation requirement is allocated to the generating units.

The NYISO will determine the amount of regulation required for different time periods and load conditions in accordance with procedures defined in the *NYISO Ancillary Services Manual* (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp).

The amount of Regulation Service required varies on an hourly and seasonal basis. The NYCA regulation requirements are posted on the NYISO website at the following URL: http://www.nyiso.com/public/webdocs/market_data/reports_info/nyiso_regulation_req.pdf

3.1.5. Operations Monitoring Procedures

This section describes the procedures associated with monitoring the operation of the NYS Power System. General procedures dealing with the Normal State and Warning State are given first, followed by specific procedures to be carried out under Normal and Warning State conditions.

Specific procedures cover the following:

- Response to Normal State Conditions
- Response to Warning State Conditions
- Reliability Assessment Support
- Automatic Voltage Regulators / Power System Stabilizer Outages
- Communication of NYCA Operating Conditions
- Hourly Inadvertent Accounting
- Local Reliability Rules
- Applications of the NYSRC Reliability Rules
- Daily Operation for Monitoring Operating Reserve

3.1.6. Response to Normal State Conditions

NYISO Actions

The NYISO shall monitor NYS Power System conditions at all times, and determine and apply the applicable actions listed below that are necessary to remain in the Normal State:

1. Coordinate actions with TOs and other Control Areas.
2. Initiate one or more of the following actions:
   a. Adjust phase angle regulators.
   b. Shift or start generation by NYISO request to obtain additional reactive power (MVAr) control.
   c. Activate reserves.
   d. Adjust reactive sources and transformer taps.
   e. Perform Generation shifts.
   f. Modify Interchange Schedules.
   g. Request NYS Transmission System facilities that are out of service for maintenance to be returned to service.
   h. For high voltage conditions only, request NYS Transmission System facilities that are in service to be removed from service where appropriate.
   i. Implement manual voltage reduction.
   j. May call for a reserve pickup to return to schedule if the NYISO Area Control Error exceeds 100 MW.
   k. Take actions to maintain operating reserve, in accordance with the procedures described in this Manual.

Transmission Owner Actions

NYISO operational contact is generally with the TO. The TOs are responsible for controlling or coordinating the operation of Generators connected to their systems, as follows:

1. Coordinate and implement corrective actions, as requested by the NYISO Shift Supervisor.
2. Monitor conditions with respect to their own systems.
3. Perform the following actions when the NYCA is operating in the Normal State and Normal State Criteria are not met:
   a. Notify the NYISO Shift Supervisor.
   b. Request assistance from the NYISO Shift Supervisor, as required.
   c. Initiate unilateral corrective action, if the violation is severe enough to require immediate action.

Other Considerations

1. All schedule changes should be analyzed in advance of implementation in an effort to avoid violation of the Normal State criteria.
2. The NYISO shall dispatch the system such that the removal of any facility for scheduled work will not result in the violation of these criteria in the Normal State. Transmission Owners are responsible for providing appropriate advance notice of such switching.
3. During periods when adverse conditions such as tornadoes or hurricanes exist, or are forecast to occur within the service area of the NYISO Systems, it may be necessary to take steps in addition to those procedures normally followed to maintain system security.
4. It is the responsibility of the NYISO to monitor weather conditions and forecasts issued by the National Weather Service. Should local adverse conditions occur or if they are predicted to occur, it is the responsibility of the TO to inform the NYISO. If a situation involving impending severe weather exists, the NYISO shall notify all TOs and consider declaration of the Alert State.
5. The actual voltage on all busses listed in Table A.2 and Table A.3 shall be monitored by the NYISO and TOs. It shall be the TO responsibility to maintain voltage levels within limits specified in Table A.2 and Table A.3 and to coordinate actions, which would affect voltage levels on busses of other TOs or Neighboring Systems.

   If the NYISO anticipates conditions, which would cause the voltage at any bus listed in Table A.2 and Table A.3 to violate Normal State Criteria, the NYISO shall notify the TOs, and together they shall formulate a corrective strategy. If implementation of the corrective strategy does not produce the desired result, and the NYISO determines that further corrective action is necessary to remain in the Normal State, the NYISO shall request such actions in accordance with Normal State Responses. TOs must coordinate and implement corrective actions as requested by the NYISO.
6. It may be necessary to schedule energy transactions from neighboring control areas for reliability reasons in accordance with Interconnection Agreements.

3.1.7. Response to Warning State Conditions

NYISO Actions

The NYISO shall monitor system conditions at all times and determine the action(s) listed below that are necessary to return the system to the Normal State:

1. Coordinate actions with TOs and other Control Areas.
2. Initiate one or more of the following actions:

    a. Adjust phase angle regulators.
    b. Shift or start generation by NYISO request to obtain additional reactive power (MVAr) control.
    c. Activate reserves.
    d. Adjust reactive sources and transformer taps.
    e. Perform Generation shifts.
    f. Modify Interchange Schedules.
    g. Request NYS Transmission System facilities that are out of service for maintenance to be returned to service.
    h. For high voltage conditions only, request NYS Transmission System facilities that are in service to be removed from service where appropriate.
    i. Implement manual Voltage Reduction.
    j. May call for a reserve pickup to return to schedule if the NYISO Area Control Error (ACE) exceeds 100 MW.
    k. Take actions to maintain operating reserve, in accordance with the procedures described in this Manual.
    l. Curtail non-essential TO and Generation Owner load.
    m. Order Generation to full operating capability.
3. Take the following actions if the above measures are insufficient to comply with Normal Transfer Criteria within 30 minutes or Operating Reserve cannot be delivered due to transmission limitations for 30 minutes:

    a. Notify all TOs, via the Hotline communications system, that Emergency Transfer Criteria are in effect for the facility (ies) involved.
    b. Take actions, as required, to stay within Emergency Transfer Criteria.
    c. Confer with TOs that will have Post-Contingency loading or voltage conditions that exceed allowable limits. Jointly develop strategies to be followed in the event a contingency occurs, including preparation for a rapid Voltage Reduction and/or Load Shedding.
4. If following the implementation of the actions listed above all Normal State criteria cannot be achieved, satisfy as many of the Normal State criteria as possible.

Transmission Owner Actions

Transmission Owners shall perform the following actions:

a. Coordinate and implement corrective actions, as requested by the NYISO Shift Supervisor.
b. Monitor conditions with respect to their own systems.
c. Perform the following actions when the NYCA is operating in the Warning State and Warning State Criteria are not met:
d. Notify the NYISO.
e. Request assistance from the NYISO, as required.
f. Initiate unilateral corrective action, if the violation is severe enough to require immediate action.

Other Considerations

1. For all contingencies that would result in a violation of the Warning State criteria, corrective action that would be necessary if the contingency occurs shall be determined through coordination between the NYISO and the affected TO.
2. If the NYISO foresees an extended period of operation in the Warning State, a canvass of the TO Systems shall be made to determine if assistance can be provided.
3. If the situation involving impending adverse conditions exists, the NYISO shall notify all TOs and consider declaration of the Alert State.

3.1.8. Reliability Assessment Support

NYISO Actions

The NYISO shall perform the following actions in support of the Reliability Assessment function:

1. Execute the Reliability Assessment function on demand following a power system disturbance.
2. Override and substitute SCADA analog and status data that is incorrect or missing.
3. Activate outages in the network model by "opening" the appropriate breakers or switches in the model.
4. Review and acknowledge any alarm messages.
5. Review the "Confirmation" display and make any necessary corrections or adjustments to the incoming data.
6. Review and acknowledge potential transmission system violations produced by the state estimator and Security Analysis functions.

3.1.9. Communication of New York Control Area Operating Conditions

NYISO Actions

The NYISO shall perform the following actions:

1. Obtain the following data for the NYCA Report, prior to 0530 hours:

   Generator anticipated operating capability for the NYCA peak hour, including all purchases and sales.

Forecast NYCA load requirements.

2. Determine the following information for the NY Control Capacity Report display, using the acquired data:
   NYCA forecast peak hour load
   NYCA reserve requirements
   NYCA generation available capability
   Interchange summary and peak hour Desired Net Interchange (DNI)
   Total anticipated reserve for the NYCA peak hour
   Previous day's peak load and hour
3. Post the NYCA Capacity Report.
4. Immediately report any critical change in the status of the NYCA, either via the emergency telephone system or the NYCA Status Report.
5. Report all NYCA disturbances, e.g., loss of a major generator, when appropriate.
6. Notify the NYISO designated media contact (or the designated alternate) when system conditions exist that would result in general public awareness of an actual or impending situation.

3.1.10. Hourly Inadvertent Accounting

The following procedures apply only to the NYISO. The *NYISO Accounting and Billing Manual* (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp) describes the Inadvertent Interchange accounting procedure in further detail.

NYISO Actions

The NYISO shall perform the following checks on an hourly basis:

1. *Prior to each hour* – The sum of External transaction schedules should be equal to the NYCA DNI schedule.
2. *After each hour* – The sum of the interconnection readings should be equal to the NYCA Actual Net Interchange (ANI).
3. *After each hour* – The NYCA Inadvertent Interchange should be equal to the difference between the DNI and ANI.
4. *After each hour* – Reconcile any inadvertent variances with neighboring Control Areas.
5. *After each day* – Reconcile any inadvertent variances with neighboring Control Areas.

3.2. Daily Operation for Monitoring Operating Reserve

The NYISO Shift Supervisor will monitor the Operating Reserve both as forecast for the expected system peak each day and under actual conditions as the day progresses.

Peak Load Forecast

The NYISO Shift Supervisor (or designee) shall prepare the NYISO daily status report twice daily, in anticipation of the morning peak and evening peak as indicated in this Manual.

If a shortage of energy, reserves, or Ancillary Services is projected, the NYISO will take actions as directed in the *NYISO Emergency Operations Manual*, available from the NYISO Web site at the following URL:

http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp

3.3. Periodic Monitoring of Fuel and Resource Availability

Installed Capacity (ICAP) Suppliers shall submit Fuel and Environmental Restriction Data to the NYISO on weekly and yearly intervals and as requested by the NYISO. All ICAP Suppliers shall complete the Fuel Availability Self Reporting Surveys as follows:

1. Yearly Fuel Surveys must be completed within 30 days of NYISO notification of its availability.
2. Weekly Surveys must be completed by 1:00 p.m. of the first business day of each week.
3. As Requested Surveys must be completed by 1:00 p.m. of the day prior to the operating day the survey is requested for.

Decremental Bids (Wheels)

A Wheel-Through that is accepted in the DAM will be converted to a bid for the Real-Time Market using the "RTM Bid Price" provided in the Market Participant's DAM bid. If the Market Participant does not provide a "RTM Bid Price" when submitting its DAM bid, a default economic scheduling priority of - $1000.00 will be used when the DAM bid is converted to a bid for the Real-Time Market.

Sink Price Cap Bids (Exports)

An accepted, Day-Ahead Export that is not designated as a CTS Interface Bid for the Real-Time Market will be converted to a Real-Time Market bid using the "RTM Bid Price" provided in the Market Participant's DAM bid. If the Market Participant does not provide a "RTM Bid Price" when submitting its DAM bid, a default economic scheduling priority of + $2000.00 will be used when the DAM bid is converted to a bid for the Real-Time Market.

CTS Interface Bids (Imports and Exports)

An accepted, Day-Ahead Import or Export that is designated as a CTS Interface Bid for the Real-Time Market will be converted to a bid for the Real-Time Market using the "RTM Bid Price" provided in the Market Participant's DAM bid. Market Participants must specify a "RTM Bid Price" when submitting an Import or Export designated as a CTS Interface Bid for the Real-Time Market, whereas this field is optional for Decremental bids and Sink Price Cap Bids.

A Market Participant also has the option of modifying its Real-Time Market Bid, regardless of whether the Bid has an MP-specified "RTM Bid Price," or the Bid was adjusted by the MIS to the applicable default economic scheduling priority, as outlined above. After the Day-Ahead checkout process with neighboring Control Areas, the Real-Time Market Bid can be adjusted for megawatts and/or price by the MP before the close of each hourly RT Market. In this instance the entire megawatt amount of the transaction will be evaluated by the RTC with this new price.

6.3. Capacity Limited and Energy Limited Resources

Many generating units have limitations on their ability to operate for a period of time over all, or a portion, of their operating range. Classification as a Capacity Limited Resource (CLR) or the sub-classification of Energy Limited Resource (ELR) may qualify such generating units for special balancing energy and Installed Capacity (ICAP) consideration while making energy and/or capacity limited MWs available to the Day-Ahead, In-Day, and Real-Time Markets. Additional information on CLR and ELR usage can be found in Attachment M of the *NYISO Installed Capacity Manual (*available

from the NYISO Web site at the following URL:
http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp)

6.4. Normal and Emergency Upper Operating Limits (UOLN and UOLE)

All energy Suppliers are required to specify both a Normal Upper Operating Limit (UOL_N) and an Emergency Upper Operating Limit (UOL_E) in their Day-Ahead ("DA") and Real-Time ("RT") offers. The UOL_N defines the unit's operating limit under normal system conditions; the UOL_E defines the unit's operating limit achievable at the request of the NYISO during extraordinary conditions. Both limits should reflect the unit's achievable capacity. The specified value of UOL_E in the DA and RT offers must be greater than or equal to value specified for UOL_N. Additional information on Upper Operating Limits for CLR and ELR resources can be found in Attachment M of the *NYISO Installed Capacity Manual* (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp).

6.5. Inter-Control Area ICAP Energy

With few exceptions, all NYISO ICAP providers have an obligation to submit bids into the NYISO Day-Ahead Market on a daily basis. This obligation applies to ICAP providers located both within and external to the NYCA. Rules governing the obligations associated with NYISO ICAP contracts are defined in the *NYISO Installed Capacity Manual (*available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp).

An ISO has certain additional rights to energy associated with ICAP committed to its Control Area in real time. PJM, ISO-NE, IESO, HQ, and the NYISO have agreed to a number of "General Principles" to facilitate access to the energy associated with ICAP contracts with suppliers located in external control areas in the event of a capacity shortage within a control area.

NYISO ICAP Suppliers Located in the PJM, ISO-NE or IESO Control Area

In the event that energy from a NYISO ICAP resource located in the PJM, ISO-NE or IESO Control Area is required to resolve a capacity deficiency in the NYCA, the NYISO will publish an alert to the NYISO Market & Operations web page, specifically on the System Conditions page (http://www.nyiso.com/public/markets_operations/market_data/system_conditions/index.jsp). This alert serves as NYISO's instruction to ensure that all necessary measures are taken to facilitate delivery of the ICAP backed energy to the NYCA in response to a Supplemental Resource Evaluation (SRE) request, or through the next Real-Time Commitment (RTC). An email will also be sent to the ICAP resource's designated contact provided in the NYISO Market Information System (MIS).

Transaction offers should identify the source as the appropriate external proxy bus and the sink as the NYCA reference bus. The specific ICAP unit should also be identified in the User Reference field of the MIS form.

Suppliers providing ICAP to NYISO at the NE-AC Proxy wishing to bid energy that is above their capacity contract will need to enter two bids into the NYISO's Joint Energy Scheduling System (JESS). The first bid should be for the contracted ICAP amount of energy and the second should be for any energy above the contracted amount.

Resources from Quebec

In the event that NYISO ICAP backed energy is required from Quebec, the NYISO will publish an alert to the NYISO Market & Operations web page, specifically on the System Conditions page. An email will also be sent to the ICAP resource's designated contact provided in the NYISO Market Information System (MIS). This serves as the NYISO's instruction to the designated contact to ensure that all necessary measures are taken to facilitate delivery of the ICAP backed energy to the NYCA in response to a Supplemental Resource Evaluation (SRE) request, or through the next Real-Time Commitment (RTC).

Resources from NYISO

The NYISO is committed to a high level of deliverability for energy from the NYCA that supports an ICAP contract in an external control area. In the event that a neighboring control area has an in-day forecasted or actual reserve shortage (e.g. a PJM Maximum Generation Emergency), the affected control area's ICAP resource(s) located within the NYCA are expected to follow the rules and obligations set forth by the affected control area in order to make their ICAP backed energy available. The ICAP resource(s) is also expected to follow the standard NYISO bidding rules required to make their ICAP backed energy available to the affected control area. In addition, in the event the ICAP backed energy transaction is not accepted in RTC due to a NYISO reserve shortage, the NYISO operator may take manual action to facilitate the delivery of ICAP backed energy if such action is requested by the affected control area. Transaction offers need to identify the source as the specific ICAP resource sold and the sink as the appropriate external proxy bus.

Pro-rata reductions in energy delivery will be applied based upon the current capability of the NYCA resource supplying the external ICAP energy. If the resource has less capacity available than its ICAP obligation calls for, and/or it has ICAP obligations in more than one control area, then the ICAP obligation(s), as well as non-ICAP energy contracts, will be pro-rated accordingly. The NYISO is not obligated to supply energy from NYISO-only ICAP resources.

Wheel-through transactions with ICAP implications

In the event that an ICAP transaction between two neighboring control areas must pass through the NYCA, the NYISO will deliver the associated energy, subject to transfer limitations. The entity offering the ICAP transaction must follow the standard NYISO bidding rules to wheel their ICAP backed energy through the NYCA.

Interface Limit Reductions

System transmission conditions at times may require a reduction in the external interface limits for a specific control area. In the event that the ICAP entitlement associated with a specific external control area is less than or equal to the reduced interface limit, then the external control area will be entitled to the contracted ICAP amount. In the event that the ICAP entitlement for an external control area is greater than the reduced interface limit, then the NYISO will schedule the deliverable quantity based on the RTC where time permits. In real time, the external control area dispatcher may contact the NYISO dispatcher and identify the specific external ICAP transactions that they wish to curtail. If the external control area dispatcher does not specify the ICAP transactions to be curtailed, then the NYISO dispatcher will perform curtailments based upon existing operational procedures for locational curtailment. In either event, the export transactions will be scheduled or curtailed to a level consistent with the reduced interface limits.

MIS Transaction IDs must be submitted for all inter-control area ICAP transactions

In order to manage external ICAP transactions, all NYCA resources with ICAP obligations in external control areas, all external resources with ICAP obligations in the NYCA, and all ICAP transactions that will wheel through the NYCA must submit MIS transaction IDs to the NYISO via email to icap_info@nyiso.com. Additionally, each NYISO ICAP resource located outside the NYCA shall include a 24 X 7 telephone contact number when providing its MIS transaction ID each month. MIS transaction IDs and telephone contact numbers must be received by the NYISO by or before the dates shown in the ICAP Event Calendar at:

http://www.nyiso.com/public/markets_operations/market_data/icap/index.jsp

6.6. Emergency Demand Response Program and Special Case Resources

The Emergency Demand Response Program (EDRP) provides a mechanism for load reduction during emergency conditions, thereby facilitating the reliability of the New York State bulk power system. Forecast reserve shortages may be shortages for the NYCA statewide region, locational shortages within the NYCA region due to transmission constraints, or inter-regional locational

shortages between NYCA and neighboring Control Areas due to transmission constraints. A complete description can be found in the *NYISO Emergency Demand Response Manual* (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp) .

Retail end users who agree to participate in the EDRP can be accommodated through one of four types of Curtailment Service Providers (CSPs):

1. Load Serving Entities (LSEs), either that currently serving the load or another LSE
2. Through NYISO-approved Curtailment Customer Aggregators
3. As a Direct Customer of the NYISO
4. As a NYISO-approved Curtailment Program End Use Customer.
5. Curtailment Customer Aggregators and Curtailment Program End Use Customers must register with the NYISO as Limited Customers.

Voluntary Participation

Participation in the EDRP is voluntary and no penalties are applied if a CSP fails to respond to a NYISO notice to reduce load.

Retail end users participating in the EDRP cannot participate in the NYISO's Special Case Resources (SCR) Program. SCRs that have registered with the NYISO but not sold their capacity will be added to the list of EDRP participants for that period of time when their capacity is unsold, and will be called with EDRP participants if an EDRP event is activated.

The NYISO will allow participation by aggregations of smaller customers, the curtailed usage of which will be determined by using an alternative to the basic provisions regarding the metering and measurement of performance. Distributed Generation (DG) and self-generation resources are not eligible. Direct serve customers are also prohibited from operating under alternative performance measures.

NYISO Notification

It is the NYISO's intention to provide CSPs notice no less than two hours in advance of the time specified to reduce load, pursuant to NYISO emergency operations procedures. However, instructions may be issued requesting an immediate start.

Special Case Resources

Special Case Resources are Loads capable of being interrupted upon demand, and distributed generators that are not visible to the NYISO's Market Information System. The Unforced Capacity of

a Special Case Resource corresponds to its pledged amount of Load reduction as adjusted by historical performance factors and as increased by the Transmission District loss factor. For details, refer to the *NYISO Installed Capacity Manual*, available from the NYISO Web site at the following URL:

http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp

6.7. Scheduling Operations Procedures

The following procedures are intended for the scheduling operations that occur during the Dispatch Day, but prior to operations, which occur during the Dispatch Hour:

- Interaction with Real-Time Commitment
- Interaction with Real-Time Automated Mitigation Process
- Interaction with Fast Start Management
- Anticipated Operating Reserve Shortages
- Out-of-Merit Generation
- Supplemental Commitment Process

6.7.1. Interaction with Real-Time Commitment

Hour-ahead scheduling is performed on a periodic basis and is completed at least 45 minutes prior to the beginning of the dispatch hour.

NYISO Actions

The NYISO performs the following:

1. Updates the power system grid model based on the latest transmission outage schedules, including forced outages.
2. Updates the load forecast based on the latest load information.
3. Accepts any updated reserve requirements.
4. Accepts the day-ahead schedules and firm transaction schedules.
5. Accepts the hour-ahead generation bids and firm transaction bids.
6. Accepts the telemetered phase shifter and tap settings from SCADA with adjustments made for known schedule changes.
7. Executes the Real-Time Commitment (RTC) using SCUC with a 2½ hour horizon.

Posts the following results:

1. Revised generator schedules for the next hour.
2. Revised firm transaction schedules for the next hour.
3. Market Participant Actions.
4. Market Participants shall request the NYISO for any changes in generation, load, and transactions schedules.

6.7.2. Interaction with Fast Start Management

The fast start management (FSM) function allows NYISO operations staff to start or stop, or delay the turning on or turning off of specified "fast start" generators (typically, gas turbines). The FSM function will normally operate in a mode where all first time fast start unit basepoints are held back until the system operators give an explicit approval for the basepoints to be sent to the unit.

Additionally, all fast start units' startups and shutdowns must be first approved by system operators. There will be messages to the operators indicating when a fast start unit has met its minimum run time and is not economic to run.

In the Reserve Pickup and Maximum Generation Pickup (RTD-CAM) modes, the default will be for fast start units' schedules to be sent out without system operator approval

Figure 16 summarizes the startup characteristics for real-time commitment.

Figure 16: Unit Startup Characteristics

Unit Classification	Startup Characteristics
Fast Start Units*	10-15 minute startup notice starts by RTC on the quarter hour On-Demand starts by RTD-CAM
Slow Start Units	30-minute startup notice starts by RTC on the quarter hour
* Also known as Quick Start Units	

6.7.3. Anticipated Operating Reserve Shortages

The NYISO prepares the NYISO daily status report twice daily, in anticipation of the morning peak and the evening peak. Forecasted loads and operating capacity, including maximum generation capability and all firm transactions for the hours of the expected peak are provided by the Eligible Customers of the NYISO. The NYISO also provides a forecasted peak load based on NYISO data for comparison to that supplied by the TOs.

Resource Categories

There are ten Resource Categories as shown by Figure 17.

Figure 17: Resource Categories

Resource Categories									
(R1) Energy	(R2) AGC Regulation Reserve	(R3) 10 Min Spin Reserve	(R4) 10 Min Non-Synch Reserve	(R5) 30 Min Reserve (Internal or External Reserve Activation)	(R6) FRED*	(R7) Simultaneous Active of Reserves and/or External Emergency Purchases	(R8) Unexpired Un-accepted Day-Ahead Bids	(R9) Unexpired Un-accepted Hour-Ahead Bids	(R10) Involuntary Load Curtailment
Regulating resources or Dispatchable or Non-Dispatchable	Regulating resources	Dispatchable or Non-Dispatchable	Dispatchable or Non-Dispatchable and Off-Line but Available	Dispatchable or Non-Dispatchable and Off-Line but Available	Dispatchable or Non-Dispatchable and Off-Line but Available	Invoked Manually	Non-Dispatchable or Off-Line but Available	Non-Dispatchable or Off-Line but Available	Invoked Manually
FRED = **F**orecast **R**equired **E**nergy for **D**ispatch; the capacity to supply energy to meet NYISO forecasted load that is in excess of the sum total of Day-Ahead load bids.									

Existing Real-Time Non-SRE Resource Adjustments are listed as follows:

1. AGC moves regulating resources from (R2) to (R1) and from (R1) to (R2) to maintain regulation.
2. RTD moves "Dispatchable" (On-Line or Off-Line) resources between (R1), (R2), (R3), (R4), (R5) and (R6) to balance load with generation and maintain reserves.
3. If RTD can't solve rapidly enough for an energy deficiency, Reserve Pickup is invoked to move some "Dispatchable" and "Non-Dispatchable" resources from (R2), (R3), and (R4) at emergency response rates (and from Internal (R5) and (R6) at normal response rates or faster) into (R1) to rapidly eliminate the deficiency.

> ***Note:*** LESRs will not respond to reserve pickups except to either maintain any injection or terminate any consumption of energy.

4. During a Reserve Pickup – RTD-CAM is used to convert 10-Minute Operating Reserve to energy using emergency response rates for some or all suppliers providing operating reserve and normal response rates for some or all other suppliers if needed. Reserve Pickup, which only dispatches suppliers upwards, looks at control error and load trending approximately 10 minutes ahead, and allows approximately 10 minutes for the reserve pickup to occur.

   Reserve pickup may occur if energy becomes deficient due to the loss of a large generator; to return schedules if the ACE exceeds 100 MWs; or if a faster ramp rate is required to solve a transmission security violation.

   During Reserve Pickup, no regulation penalty is invoked for generators that exceed their RTD basepoint (i.e., over-generation is encouraged and rewarded). Reserve Pickup will be terminated by the Operator when a sufficient level of energy has been replaced. Upon this termination, generator basepoints will be initialized at their ending actual levels.

   Locational Reserve Pickup may be invoked to solve a specific locational energy deficiency or transmission violation.

5. For losses of large generators, Simultaneous Activation of Reserves may be invoked to move resources from (R7) into (R1) to rapidly eliminate the energy deficiency.

   Simultaneous Activation of Reserves is utilized for a condition in which a number of neighboring control areas performs a Reserve Pickup to replace energy on a regional basis. The control area that required the replacement of energy will ultimately pay back the energy to neighboring control areas as an inadvertent energy payback.

6. If steps 2, 3, and/or 4 are insufficient, External Reserve Activation may be invoked to move resources from External (R5) and (R6) into (R1) to rapidly eliminate the energy deficiency.

   Upon an External Reserve Activation, Interchange Scheduler Plus (IS+) is used to perform an evaluation to change DNIs with neighboring control areas to allow interruptible exports to be cut, and to allow externally procured operating reserves to be converted to energy and imported.

7. If Reserve Pickup is (or is expected to be) insufficient, Max Gen Pickup may be invoked manually through phone notifications to TOs to move "Dispatchable" and "Non-Dispatchable" resources (R2), (R3), and (R4) at emergency response rates (and Internal (R5) and (R6) at normal response rates or faster) into (R1) to rapidly eliminate the energy deficiency.

> ***Note:*** LESRs will not respond to reserve pickups except to either maintain any injection or terminate any consumption of energy.

   A Maximum Generation Pickup is an emergency energy pickup as directed by the NYISO outside a normal RTD run. At the NYISO's judgment, generators will be instructed via voice communication to increase output to their upper operating limits as soon as possible until directed otherwise. This is typically invoked to relieve a transmission violation rapidly.

8. If a reliability violation continues to occur, prescribed corrective actions should be taken which may include postponement or cancellation of scheduled transmission outages according to procedures defined in the *NYISO Outage Scheduling Manual* (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp). This may also include curtailment of external transactions.

9. If a reliability violation continues, External Emergency Purchases may be invoked to move resources from (R7) to (R1).

10. If other steps are insufficient in quantity and/or speed, Involuntary Load Curtailment (including possibly Load Shedding) may be invoked according to prescribed procedures to move (R10) into (R1) to rapidly eliminate the energy deficiency.

11. As a follow-up to the above steps, subsequent RTD runs will move Internal "Dispatchable" resources (R5) and (R6) into (R1) to replenish diminished regulation and 10 minute reserves.

    If the data indicates that the NYCA will be short of Operating Reserve, the NYISO shall perform the actions described for supplemental commitment and scheduling.

6.7.4. Out-of-Merit Generation

From time to time, generators must be operated out of economic order or at levels that are inconsistent with the calculated schedules. Any NYISO-authorized deviation from the schedule is considered Out-of-Merit (OOM) Generation and is not subject to regulation penalties. A unit that is out-of-merit is balanced at actual output and may be eligible for a supplemental payment if its bid production cost is not met.

NYISO Requests for Out-of-Merit Generation

Out-of-Merit Generation, either up or down, can be requested by the NYISO for security of the bulk power system, during communication failures, or because the Real-Time Commitment does not successfully run. The energy provided during the out-of-merit condition will be paid at the Real-Time Market Locational Based Marginal Pricing (LBMP) rates, but not all out-of-merit units are eligible to set LBMPs. The unit will be provided a supplemental payment, if required to recover its bid cost, consistent with the rules for bid production cost guarantees. Note that all OOMs for reliability in NYC (Zone J) are considered as OOM for ISO reliability, as the NYISO secures the 138 kV system in Zone J. For more information on OOM treatment, see table 5-8 below.

Any supplemental payments will be charged to all NYISO Loads through the Schedule 1 Ancillary Service. The generator will be put back in merit by the NYISO when conditions warrant.

Transmission Owner Requests for Out-of-Merit Generation

Transmission Owners in the NYISO system can request that a generator be run out-of-merit, either up or down, for local reliability. The specific generator and reason for the request must be identified by the TO at the time of the request. The energy provided by the generator will be paid at the Real-Time Market LBMP, but not all OOM units are eligible to set LBMPs. The unit will be provided a supplemental payment, if required to recover its bid cost, consistent with the rules for bid production cost guarantees. Any supplemental payments will be charged to the Loads within the TO's area. The generator will remain out-of-merit until the TO requests that the NYISO put it back in merit. For more information on OOM treatment, see table 5-8 below.

Generator Operator Requests for Out-of-Merit Generation

Generator operator requests for OOM Generation must be made through the TO. The specific reason for the request is required at the time the request is relayed by the TO to the NYISO. The generator will remain out-of-merit until the generator operator requests, via the TO, that the NYISO put it back in merit.

A generator operator may request out-of-merit operation to perform a Dependable Maximum Net Capability (DMNC) test. The process for this test is described in Section 6.7.5. During a DMNC test, energy that is scheduled in the Day-Ahead Market (DAM) is covered by a bid production cost guarantee. Energy that is not scheduled in the DAM will be paid for at the Real-Time Market LBMP, and it will not receive an in-day bid production cost guarantee. Not all Out-of-Merit Generation is eligible to set LBMP. For more information on OOM treatment, see table 5-8 below.

Derated generation can also be requested by a generator operator for extenuating circumstances that require reduced operation or shutdown. This includes equipment failure or pollution episodes. The generator remains responsible for balancing energy.

Figure 18: Out-of-Merit Treatment

Action Type	OOM	GT Eligible to Set Price?	Public Notice Posted?	Example Message
ISO Action	ISO VOLTAGE SUPPORT		Yes	ISO REQUESTS HUNTLEY___67 OUT OF MERIT. ISO VOLTAGE SUPPORT AT START TIME 08/02/2007 10:00 FOR VOLTAGE SUPPORT @ GARDENVILLE / WESTERN VOLTAGES.
	OPS INTERVENE/MODIFY MINGEN		No	N/A
	OPS INTERVENE/MODIFY UOL		No	N/A
	OPS INTERVENE/MODIFY BOTH		No	N/A
	START-UP/SHUT DOWN	Yes*	No	N/A
	OOM FOR TESTING	Yes*	No	N/A
	NYISO GEN AUDIT		No	N/A
	COMMITTED FOR ISO RELIABILITY		Yes, Unless the unit is a GT	ISO REQUESTS GILBOA___3 OUT OF MERIT. COMMITED FOR ISO RELIABILITY AT START TIME 08/24/2016 12:00 FOR Security..
	ISO ENERGY LIMITED RES		No	N/A
	OOM FOR RESERVES		Yes, Unless the unit is a GT	ISO REQUESTS GILBOA___4 OUT OF MERIT. COMMITTED FOR ISO RESERVES AT START TIME 02/01/2008 11:00 FOR 10 MIN SYNC.

Gen Action	GEN REQUEST/MODIFY MINGEN		No	N/A
	GEN REQUEST/MODIFY UOL		No	N/A
	GEN REQUEST/MODIFY BOTH		No	N/A
TO Action	OOM FOR TO RELIABILITY		Yes	Metering Authority - New York State Electric & Gas REQUESTS MILLIKEN___2 OUT OF MERIT. OOM FOR TO RELIABILITY AT START TIME 07/06/2015 07:00 FOR security.
	TO VOLTAGE SUPPORT		Yes	Metering Authority - Niagara Mohawk UPDATES HUNTLEY___68 OUT OF MERIT. TO VOLTAGE SUPPORT AT START TIME 08/02/2006 12:00 FOR Var support in western NY.

*Note: OOM for Testing and START UP/SHUT DOWN are two additional OOM types assigned by the NYISO's settlements department after the market software has run

6.7.5. Generator DMNC Test Scheduling Requirements

Test Scheduling Notification Rules

For Generators 100 MW and greater; the Generator notifies the NYISO Scheduling Department (see immediately above) and the Transmission Owner (TO) at least five (5) business days in advance of the proposed test date that the Generator is requesting a DMNC test.

For Generators 25 to 99 MW, (including multiple units under a single owner totaling more than 25 MW), the Generator notifies the NYISO Scheduling Department and the TO at least two (2) business days in advance of the proposed test date that the Generator is requesting a DMNC test. Generators under 25 MW testing separately have no notification requirements.

The NYISO will conduct a system reliability review and notify the Generator through the TO if, and only if, the request is denied.

Day-Ahead Bidding

Generators 100 MW and greater must bid into the Day-Ahead energy market such that the Generator is scheduled for the hours requested for the DMNC test. If the Generator is not scheduled, the DMNC test is cancelled and notification must be made to NYISO Scheduling (at the number/email address above in red) and the TO by hour 1400 of the business day prior to when the DMNC test is scheduled.

For Generators 25 to 99 MW, a Day-Ahead bid is not required if the Generator is a unit that can be committed through Real-Time Commitment (RTC). In the event of a test cancellation the Generator must notify NYISO Scheduling and the TO by hour 1400 of the business day prior to when it is requesting a DMNC test.

Test Day Procedures

On the day of the scheduled DMNC test, at least three (3) hours prior to the scheduled test, the Generator, through the Transmission Owner, must request permission from the NYISO to perform the test. Also, the Generator, regardless of size, (i.e., with or without a DAM schedule), must ensure that in the Real-Time Market the unit is scheduled for the hours requested for the DMNC test, including ramping up to the test level. The NYISO will approve or deny the request at least two (2) hours prior to the scheduled test, notifying the Generator through the Transmission Owner, allowing time for Real-Time Market energy market bid adjustments.

On the day of the test, the Generator is required to adjust its (price-taking) Real-Time Market bid to allow Real-Time Dispatch (RTD) to schedule the Generator up to its current DMNC rating.

The Generator must notify the NYISO through the Transmission Owner that the DMNC test has started.

The NYISO will log that the Generator is performing a DMNC test and that the Generator is dispatched out-of-merit.

The Generator must notify the NYISO through the Transmission Owner that the test is complete. The NYISO will log the completion time and the Generator will resume following normal base points.

Accounting for and Submitting DMNC Test Results

During the Generator's DMNC test period, the Generator will not set the LBMP.

For the energy that is not subject to Day Ahead LBMP, the NYISO will pay the Generator the LBMP in the Real-Time Market at its location for the energy it produced during the Generator's DMNC test.

The NYISO will not charge the Generator for any performance and regulation penalties that may apply during the Generator's DMNC test period.

The Generator must submit DMNC test results data online, (including weather-adjusted data), as defined in the ICAP Automated Market User's Guide, Section 11, and section 4.2 of the NYISO

Installed Capacity Manual (available from the NYISO Web site at the following URL: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp).

6.7.6. Rules for Generators Conducting Certain Scheduled Steady-State Tests

There are special settlement rules for Generators conducting certain scheduled steady-state tests. Please see the Accounting and Billing Manual at the following link for this information: http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp

6.7.6.1. Eligible Units

This eligibility is extended to all generating units that may be conducting ISO-required DMNC or VAr tests, or other necessary tests outlined below. These tests require operation while synchronized to the NYISO power grid. No pre-registration to qualify a generating unit is required to use this feature; however, generating units are required to follow the bidding, scheduling and test notification procedures defined in this section in order to qualify for the settlement treatment discussed below. Units will be subject to audit and the ISO may revoke, for cause, its approval for any generator's testing coverage under the special settlement provisions.

New units undergoing startup tests will be considered eligible for the special settlement rules as long as the tests conducted are included among the Eligible Tests listed, and the generator operator conforms to the rules outlined below. Questions about eligibility for Special Settlement Rules for unlisted tests should be directed to your Stakeholder Services representative. New Units are also directed to TB 116 at: http://www.nyiso.com/public/webdocs/documents/tech_bulletins/tb_116.pdf for additional information on requirements and procedures to be followed for new unit startup testing.

6.7.6.2. Tests that are not Eligible Tests

Tests that are not listed below do not qualify for the treatment provided in this section. Tests otherwise eligible, but for which the unit operator has failed to follow the prescribed procedures, are also not Eligible Tests. In addition, the following four tests are excluded from the treatment available under this section because they cannot be scheduled in advance or have undefined test processes.

The four tests for which special settlement rules are not available pursuant to the terms of this section are:

- Water outfall tests
- Gas system interruption
- Compliance assurance monitoring
- Turbine overspeed tests

6.7.6.3. Procedures and Rules Governing Eligible Tests

Generating units conducting Eligible Tests must follow the bidding, scheduling and test notification procedures listed below. Any failure by the Market Participant to meet the rules governing a specific test or to provide complete and timely information during the execution of a test may result in the disqualification of the request for the penalty exemption.

6.7.7. General Rules

6.7.7.1. Test Notification

To schedule a test period, the requestor must contact the NYISO Scheduling Department and provide the following test information:

Test Notification Contact: NYISO scheduling at 518-356-6050 or genplan@nyiso.com

Generator Name

Eligible Test

Start and End Date/Time Period for the test:

- For Generators 25 MW and greater; the Generator must notify the NYISO Scheduling Department (see immediately above) and the Transmission Owner (TO) at least three (3) business days in advance of the proposed test date.
- Generators less than 25 MW testing separately are not required to make this advanced test period notification.
- The NYISO will notify the Generator through the TO if, and only if, the request is denied.

6.7.7.2. Day-Ahead Bidding

- Generators 100 MW and greater must bid into the Day-Ahead energy market such that the Generator is scheduled appropriately[2] for the hours requested for the test. If the Generator is not scheduled, the generator must cancel the test and notify NYISO Scheduling (at the number/email address set forth above) and the TO by hour 1400 of the business day prior to the day of the cancelled test.
- For Generators 25 to 99 MW, a Day-Ahead bid is not required. In the event of a test cancellation the Generator must notify NYISO Scheduling (at the number/email address set forth above) and the TO by hour 1400 of the business day prior to the day of the cancelled test.

6.7.7.3. Test Day Procedures

- On the day of the scheduled test, at least three (3) hours prior to the scheduled test, the Generator, through the Transmission Owner, must request permission from the NYISO to perform the test. Also, the Generator, regardless of size, (with or without a DAM schedule), must ensure that in the Real-Time Market the unit is scheduled for the hours requested for the test, including ramping up to and down from the test level (as needed). Test schedules must be appropriate to the unit's normal ramp rate. The NYISO will approve or deny the request at least two (2) hours prior to the start of the scheduled test, notifying the Generator through the Transmission Owner, allowing time for Real Time Market bid adjustments.
- If conditions occur that could result in a test cancellation, a delay beyond the scheduled start time, an extension beyond the scheduled end time, or if the Generator is projecting that it cannot meet its Day-Ahead schedule, the Generator will notify the Transmission Owner who will notify the NYISO operators. Generators should communicate their expected operating characteristics during these events and make appropriate changes in the unit's Real-Time energy offers. If the NYISO approves a schedule change, special settlement rules may still apply. However, the test duration limits included in the Test Specific Criteria section below for all Eligible Tests still apply.
- At least 3 hours before the test, the Generator is required to have submitted in the NYISO Real Time market, hourly offers reflecting a good-faith estimate of its energy production.

For all tests with the exception of those tests required by the NYISO (DMNC & VAr) Suppliers must bid the generators in Self-Committed Fixed mode in quarter-hour increments for all hours when the Eligible Test is expected to be conducted. These offers will be used for all NYISO Real-Time schedule forecasts. Rules addressing NYISO required tests are outlined in the documents identified in the Eligible Tests section below.

- The Generator must notify the NYISO through the Transmission Owner that the test has started.
- The NYISO will log the Generator test and will dispatch the Generator consistent with its Real-Time schedule.
- The Generator must notify the NYISO through the Transmission Owner that the test is complete. The NYISO will log the completion time and the Generator will continue to follow its Real-Time schedule.

6.7.7.4. Test Specific Criteria

The NYISO will apply special settlement rules for Eligible Tests pursuant to the following test criteria:

- Special settlement rules will be applied to the shorter of i) the time period listed in the Qualifying Test Duration section of the description of the Eligible Tests provided below or ii) the length of the actual test. In addition, the NYISO will refer to Periodicity as the expected frequency of a test for any given unit. Periodicity is a guideline for the NYISO to use in assessing the impact of this exemption process and with which the NYISO will monitor the program for possible abuse.

6.7.8. Eligible Tests

1. **DMNC Test**

(See Section 3.8.5 of this manual for Generator DMNC Test Scheduling Requirements)

Steam Unit/ Combined Cycle DMNC Test DAM scheduling criteria

Must be scheduled to 90% of Operating Capability

Test Periodicity – 2/year, Bi-Annually (Winter/Summer);

Qualifying test duration – up to 6 hours

GT DMNC (With/Without Power Recovery) Test DAM scheduling criteria

Must be scheduled to 90% of Operating Capability Test Periodicity – 2/year Qualifying test duration – up to 2 hours

2. **VAr Tests**

(See Section 3.6 of the Ancillary Services Manual for specific VAr testing and reporting requirements at:
http://www.nyiso.com/public/markets_operations/documents/manuals_guides/index.jsp

Steam Unit /GT VAR (Lead/Lag) Test

DAM scheduling criteria – As per the Ancillary Services Manual

Test Periodicity – 1/year

Qualifying test duration – up to 3 hours

3. **RATA Testing**

DAM scheduling criteria – as accurate as can be done, NYISO expectation is that unit will be scheduled to at least its minimum operating level

Test Periodicity – 1/year

Qualifying test duration – up to 16 hours

4. **Mill fineness checks**

DAM scheduling criteria – No special operating levels defined. Test Periodicity – 1/year Qualifying test duration – up to 2 hours

5. **Reheat intercept/stop valve leakage test**

DAM scheduling criteria – could be done at different load points

Test Periodicity – as needed Qualifying test duration – up to 1 hr

6. **N2 Leakage Test**

DAM scheduling criteria – as accurate as can be done, minimum schedule 50% of full load Test Periodicity – 1/year

Qualifying test duration – up to 8 hours

7. **Boiler Efficiency Test**

DAM scheduling criteria – 90% of full load

Test Periodicity – 2/year

Qualifying test duration – up to 4 hours

8. GT Monthly Operational Test

DAM scheduling criteria – 100% of opcap

Test Periodicity – 1/month

Qualifying test duration – up to 2 hours

9. Particulate Testing

DAM scheduling criteria – No special operating levels defined

Test Periodicity – 1/5 years

Qualifying test duration – up to 16 hours

Residual oil fired units will be required to conduct particulate testing annually for nickel under the EPA's proposed Hazardous Air Pollutant (HAP) Maximum Achievable Control Technology (MACT) requirements. Coal may have similar requirements under the HAP MACT mercury requirements (Generally 12-16 hours per unit).

10. NOx Testing

DAM scheduling criteria – full load.

Real-Time scheduling criteria – full load.

Test Periodicity – 1/5 years

Qualifying test duration – 3 hours on each fuel

Every combustion turbine and diesel generator that is grid connected and is not RATA tested (no CEMS) is subject to NOx testing once every five years. If the unit is capable of operating on multiple fuels, testing must be conducted on each fuel. Regulatory provisions may allow testing of representative units (basically one in three) so practically speaking not every unit will actually be tested. (Generally 3 hours per unit per fuel). Generators should consult relevant federal and state air emission testing regulations to determine their specific requirements.

11. Full Load Fuel Oil Test

Scheduling criteria – The following process will apply to the scheduling of these tests:

a. Test schedules will be submitted three days in advance including an estimate of the expected test hours for the selected pseudo-unit per Section A-2 above.

b. When DAM schedules for the day following the test are received by the CC unit owner/operator (by 11:00 of the test day) the test will either be feasible or not based upon the unit minimum down time and the following day's schedule.

   i. If the test is feasible and will be conducted, the CC unit owner/operator will, as described in Section A-3 above, notify the NYISO through the Transmission Owner that the test is confirmed and the planned actual hours in which it will be conducted. Following the procedures described in Section A-3 the CC unit owner/operator will also bid into the RT market (HAM) in "Self-Scheduled Fixed Mode" their best estimate of unit output in 15 minute increments over the test period and will also follow all other procedures described in section A-3 above.

   ii. If the Day Ahead schedules will not permit sufficient downtime to run the test as scheduled, the CC unit owner/operator will follow the test cancellation procedures described in Section A-3 above and reschedule the test per section A-1 above for a subsequent day.

Test Periodicity – 1/month/Combustion Turbine

Qualifying test duration – 3 hours

12. Control System Performance Testing

DAM scheduling criteria – No special operating levels defined.

Test Periodicity – as needed

Qualifying test duration – up to 16 hours

6.7.9. Supplemental Commitment Process

The NYISO may use the SRE process to commit additional resources outside of the SCUC and RTC processes to meet NYISO reliability or local reliability requirements. Transmission Owners (TOs) may request the commitment of additional generators to ensure local reliability in accordance with the local reliability rules. The NYISO will use SREs to fill these requests by TOs. In

addition, Generator Owners may request the operation of a specific steam unit if certain combustion turbines have an energy or a non-synchronous reserve schedule that necessitates operation of the steam unit due to 24-hour NO_X Averaging Period requirements.

When the NYISO requests that generators submit bids in response to an SRE, ICAP suppliers must offer their available capacity unless an offer is pending in the Real Time market when the SRE request is made or the unit is unable to run due to an outage, operational issues or temperature derates. Special Case Resources are not required to respond to SRE requests by section 5.12.1 of the Market Services Tariff. However, the NYISO may request SCR and EDRP resources to respond to SRE requests on a voluntary basis.

Since SREs are only performed to address reliability concerns, it is intended that units committed by the SRE process fulfill their obligation by physically operating.

NYISO Requests for SREs

The NYISO may perform SREs in response to the following two conditions:

1. When Day-Ahead reliability criteria violations are forecast after SCUC has begun or completed its Day-Ahead evaluation (i.e.: too late for additional day-ahead commitments).
2. When In-Day reliability criteria violations are anticipated more than 75 minutes ahead (i.e.: too early for RTC commit additional resources).

Transmission Owner Requests for SREs

TOs may request the NYISO to issue an SRE to commit additional resources for reliability purposes in a local area. TO requests for SREs are subject to the same conditions and the same time frame as the NYISO's use of the SRE process – after SCUC has run. Any requests by TOs to commit generators not otherwise committed by the NYISO in the Day-Ahead Market will be posted to the OASIS.

When requesting an SRE, TOs must give the NYISO the reliability reason for the request, the expected duration of the SRE, and the specific facility or constraint affected. NYISO dispatchers will log all such TO requests for SREs. Within 5 business days the TO requesting the SRE commitment shall provide detailed written justification for the SRE to SREinfo@nyiso.com. The NYISO will review all SRE requests to ensure that practices being followed are consistent with NYISO tariffs and NYS Reliability Rules.

The TOs written justification must detail the system conditions that resulted in the need for the SRE commitment such that the NYISO can independently verify the request. The following system conditions should be identified when applicable: TO local area or regional load levels; identification of thermal transmission facility or substation voltage constraint, identification of whether the constraint represents a predicted actual or post-contingency violation; identification of significant transmission or generating unit outages affecting such constraint; and identification of special local reliability criteria. Other local area system conditions that resulted in the need for the SRE commitment should also be identified.

Generator Owner Requests for SREs

If certain combustion turbines have an energy or a non-synchronous reserve schedule that necessitates the operation of a specific steam unit operated by the turbine owner due to 24-hour NO_X Averaging Period requirements, the NYISO may commit the steam unit if the generator owner takes the following actions:

- The generator owner shall notify the NYISO and the TO of this operational requirement. The generator owner must notify the NYISO via the TO after the DAM posts, but no later than Hour Beginning (HB) 14 of the day prior to the operating day. In addition, throughout the operating day, the generator owner must communicate to the NYISO via the TO any changes in run-time limitations that may result from the combustion turbine's actual energy schedule or availability.
- The generator owner may request of the NYISO and inform the TO that a specific steam unit be operated, as required, to satisfy the NOx averaging requirements for the selected combustion turbine's energy or non-synchronous reserve DAM schedule given the 24-hour NO_X Averaging Period requirements for the operating day. The generator owner request should identify the steam unit, the required additional hours of operation, and the specific generation levels necessary to meet the 24-hour NOx Averaging Period requirement.

If the combustion turbines are not required for either NYISO or local TO reliability, and the associated steam units are not committed in the DAM, then the NYISO will mark the combustion turbines as unavailable in the generation outage scheduler, such that they are not committed in real-time operation. The combustion turbines will be identified as Energy Limited Resources (ELR), since the generator owner will be unable to fulfill the DAM energy or non-synchronous reserve schedule as determined by the NYISO. Combustion turbines subject to the 24-hour NOx Averaging Period requirement must be registered as Energy Limited Resources.

6.7.10. Supplemental Resource Evaluation Procedures

SRE commitment refers to the NYISO scheduling a generator to start-up to run at, or above, its minimum generation level. SCUC commits resources for the next day, and RTC can commit

resources in the Dispatch Day. RTC begins with SCUC Day-Ahead generator and load schedules, non-expired/non-accepted/non-updated (but not SCUC) bids, updated or new bids, updated transaction requests, updated load forecasts, updated outage schedules, and updated status changes. It then evaluates conditions for the next 2 ½ hours, performs a supplemental commitment (if needed) optimized for the next dispatch hour, and schedules newly requested transactions for the next dispatch hour.

The objective function of SCUC is not intended to evaluate energy costs and/or start-up/min gen costs for Day-Ahead capacity forward commitments for non-synchronized reserves. However, RTC will consider start-up costs. A generator started by RTC will be assumed to run at least one hour, so that its start-up bid price will be spread over one hour and added it to its bid energy price in RTC. For the purposes of setting LBMP, only the generator's energy price bid will be used. As with other start-ups, these generators will be eligible for supplemental payments to insure their start-up and minimum generation (for the remainder of the dispatch day) price bids are recovered.

Resource Monitoring Procedures

1. ***Monitor Regulation/Reserve Levels*** – The NYISO shall monitor the level of regulation and reserve resources available to meet anticipated NYCA requirements.
2. ***Monitor Adequacy of Bids*** – The NYISO shall also track the level of unexpired/unaccepted resource bids (R8 and R9) by location as potential replacements for Resources (R1), (R2), (R3), (R4), (R5), and (R6). If certain bid categories are deemed insufficient, the NYISO shall post an announcement to market participants to solicit additional bids.

6.7.11. General SRE Commitment

SRE shall only be used to address resource deficiencies; it shall not be used to reduce costs. The general SRE commitment procedure is as follows:

1. ***Initiate SRE*** – The NYISO shall proceed with an SRE:
   - If a resource deficiency occurs (or is anticipated to occur), and
   - If the Existing Real-Time Non-SRE Resource Adjustments steps 1 through 7 are (or are anticipated to be) inadequate, and
   - If the problem is outside the windows of evaluation for both SCUC and RTC.
2. ***Resource Deficiency*** – The resource deficiency may be a result of:
   - The subsequent loss of an energy, regulation, or reserve resource;
   - The loss of a transmission facility;
   - A load forecasting anomaly; and/or