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Transmission
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Operations
manual

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Transmission & Dispatching Operations Manual

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4. SCHEDULING OPERATIONS

This section describes the Operating Day scheduling process.

4.1 SCHEDULING OPERATIONS REQUIREMENTS

This subsection describes the requirements for the Operating Day scheduling of generation, transactions, load, and Ancillary Services. The principal functions are:

- In-Day Scheduling Changes
- Balancing Market Evaluation
- Interchange Scheduling
- OASIS Posting

4.1.1 In-Day Scheduling Changes

After the Day-Ahead schedule is published, the NYISO evaluates any events, including but not limited to the loss of significant Generators or transmission facilities that may cause the NYCA dispatch to be inadequate to meet the requirements established in the Reliability Rules.

The NYISO will modify, as necessary, the Day-Ahead commitment schedules to achieve a reliable next-day schedule while minimizing total Bid Production Cost over the remainder of the day to meet Load scheduled Day-Ahead. The NYISO may use the following emergency resources:

- Bids submitted to the NYISO that were not previously accepted but were designated by the bidder as continuing to be available for emergency needs
- new Bids from all Suppliers, including neighboring systems
- cancellation of/or rescheduling of transmission facility maintenance outages where SCD can not solve security constraints.

Actions taken by the NYISO in performing Supplemental Resource Evaluation (SRE) will not change any financial commitments that resulted from the Day-Ahead SCUC. When a supplier on forced outage becomes available for service again, it may submit a new bid in-day for potential commitment by BME or SRE or day ahead for potential commitment by SCUC. The procedures for supplemental resource evaluation for energy and ancillary services are covered in Section 4.2 of this manual.

4.1.2 Balancing Market Evaluation (Hour-Ahead)

The commitment of generating units in the Day-Ahead time frame was based on a load forecast and equipment outage schedule that is subject to change. Unforeseen events can cause loads to change. In addition, unplanned equipment outages may occur. Since the NYISO has the obligation to maintain reliability, a

mechanism to augment and adapt the Day-Ahead schedules was created and named the Balancing Market. The bidding for this market is finalized 90 minutes prior to the beginning of the Operating Hour. A Balancing Market Evaluation (BME) tool was created to balance an updated load forecast (performed by the NYISO) with generation commitment from the Day-Ahead market plus energy bidding in the Balancing Market. Exhibit 4.1 shows how the total generation requirement for the Balancing Market is defined.

After the Day-Ahead schedule is published, and up to 90 minutes prior to each dispatch hour, Eligible Customers and Suppliers may:

- submit additional bids to the NYISO for Energy from:
 - % Generators or other resources that are dispatchable within five minutes and that can be included in and respond to the NYISO's SCD program
 - % fixed block Energy (non-dispatchable) Bids available for the next hour lower their Bid Price for Energy from Generators committed by the NYISO in the Day-Ahead Market
- change their Bid Price for additional Energy from Generators that were committed by the NYISO in the Day-Ahead Market
- modify Bilateral Transactions that were accepted by the NYISO in the Day-Ahead schedule
- propose new Bilateral Transactions
- submit Bids to purchase Energy from the Real-Time Market.

The Bids submitted up to 90 minutes before the dispatch hour are referred to as Hour-Ahead-Bids. The NYISO uses the Balancing Market Evaluation 90 minutes before each dispatch hour to determine schedules for the LBMP Market and Bilateral Transactions including Exports, Imports and Wheels-Through. In developing these schedules, the BME will consider updated Load forecasts and evaluate the impact on reliability of the proposed schedules and commitments. The BME will adjust firm Bilateral Transaction schedules based on Incremental and Decremental Bids and all Generator schedules, based on their Bids, to maintain reliability. The BME will not determine any prices but will schedule on a least total Bid Production Cost basis.

A generator which needs to remain on-line past the end of the Dispatch Day or Dispatch Hour to fulfill its minimum run time will have the responsibility to structure its bid in such a way as to continue to be economic as evaluated by SCUC or BME, respectively, so it is scheduled to remain on-line.

If the Market Participant wishes to schedule or run its own generation for the transaction, it must submit a decremental bid that it expects to be below either the HAM LBMP at the POI (for non-dispatchable generators) or the real-time LBMP at the POI (for dispatchable generators). To the extent the HAM or real-time LBMPs exceed the decremental bid, the generator will support the transaction.

4.1.3 Interchange Scheduling

The Interchange Scheduling (IS+) function allows NYISO personnel to monitor ongoing energy transactions. These transactions are bids accepted in either the Day-Ahead scheduling process or the BME scheduling/dispatch process. The IS+ program provides facilities for entering transactions and reviewing existing transaction information. The following basic calculations are performed:

- **Desired Net Interchange (DNI):** This calculation provides the net interchange schedule between the NY Control Area and the External Control Areas. This is the net sum of all the External transactions.
- **Instantaneous Net Interchange:** This is the net of all external transaction schedules, but varies with time over the hour to allow for the ramping of transactions.

DNIs which reflect scheduled energy interchanges between the NYCA and neighboring Control Areas will need to be coordinated and verified by neighboring Control Areas as specified in interconnection agreements between the NYISO and other Control Areas.

4.1.4 OASIS Posting

The **NYISO Manual for Market Information Systems** describes the scheduling data that is posted on the OASIS.

4.1.5 Scheduling and Curtailment of Bilateral Transactions

Bilateral transactions may be requested as Firm or Non-Firm. A Firm transaction is willing to pay congestion, so that an accepted Day-Ahead Firm transaction receives a forward contract for its schedule and Transmission Usage Charge (TUC = Congestion Price + Incremental Losses). A Non-Firm transaction is unwilling to pay congestion, so its schedule is advisory only and subject to curtailment.

Firm transactions from a source (specific bus for which a generation shift factor exists and at which LBMP is calculated) to a sink (load zone) will be scheduled as financial bilateral transactions, provided they result in a physically feasible flow-based solution (i.e., generation matches load energy with no security violations). A load being supplied by a Firm transaction will have a physical delivery schedule (subject to possible curtailment under emergency conditions or for wheel-throughs to relieve a security violation) equal to the transaction amount. However, a generator supplying a Firm bilateral transaction will have an operational physical schedule based upon its decremental price bid. Thus, a load being served by a Firm bilateral transaction will have a financial

transaction schedule; but the generator supplying that transaction will have a separate operational physical schedule.

In general, under NYISO/LBMP operation, if the a Firm bilateral transaction is physically cut/curtailed, its financial schedule will remain intact. Thus, generation may be dispatched down, and DNI schedules may be reduced (as is currently done to cut transactions), but the financial obligations will remain.

If a Non-Firm transaction is physically cut/curtailed, the transaction is eliminated. As a default, except in the case of wheel-throughs, a generator previously supplying a cut Non-Firm transaction will bid into the LBMP Energy Market, and a load previously being supplied by a Non-Firm transaction will be served by the LBMP Energy Market.

Self Cancellation (Withdrawal) of Bilateral Transactions

A supplier and load may agree to reduce or eliminate a bilateral transaction previously scheduled in the Day-Ahead Market. In this case, they must submit a revised schedule through BME. The full Day-Ahead Transmission Usage Charge (TUC) will still accrue. The change in schedule will be settled with Real-Time LBMP Energy and/or the Real-Time TUC.

The following tables will describe the conditions listed below:

- Exhibit 4.1 Scheduling and Physically Curtailing Firm Bilateral Transactions
- Exhibit 4.2 Scheduling and Curtailment of Non-Firm Bilateral Transactions
- Exhibit 4.3 NYISO Curtailment Steps
- Exhibit 4.4 Re-Instatement of Curtailed bilateral Transactions
- Exhibit 4.5 Transaction Conversion and Curtailment Notifications Required by NYISO
- Exhibit 4.6 Scheduling and Dispatching LBMP Suppliers and Loads

Exhibit 4.1

Scheduling and Physically Curtailing Firm Bilateral Transactions

Summary Table								
Scheduling and Physically Curtailing Firm Bilateral Transactions								
	Internal Source				External Source			
	Internal Load		External Load (Export)		Internal Load (Import)		External Load (Wheel-Through)	
	(1) Financial Transaction Schedule	(2) Operational Physical Schedule	(3) Financial Transaction Schedule	(4) Operational Physical Schedule	(5) Financial Transaction Schedule	(6) Operational Physical Schedule	(7) Financial Transaction Schedule	(8) Operational Physical Schedule
A. Day-Ahead	Up to Full Requested Amount for Fixed MW Loads*; or Based on Day-Ahead Bids for Price Capped Loads*	Source Scheduled up to Day-Ahead Financial Schedule based on Decremental Bids	Up to Full Requested Amount for Fixed MW Loads*; or Based on Day-Ahead Bids for Price Capped Loads*	Source Scheduled Up to Day-Ahead Financial Schedule based on Dec Bids with Total Exports Limited to ATC	Up to Full Requested Amount for Fixed MW Loads*; or Based on Day-Ahead Bids for Price Capped Loads*	Up to Day-Ahead Financial Schedule with Total Imports Limited to ATC w/Schedules based on Dec Bids	Up to Full Requested MW based upon Source's Day-Ahead Dec Bid with Total Imports and Exports Limited to Applicable ATC. Wheel-Throughs may not bid Price Capped Loads	Same as Financial Transaction Schedule
B. Hour-Ahead	Same as above for comparable Day-Ahead cases except using Hour-Ahead bilateral schedule requests and no Forward Contract is issued.							
C. Day-Ahead or Hour-Ahead Scheduled Supplier is Uneconomic in Real-Time	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed	Supplier Dispatched Down in Real-Time	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed.	Supplier Dispatched Down in Real-Time. No change in DNI takes place.	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed.	No Re-Dispatch of Supplier and no change in DNI takes place.	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule and TUC are also Fixed.	No Re-Dispatch of Supplier and no change in DNI takes place.
D. Security Violation Occurs in Real-Time	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed	Supplier Dispatched Down and/or decommitted in Real-Time if Needed. No Change takes place in Load Schedule in Real-Time unless Load Curtailment is invoked under Emergency Procedures	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed.	Supplier Dispatched Down and/or decommitted in Real-Time if Needed. No Change takes place in Load Schedule and DNI in Real-Time unless Energy Transaction is curtailed under Emergency Procedures	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed.	Supplier Re-Scheduled Down ("Curtailed") in Real-Time if Needed; DNI also changed. No Change in Load Schedule in Real-Time unless Load Curtailment is invoked under Emergency Procedures	Day-Ahead TUC refunded if curtailed	Supplier Re-Scheduled Down ("Curtailed") and Energy Transaction is curtailed in Real-Time if Needed; DNI changed to reflect both curtailments.
E. Day-Ahead or Hour-Ahead Schedule is Self Canceled (Withdrawn) by Supplier (Source) or LSE (Sink)	Day-Ahead Schedule and TUC are Fixed; Hour-Ahead Schedule is Fixed	Source and Sink update schedule in BME	Day-Ahead Schedule and Price are Fixed; Hour-Ahead Schedule is Fixed.	Source and Sink update schedule in BME. DNI is changed.	Day-Ahead Schedule and Price are Fixed; Hour-Ahead Schedule is Fixed.	Source and Sink update schedule in BME. DNI is changed.	Day-Ahead Schedule and Price are Fixed; Hour-Ahead Schedule is Fixed.	Source and Sink update schedule in BME. DNI is changed.
Financial Transaction Schedule must result in a physically feasible flow-based solution in SCUC or BME; determination of Firm transactions that can not be scheduled will be based on the Sources' Decremental Bids. ATC = Available Transfer Capability of applicable transmission flow-gate. Day-Ahead supplier scheduled for less than its scheduled transactions buys replacement energy at its bus at Day-Ahead LBMP (transaction pays Day-Ahead TUC). Day-Ahead supplier that is off-schedule in supporting a scheduled transaction settles up with Real-Time Energy LBMP. Day-Ahead Transmission Customer load that is off-schedule in its scheduled transaction settles up with Real-Time TUC.								

Exhibit 4.2

Scheduling and Curtailment of Non-Firm Bilateral Transactions

Both SCUC and BME perform a screening function by looking ahead and not "scheduling" a Non-Firm Bilateral Transaction if it anticipated to contribute to positive congestion.

Scheduling and Curtailment of Non-Firm Bilateral Transactions	
Condition	Results
Non-Firm is anticipated by SCUC or BME to contribute to Negative Congestion	Non-Firm is "scheduled" on advisory basis subject to future curtailment. Not paid for negative congestion as Firm Transaction would be.
Non-Firm is not anticipated by SCUC or BME to contribute to Positive Congestion	Non-Firm is partially or fully "scheduled" on advisory basis subject to future curtailment.
Non-Firm is anticipated by SCUC or BME to contribute to Positive Congestion	Non-Firm is not scheduled. Non-Firm previously "scheduled" Day-Ahead by SCUC is partially or fully "unscheduled" by BME.
Non-Firm transaction that was previously "scheduled" by SCUC or BME actually contributes to Positive Congestion in Real-Time for one SCD interval	<p>If the Non-Firm transaction is an Internal, Import or Export transaction, no physical curtailment will be invoked. Rather, the NYISO will partially or fully convert the generator and load to Real-Time LBMP Energy Market Participants (with notifications made) for the remainder of their "schedule" (rest of day or hour).</p> <p>If the Non-Firm transaction is a Wheel-Through transaction, the NYISO will partially or fully physically curtail the transaction for both the Source and Sink with appropriate DNI schedule changes (with notifications made) for the remainder of its "schedule" (rest of day or hour).</p>
Generator or load associated with an Import or Export Non-Firm Transaction (that was previously converted to the Real-Time LBMP Energy Market due to positive congestion) contributes to an Operating Security Violation occurs	DNI schedule is changed to reduce or eliminate the import and/or export.
NYISO initiates Backup Dispatch System (BDS)	All Non-Firm previously "scheduled" by SCUC or BME is fully physically curtailed for the remainder of their "schedule" (rest of day or hour)

Exhibit 4.3

NYISO Curtailment Steps

NYISO Curtailment Steps		
Corresponding TLR Level	Condition	Action
TLR 1	Congestion is anticipated	Issue notification of potential problems time permitting
TLR 2	Congestion is projected	Hold Non-Firm Interchange Transactions at current levels to prevent Operating Security Limit Violation
TLR 3	Congestion Occurs	Immediately convert generators and loads associated with Internal, Import and/or Export Non-Firms that are contributing to positive congestion to LBMP Energy market participants. Also immediately physically curtail (by changing DNI schedules) Wheel-through Non-Firm transactions that are contributing to positive congestion.
	Operating Security Violation Occurs	Partially or fully physically curtail External Non-Firms (Imports, Exports and Wheel-Throughs) using IS+ by changing DNI schedules to: (1) curtail those in lowest NERC Priority first; (2) curtail within each NERC Priority based on Decremental Bids; and (3) prorate curtailment if Decremental Bids within a Priority are equal.
	Operating Security Limit Violation	Curtail (through DNI schedule change) unscheduled loop-flow Non-Firm transactions contributing to the violation starting with those with the lowest NERC Priority first.
TLR 4	Operating Security Limit Violation	Perform Re-Dispatch
TLR 5	Operating Security Limit Violation Remains Even After Re-Dispatch	Curtail External Firms Until Constraint is Relieved by: (1) curtailing based on Decremental Bids; and (2) prorating curtailment if Decremental Bids are equal.

Exhibit 4.4

Re-Instatement of Curtailed Bilateral Transactions

Re-Instatement of Physically Curtailed Transactions	
Type of Curtailment	Re-Instatement
Non-Firm transaction previously "scheduled" (on advisory basis) by SCUC or BME that is curtailed in Real-Time	Must Re-Submit Schedule Request thru BME (may already be in cue)
Firm Inter-Control Area transaction previously scheduled by SCUC that is physically curtailed (DNI schedule change) by BME or in Real-Time to solve a security violation	Has option of: (1) automatically being re-evaluated by BME for re-scheduling, and receiving Day-Ahead TUC refund for the duration of the curtailment; or (2) canceling the originally scheduled transaction for the remainder of the day, receiving a Real-Time TUC true up, and resubmitting a new schedule request thru BME if and when desired.
Firm Inter-Control Area transaction previously scheduled by BME that is physically curtailed (DNI schedule change) in Real-Time to solve a security violation	May Re-Submit Schedule Request thru BME (may already be in cue)
Transaction previously scheduled by SCUC or BME itself canceled by Supplier or LSE	May Re-Submit Schedule Request thru BME (may already be in cue)

Exhibit 4.5

Transaction Conversion and Curtailment Notifications Required by NYISO

Transaction Conversion and Curtailment Notifications Required by NYISO	
Action	Notification
Conversion of generators and loads associated with Internal, Import and/or Export Non-Firms to LBMP Energy market participants (TLR).	Automatic E-Mail to Source and Sink
Physical curtailment (through DNI schedule change) of Inter-Control Area Non-Firm transactions (TLR 2c)	Automatic E-Mail to Source and Sink; Phone call to the affected Control Areas (which in turn should notify the Source and Sink); Phone call to affected Transmission Provider(s) for exports; otherwise E-Mail to affected Transmission Providers
Physical curtailment (through DNI schedule change) of unscheduled loop-flow Non-Firm transactions (TLR 3)	Phone call to the affected Control Areas (which in turn should notify the Source and Sink)
Physical curtailment (through DNI schedule change) of Firm External Source to Internal Sink Transaction (Import)	Phone call to affected Control Area (which in turn should notify the Source), and E-Mail to affected Transmission Provider(s) and the Sink
Physical curtailment (through DNI schedule change) of Firm Internal Source to External Sink Transaction (Export)	Phone call to affected Control Area (which in turn should notify the Sink), and phone call to affected Transmission Provider (which in turn should notify the Source)
Physical curtailment (through DNI schedule change) of Firm External Source to External Sink Transaction (Wheel-Through)	Phone call to the affected Control Areas (which in turn should notify the Source and Sink), and E-Mail to affected Transmission Provider(s)
Source = Supplier at Point of Injection (POI) Sink = Load at Point of Withdrawal (POW)	

4.1.6 Scheduling and Dispatching LBMP Suppliers and Loads

Exhibit 4.6

Scheduling and Dispatching LBMP Energy Market Suppliers and Loads								
	Internal Suppliers		Internal Loads		External Suppliers (Import with Marcy as Point-of-Withdrawal - POW)		External Loads (Export with Marcy as Point-of-Injection - POI)	
	(1) Financial Schedule	(2) Operational Schedule	(3) Financial Schedule	(4) Operational Schedule	(5) Financial Schedule	(6) Operational Schedule	(7) Financial Schedule	(8) Operational Schedule
A. Day-Ahead	Based on Day-Ahead Incremental Bids	Same as Day-Ahead Financial Schedule	Up to Full Requested Amount for Fixed MW Loads*; or Based on Day-Ahead Bids for Price Capped Loads*	Same as Day-Ahead Financial Schedule	Based on Day-Ahead Incremental Bid with Total Imports Limited to ATC	Same as Day-Ahead Financial Schedule	Up to Full Requested Amount for Fixed MW Loads*; or Based on Day-Ahead Bids for Price Capped Loads*. Total Exports Limited to ATC.	Same as Day-Ahead Financial Schedule
B. Hour-Ahead	Based on Hour-Ahead Incremental Bids	Dispatched in SCD	Not Available		Based on Hour-Ahead Incremental Bids with Total Imports Limited to ATC	Same as Hour-Ahead Financial Schedule	Up to Full Requested Amount for Fixed MW Loads*; or Based on Hour-Ahead Bids for Price Capped Loads* with Total Exports Limited to ATC	Same as Hour-Ahead Financial Schedule
C. Day-Ahead or Hour-Ahead Supplier is Uneconomic in Real-Time	Day-Ahead Schedule and Price are Fixed	Supplier Dispatched Down in Real-Time; settled in Real-Time	Day-Ahead Schedule and Price are Fixed		Day-Ahead DNI Schedule and Price are Fixed	No Re-Dispatch of Supplier and no change in DNI takes place.	Day-Ahead DNI Schedule and Price are Fixed; Hour-Ahead DNI schedule are Fixed	
D. Security Violation Occurs in Real-Time	Day-Ahead Schedule and Price are Fixed	Supplier Dispatched Down and/or de-committed in Real-Time if Needed	Day-Ahead Schedule and Price are Fixed	No Change takes place in Load Schedule in Real-Time unless Load Curtailment is invoked under Emergency Procedures	Day-Ahead Schedule and Price are Fixed; Hour-Ahead Schedule is Fixed.	Supplier Re-Scheduled Down ("Curtailed") in Real-Time if Needed; Also DNI is changed	Day-Ahead Schedule and Price are Fixed; Hour-Ahead Schedule is Fixed.	No Change in Load Schedule in Real-Time unless Energy Export is Curtailed under Emergency Procedures; then DNI is also changed
E. Day-Ahead or Hour-Ahead Schedule is Self Canceled by Supplier or LSE	Day-Ahead Schedule and Price are Fixed	Supplier updates schedule in BME; NYISO updates SCD or Outage Scheduler	Day-Ahead Schedule and Price are Fixed		Day-Ahead Schedule and Price are Fixed	Supplier updates schedule in BME; NYISO updates DNI and SCD or Outage Scheduler	Day-Ahead Schedule and Price are Fixed	LSE updates schedule in BME; NYISO updates DNI
<p>* Financial Schedule must result in a physically feasible flow-based solution in SCUC or BME. ATC = Available Transfer Capability of applicable transmission flow-gate. Internal Suppliers are dispatchable in Real-Time. External Suppliers are pre-schedulable Day-Ahead or Hour-Ahead, but not dispatchable in Real-Time. Marcy is used as a reference bus where noted.</p>								

4.2 SCHEDULING OPERATIONS PROCEDURES

These procedures are intended for the scheduling operations that occur during the Dispatch Day, but prior to real-time operations which occur during the Operating Hour. There are two processes:

- Periodic Hour-Ahead Scheduling
- A periodic Supplemental Scheduling

4.2.1 Hour-Ahead Scheduling

Hour-ahead scheduling is performed on a periodic basis and is completed at least 30 minutes prior to the beginning of the next hour.

NYISO Actions:

The NYISO performs the following:

1. Updates the dispatch model based on the latest outage schedule.
2. Updates the load forecast based on the latest load information.
3. Accepts the 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.
7. Executes the Balancing Market Evaluation (BME) using SCUC with a three hour horizon.
8. Selects feasible non-firm transactions from the day-ahead and hour-ahead bids, based on the updated ATCs from the BME.
9. Posts the following results:
 - approved hour-ahead non-firm transactions
 - revised generator schedules for the next hour
 - revised firm transaction schedules for the next hour

Market Participant Actions:

Market Participants shall request the NYISO for any changes in generation, load, and transactions schedules.

4.2.2 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 Transmission Owners.

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) Shared Activ of Reserves and/or External Emergency Purchases	(R8) Unexpired Unaccepted Day-Ahead Bids	(R9) Unexpired Unaccepted Hour- Ahead Bids	(R10) Involuntary Load Curtailment
On-Control or On Dispatch or Off- Dispatch	On-Control	On- Dispatch or Off- Dispatch	On- Dispatch or Off- Dispatch and Off-Line but Available	On- Dispatch or Off- Dispatch or Off-Line but Available	On- Dispatch or Off- Dispatch or Off-Line but Available	Invoked Manually	Off- Dispatch or Off-Line but Available	Off- Dispatch or Off-Line but Available	Invoked Manually
<p>FRED = Forecast Required Energy for Dispatch FRED = capacity to supply energy to meet NYISO forecasted load that is in excess of the sum total of Day-Ahead load bids. FRED each hour should at least equal... NYISO NYCA Load Forecast minus Sum of Day-Ahead Internal Load Bids and Bilateral Schedules with Internal Sinks.</p>									

Existing Real-Time Non-SRE Resource Adjustments (Not Necessarily in Order Shown)

- 1) AGC moves "On-Control" resources from (R2) to (R1) and from (R1) to (R2) to maintain regulation.
- 2) SCD moves "On-Dispatch" (On-Line or Off-Line) resources between (R1), (R2), (R3), (R4), (R5) and (R6) to balance load with generation and maintain reserves.
- 3) If SCD can't solve rapidly enough for an energy deficiency, Reserve Pickup is invoked to move some "On-Dispatch" and "Off-Dispatch" 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. During a Reserve Pickup - Security Constrained Dispatch (SCD) is used to convert 10 Minute Operating Reserve to energy using Emergency Response Rates for some or all suppliers providing operating reserve (with their Upper SCD Limit changed to their Upper Operating Limit) 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 8 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; if the Pool Control Error (PCE) is greater than $3L_d$ (approximately 200 MW); 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 SCD basepoint (i.e., over-generation is encouraged and rewarded). Reserve Pickup will terminate 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.

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

Shared Activation of Reserves is utilized for a condition in which a number of neighboring control areas perform 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 payback.

- 5) If Steps #3, #4, and/or #5 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 Desired Net Interchanges (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.

- 6) If Reserve Pickup is (or is expected to be) insufficient, Max Gen Pickup may be invoked manually through phone notifications to Transmission Owners to move "On-Dispatch" and "Off-Dispatch" 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.

A Maximum Generation Pickup is an emergency energy pickup as directed by the NYISO outside an SCD run. At the NYISO's judgement, 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.

- 7) 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. This may also include curtailment of external transactions.

- 8) If a reliability violation continues, External Emergency Purchases may be invoked to move resources from (R7) to (R1).
- 9) 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.
- 10) As a follow-up to the above steps, subsequent SCD runs will move Internal "On-Dispatch" resources (R5) and (R6) into (R1) to replenish diminished regulation and 10 minute reserves.

If the data indicates that the NY Control Area will be short of Operating Reserve, the NYISO shall perform the actions described for supplemental commitment and scheduling (see Sections 4.2.3 and 4.2.4 of this manual).

4.2.3 Supplemental Commitment Process

When certain conditions occur, the NYISO must reschedule generation and Ancillary Services and perform the following:

1. If there is a loss of transmission or generation facility and an Emergency results, then invoke Emergency procedures (see **NYISO Manual for Emergency Operations**) and estimate the duration (go to Item 4 below).
2. If there is a loss of transmission or generation facility and there is no Emergency then estimate the duration (go to Item 4 below)
3. If there is a NYISO load forecast error then estimate the duration (go to Item 4 below).
4. After the NYISO estimates the duration:
 - If there is a generation shortage or transmission constraint violation on the ISO Secured Transmission System, then perform Supplemental Resource Evaluation (SRE) and post the Supplemental Schedules.
 - If there is an Ancillary Service Deficiency then procure Supplemental Ancillary Services and post the Supplemental Services Schedules.
5. If there is a Day-Ahead Regulation supply deficiency, then procure Supplemental Ancillary Services and post the Supplemental Services Schedules.

6. If a Reserve deficiency has been detected, then procure Supplemental Ancillary Services and post the Supplemental Services Schedules.

4.2.4 Supplemental Resource Evaluation

BACKGROUND

SCUC, BME, and SCD Time-Frames and Functions

Commitment refers to the ISO scheduling a generator that bid into the LBMP market to start-up to run at or above its minimum generation level, and thereby be guaranteed recovery of start-up and minimum generation bid prices for the remainder of the day.

SCUC commits resources for the next day, and Balancing Market Evaluator (BME) can commit resources for the next hour. BME begins (90 minutes before the operating hour) with SCUC Day-Ahead generator and load schedules, non-expired/non-accepted/non-updated BME (but not SCUC) bids, updated or new BME bids, updated transaction requests, updated load forecasts, updated outage schedules, and updated status changes. It then uses the SCUC software to evaluate conditions for the next three hours, performs a supplemental commitment (if needed) optimized for the next operating hour, and schedules newly requested transactions for the next operating 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 contracts for non-synchronized reserves. However, SCD will consider start-up costs for generators with short start-up times (eg., Gas Turbines). A generator started by SCD will be assumed to run at least one hour, so that its start-up bid price will be spread over one hour and added to its bid energy price in SCD. 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.

Need for Supplemental Resource Evaluation (SRE)

A method to commit supplemental resources at other times is also needed. This includes: (a) deficiencies anticipated two to seven days ahead which will require long lead time generators to start-up in advance (i.e., too early for SCUC); (b) Day-Ahead deficiencies anticipated after SCUC has begun or completed its Day-Ahead evaluation (i.e.: too late for SCUC); (c) In-Day deficiencies anticipated more than 90 minutes ahead (i.e.: too early for BME to run); or (d) Real-Time deficiencies that

occur after BME has begun or completed its Hour-Ahead evaluation (i.e.: too late for BME to run) and SCD/Reserve Pick-Up has run. Similarly, a method to decommit resources is also needed.

SRE Objectives

The primary objective of SRE Procedures should be: (1) effectiveness in eliminating resource deficiencies, and (2) execution simplicity (i.e., "user friendliness"; with due regard for economic efficiency. SRE procedures should answer these two general questions: (1) How do you know when resources need to be moved from one resource category to another? and (2) How do you decide which resources get moved from one category to another?

Minimal Use of SRE

To the extent feasible, the need for the Supplemental Resource Evaluation described above should be minimized. This may be accomplished through the development of new techniques such as starting the execution of SCUC later, executing supplemental SCUCs, and/or executing BME that looks further ahead.

SRE Pre-Calculated Resource Replacement Charts

The NYISO will prepare pre-calculated SRE electronic charts (rather than paper) for available resource replacements. The charts would be computed and updated from current input to (but not output from) SCUC and BME. They would consist of a matrix of available resources sorted by:

- a) Type (i.e.: energy (R1), regulation (R2), operating reserves (R3)/(R4)/(R5), and FRED (R6)
- b) Location
- c) Start-up time
- d) Availability in MW by hour.

Within each of these categories, resources would be sorted in order of average price for a given number of hours expected to be required. The price would include start-up and minimum generation price bids, and would take minimum run times into consideration (an example is included below).

Bid Changes

If a resource is selected by SRE and committed for a designated number of hours of operation, it may not raise (but it may lower) its bid price for energy for the duration of that commitment.

Use of Day-Ahead and Hour-Ahead Bids for SRE

Unexpired/Unaccepted Day-Ahead Bids (Resource R8) and Unexpired/Unaccepted Hour-Ahead Bids (Resource R9) are distinct and need to be treated separately, as follows:

- 1) Three types of supplemental resource bids can exist:
 "D": Day-Ahead Market Bids which are unexpired and unaccepted.
 "H": Hour-Ahead Market Bids which are unexpired and unaccepted.
- 2) Unexpired Day-Ahead Market Bids automatically expire when the BME Market closes (i.e., 90 minutes before the Dispatch Hour).
- 3) Bids will be used in commitments as follows:

Commitment	Bid Used
2 to 7 Day-Ahead SRE Commitment	"D"
SCUC	"D"
Post-SCUC Day-Ahead SRE Commitment	"D"
Pre-BME In-Day SRE Commitment	"D"
BME	"H"
Post-BME/Pre-Dispatch Hour SRE Commitment	"H"
SCD and Reserve Pick-Up Real-Time Commitments	"H"
Real-Time SRE Commitment	"H"

- 4) It is important to understand that so-called "Day-Ahead" Bids "D" may actually be submitted during the Dispatch Day for use by SRE during that Dispatch Day. Also, as shown in the above chart, Day-Ahead Bids "D" and Hour-Ahead Bids "H" **are not** applicable at the same time.

Resource Monitoring Procedures

- 1) **Monitor Regulation/Reserve Levels** - The NYISO should monitor the level of regulation and reserve resources available to meet anticipated NYCA requirements.
- 2) **Monitor Adequacy of Bids** - The NYISO should 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 should post an announcement to market participants to solicit additional bids.

4.2.5 General SRE Commitment Procedures

- 1) SRE should only be used to address resource deficiencies; it should not be used solely to reduce costs.
- 2) **Initiate SRE** - The NYISO should 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 (in Section 4.2.2) are (or are
anticipated to be) inadequate,
and if the problem is outside the windows of evaluation for both
SCUC and BME.

The resource deficiency may be a result of: (a) the subsequent loss of an energy, regulation, or reserve resource; (b) the loss of a transmission facility; (c) a load forecasting anomaly; and/or (d) a resource deficiency forecast but not evaluated by BME.

More detailed steps are subsequently listed below to specifically describe Day-Ahead, In-Day, and Real-Time SRE procedures.

- 3) **Define Replacement Required** - Based on the deficiency, the NYISO will determine:
 - a. Type of replacement required (i.e., regulation capability, operating reserve capability, or energy resource). In general, as shown in the table below, the replacement to be selected should match the resource lost.
 - b. Location that the replacement is needed
 - c. How soon the replacement is required
 - d. Amount in MW needed by hour
 - e. How long the replacement will be required.

SRE Replacement Decision	
Type of Resource Deficiency	Type of Replacement Required (To be Selected from Resources R8 or R9)
(R1) Energy Resource Deficiency	(R1) Energy in Acceptable Location
(R2) Regulation Resource Deficiency	(R2) Regulation in Acceptable Location
(R3)/(R4)/(R5) Operating Reserve Deficiency	(R3)/(R4)/(R5) Same Kind Replacement of Operating Reserves in Acceptable Location
(R6) FRED Deficiency	(R6) FRED - Acceptable Location

- 4) **Select Replacement Resources** - Based on the requirements determined above, the NYISO will select replacement resources from the pre-calculated SRE charts for available unexpired/unaccepted resources (see example chart further below).

- 5) **Note Exceptions** - If the NYISO's selection for supplemental resources diverges from the merit order indicated on the applicable chart, the NYISO will need to formally justify and log the exception.

- 6) **Solve Real-Time, In-Day, and Day-Ahead Deficiencies First, Second, then Third** - In the case in which SCUC has begun or already completed its execution, and a combination of Real-Time, In-Day and/or Day-Ahead resource deficiencies are subsequently anticipated, SRE should be used to solve any Real-Time problems independently first. Conditions should then be re-evaluated, and if needed, a second SRE should be used to solve any In-Day problems next. This should be followed, if necessary, by another re-evaluation and a third SRE to solve any remaining Day-Ahead problems.

- 7) **Allow But Don't Guarantee "Self"-Replacement by Resource Suppliers** - A resource that is financially obligated to serve a bilateral transaction or the LBMP spot market may wish to procure its own replacement if possible. In this case, it would need to arrange a Contract-For-Differences (CFD) contract with another resource that would agree to bid into the LBMP market. If that replacement resource were selected through SRE, the original resource would reach a side settlement with it. While the NYISO will not interfere with this type of arrangement, it will also be under no obligation to help facilitate this arrangement by delaying the implementation of SRE. Alternately, the SRE may

select another source for the replacement; presumably because it is a more economical and/or more effective replacement choice.

4.2.6 Two to Seven Day Ahead SRE Procedures

A two to seven day ahead SRE should be performed if operating capacity deficiencies are anticipated two to seven days ahead which will require long lead time generators to start-up in advance, i.e., too early for SCUC.

- 1) **Post Announcement** - If a Pre-SCUC SRE is anticipated, and if time permits, the ISO should post an announcement to market participants that a Supplemental Resource Evaluation is planned, and that additional resource bids are being solicited.

- 2) **Two to Seven Day-Ahead Operating Capacity** - If any deficiencies in Operating Capacity Resources are expected to exist that require long lead-time start-ups (longer than Day-Ahead):
 - a. Determine the amount, location and type of Supplemental Resources required. Type should be the same kind of resource that is deficient.

 - b. Determine how soon the Supplemental Resource will be needed.

 - c. Determine how long, i.e., the Supplemental Commitment Period (SCP) in hours up to the end of the Dispatch Day the Supplemental Resource is likely to be needed.

 - d. Select and schedule the move of Supplemental

 - e. Resources from available Resource Category (R8) to Category (R6) on a least cost basis where least cost equals lowest composite start-up and minimum generation costs (if start-up will be required) spread over the SCP for resources that will be available soon enough to meet the need. In cases in which all other factors are equal, the bid energy price will be used as a tie breaker.

- 3) **SCUC Re-Adjustment** - Following Step #2 above, a subsequent SCUC run may re-adjust resources.

4.2.7 Post-SCUC Day-Ahead SRE Procedures

A Day-Ahead SRE would be performed after SCUC has begun its Day-Ahead evaluation when it becomes too late for SCUC to run.

- 1) **Post Announcement** - If a Day-Ahead SRE is anticipated, and if time permits, the ISO should post an announcement to market participants that a Supplemental Resource Evaluation is planned, and that additional resource bids are being solicited.

- 2) **Day-Ahead Regulation or Reserve Deficiency** - If any deficiencies in Resources (R2), (R3), (R4), (R5), and/or (R6) are expected to exist Day-Ahead after SCUC execution begins and after allowing for Regular Realtime Non-SRE Resource Adjustment Steps #2 through #7 (Section 4.2.2):
 - a. Determine the amount, location and type of Supplemental Resources required. Type should be the same kind of resource that is deficient.
 - b. Determine how soon the Supplemental Resource will be needed.
 - c. Determine how long, i.e., the Supplemental Commitment Period (SCP) in hours up to the end of the Dispatch Day, the Supplemental Resource is likely to be needed.
 - d. Select and schedule the move of Supplemental Resources from Resource Category (R8) to Categories (R2), (R3), (R4), (R5) and/or (R6) on a least cost basis where least cost equals lowest composite availability, and start-up costs and minimum generation costs (if start-up will be required) spread over the SCP for resources that will be available soon enough to meet the need. In cases in which all other factors are equal, the bid energy price will be used as a tie breaker.

- 3) **Day-Ahead Energy Deficiency** - If an energy deficiency (R1) is expected to exist Day-Ahead (after SCUC executes) which would result in a reserve deficiency after allowing for Existing Realtime Non-SRE Resource Adjustments:
 - a. Determine the amount and location of Supplemental Resources required to eliminate the energy deficiency.
 - b. Determine how soon the Supplemental Resource will be needed.
 - c. Determine how long, i.e., the Supplemental Commitment Period (SCP) in hours up to the end of the Dispatch Day, the Supplemental Resource is likely to be needed.

- d. Select and schedule the move of Supplemental Resources from Resource Category (R8) to (R1) on a least cost basis where least cost equals lowest composite energy and start-up costs (if start-up is required) spread over the SCP for resources that will be available soon enough to meet the need.
- 4) **BME Re-Adjustment** - Following Steps #2 and/or 3 above, subsequent BME runs may re-adjust resources.

4.2.8 Pre-BME In-Day SRE Procedures

An In-Day SRE would be performed more than 90 minutes ahead when it is too soon for BME to run.

- 1) **Post Announcement** - If an In-Day SRE is anticipated, and if time permits, the ISO should post an announcement to market participants that a Supplemental Resource Evaluation is planned, and that additional resource bids are being solicited.
- 2) **In-Day Regulation or Reserve Deficiency** - If any deficiencies in Resources (R2), (R3), (R4), (R5), and/or (R6) are expected to exist In-Day more than 90 minutes ahead after allowing for Regular Realtime Non-SRE Resource Adjustments:
 - a. Determine the amount, location and type of Supplemental Resources required. Type should be the same kind of resource that is deficient.
 - b. Determine how soon the Supplemental Resource will be needed.
 - c. Determine how long, i.e., the Supplemental Commitment Period (SCP) in hours up to the end of the Dispatch Day, the Supplemental Resource is likely to be needed.
 - d. Select and schedule the move of Supplemental Resources from Resource Category (R8) to Categories (R2), (R3), (R4), (R5) and/or (R6) on a least cost basis where least cost equals lowest composite availability, and start-up costs and minimum generation costs (if start-up is required) spread over the SCP for resources that will be available soon enough to meet the need. In cases in which all other factors are equal, the bid energy price will be used as a tie breaker.

3) **In-Day Energy Deficiency** - If an **energy deficiency (R1)** is expected to exist In-Day more than 90 minutes ahead which would result in a reserve deficiency after allowing for Regular Realtime Resource Adjustments:

- a. Determine the amount and location of Supplemental Resources required to eliminate the energy deficiency.
- b. Determine how soon the Supplemental Resource will be needed
- c. Determine how long, i.e., the Supplemental Commitment Period (SCP) in hours up to the end of the Dispatch Day the Supplemental Resource is likely to be needed.
- d. Select and schedule the move of Supplemental Resources from Resource Category (R8) to (R1) on a least cost basis where least cost equals lowest composite energy and start-up costs (if start-up is required) spread over the SCP for resources that will be available soon enough to meet the need.

4) **BME Re-Adjustment** - Following Steps #2 and/or 3 above, subsequent BME runs may re-adjust resources.

4.2.9 Post-BME and/or Real-Time SRE Procedures

A Post-BME and/or Real-Time SRE would be performed in Real-Time when it is too late for BME to run.

- 1) **Optionally Post Announcement** - If a Post-BME and/or Real-Time SRE is needed, the NYISO may post (if time permits) but will not be obligated to post an announcement to market participants that a Supplemental Resource Evaluation is being invoked.
- 2) **Real-Time Regulation or Reserve Deficiency** - If any deficiencies in Resources (R2), (R3), (R4), (R5), and/or (R6) are expected to exist in Real-Time after Regular Realtime Non-SRE Resource Adjustments Steps #1 through #7 (Section 4.2.2) have been invoked:
 - a. Determine the amount, location and type of Supplemental Resources required. Type should be the same kind of resource that is deficient.
 - b. Select and move Supplemental Resources from Category (R9) to Categories (R2), (R3), (R4), (R5) and/or (R6) on a least cost basis where least cost equals lowest composite availability, and start-up and minimum generation costs (if start-up

is required) spread over 1 hour (in cases in which all other factors are equal, the bid energy price will be used as a tie breaker) as follows:

1st - Least Cost Supplemental Resources
Available in 10 minutes.

2nd - Least Cost Supplemental Resources
Available in 30 minutes if additional
Supplemental Resources are still
needed.

3rd - Least Cost Supplemental Resources
Available in Greater Than 30
minutes if additional Supplemental
Resources are still needed.

3) Real-Time Energy Deficiency - If an energy deficiency (R1) continues (or is expected to continue) to exist in Real-Time even with Regular Realtime Resource Adjustments

a. Determine the amount and location of Supplemental Resources required.

b. Select and move Supplemental Resources from Category (R9) to (R1) on a least cost basis where least cost equals lowest composite energy and start-up costs (if start-up is required) spread over 1 hour as follows:

1st - Least Cost Supplemental Resources
Available in 10 minutes.

2nd - Least Cost Supplemental Resources
Available in 30 minutes if additional
Supplemental Resources are still
needed.

3rd - Least Cost Supplemental Resources
Available in Greater Than 30
minutes if additional Supplemental
Resources are still needed.

4) BME Re-Adjustment - Following Steps #2 and/or 3 above, subsequent BME runs may re-adjust resources.

Example of SRE Pre-Calculated Resource Charts

CHART #1 - INPUT FROM UNEXPIRED/UNACCEPTED BIDS						
Gen	Zone	Min MW	Max MW	Start-Up Cost \$	Start-Up Time	Energy Bid \$/MWh
A	Z	100	500	\$1,000	3 hr.	\$20
B	Z	100	100	0	10 min.	50
C	Z	20	50	200	30 min.	19
D	Z	100	200	2,000	30 min.	42
E	Z	25	25	100	10 min.	70
F	Z	50	100	500	2 hr.	30
G	Z	100	100	0	10 min.	100
H	Z	50	50	100	10 min.	90
I	Z	0	400	0	10 min.	27
J	Z	0	300	0	1 hr.	29

Assumptions: For simplicity, assume ramp rates are such that all generators can go from Min to Max in 1 hour; ignore operating reserve bids, and ignore any other complications.

CHART #2 - SRE SORTED CHART OF UNEXPIRED/UNACCEPTED BIDS ENERGY BIDS AVAILABLE IN 4 HOURS IN ZONE Z FOR A DURATION OF 1 HOUR				
Economic Order Rank	Gen	Total Energy Cost \$	Available MW	Energy Bid Including Start-Up in \$/MWh
1	A2	\$11,000	500	\$22
2	C2	1,150	50	23
3	I	10,800	400	27
4	C1	580	20	29
5	J	8,400	300	29
6	A1	3,000	100	30
7	F2	3,500	100	35
8	F1	2,000	50	40
9	B	5,000	100	50
10	E	1,850	25	74
11	H	4,600	50	92
12	G1	5,000	50	100
13	G2	10,000	100	100

Notes: A = Gen A when Min = Max; A1 = Gen A @ Min; A2 = Gen A @ Max. Accepting all of A2 precludes A1.

CHART #3 - SRE SORTED CHART OF UNEXPIRED/UNACCEPTED BIDS ENERGY BIDS AVAILABLE IN 10 MINUTES IN ZONE Z FOR A DURATION OF 1 HOUR				
Economic Order Rank	Gen	Total Energy Cost \$	Available MW	Energy Bid Including Start-Up in \$/MWh
1	B	5,000	100	50
2	E	1,850	25	74
3	H	4,600	50	92
4	G1	5,000	50	100
5	G2	10,000	100	100

Notes: A = Gen A when Min = Max; A1 = Gen A @ Min; A2 = Gen A @ Max. Accepting all of A2 precludes A1.

CHART #4 - SRE SORTED CHART OF UNEXPIRED/UNACCEPTED BIDS ENERGY BIDS IN 100 MW BLOCKS AVAILABLE IN 10 MINUTES IN ZONE Z FOR A DURATION OF 1 HR				
Economic Order Rank	Gen	Total Energy Cost \$	Available MW	Energy Bid Including Start-Up in \$/MWh
1	B	5,000	100	50
2	H and G1	4,600 5,000	50 50	96
3	G2	10,000	100	100

Notes: A = Gen A when Min = Max; A1 = Gen A @ Min; A2 = Gen A @ Max. Accepting all of A2 precludes A1.

4.2.10 Decommitment Using SRE Procedures

A Day-Ahead committed resource that is no longer economic at the end of its Dispatch Day will be scheduled off by a subsequent SCUC. Likewise, an Hour-Ahead committed resource that is no longer economic at the end of its Dispatch Hour will be scheduled off by a subsequent BME. In some instances, SRE will need to be employed to decommit a resource In-Day or In-Hour (eg., during over-generation conditions in which all generators are at minimums and additional reductions are required, or when previously committed peaking resources are no longer needed to meet requirements). This decommitment process should proceed using SRE in reverse. In this case, the NYISO should:

- a. Determine the type, amount and location of resources which need to be reduced.
- b. Determine how soon the reduction will be needed.
- c. Determine how long the reduction will need to take place (eg., remainder of the dispatch day, next two hours, etc.).
- d. Select and schedule the reduction of resources (i.e., decommit) on a maximum cost reduction basis where maximum cost equals the highest total energy cost and/or reserve availability cost over the duration of the reduction.

4.2.11 SRE Pricing and Cost Allocations

Energy Payments - Resources committed by BME or SRE will be paid the real time LBMP for Energy and will be guaranteed recovery of start up and minimum generation costs (for the balance of the day). As previously stated, a resource committed by SRE can not raise (but may lower) its price bid for the duration of time it was committed.

Availability Payments - Resources committed by BME or SRE will be paid the higher of Day-Ahead or the Real-Time Marginal Clearing Price for reserve availability.

Cost Allocation - Assignment of replacement costs that result from a SRE will be as follows:

Assignment of SRE Replacement Costs		
Cause for SRE	Cost Assignment for Replacement Energy, Operating Reserves and/or Regulation	Cost Assignment for Supplemental Payments for Start-Up and Min Gen (if any)
Loss of SCUC Day-Ahead Committed Resource	Charged to Lost Resource	Schedule 1 Uplift
Loss of BME and/or SRE Committed Resource	Affects Real-Time Energy LBMP and/or Marginal Clearing Prices for Ancillary Services	Schedule 1 Uplift
Loss of Transmission that Results in Locational Resource Deficiency	Affects Real-Time Energy LBMP and/or Marginal Clearing Prices for Ancillary Services	Schedule 1 Uplift
Unexpected Load Increase	Affects Real-Time Energy LBMP and/or Marginal Clearing Prices for Ancillary Services	Schedule 1 Uplift
Simultaneous Combinations of Above	Pro-rata basis	Pro-rata basis

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