
	© ISO New England Inc. 2012	Procedure: Monitor Generators and DARDs
	Process Name: Dispatch Generation Resources	
	Procedure Number: RTMKTS.0070.0010	Revision Number: 39
	Procedure Owner: Steve Gould	Effective Date: January, 17, 2012
	Approved By: Director, Operations	Valid Through: January, 17, 2014

SOP-RTMKTS.0070.0010 Monitor Generators and DARDs


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1. Objective

The intent of this procedure is to monitor and economically dispatch system Generators and Dispatchable Asset Related Demands (DARDs) to meet system load requirements and maintain system reliability.

2. Background


ISO New England - ISO New England Inc. Transmission, Markets and Services Tariff Section III, ISO New England Market Rule 1 - Standard Market Design (Market Rule 1) and ISO New England Manual for Market Operations, Manual M-11 (M-11) describe the rules for dispatch of Generators and DARDs to meet system load requirements.

The primary tool used by ISO New England (ISO) in dispatching Generators and DARDs is the Electronic Dispatch (ED) system in conjunction with the Real-Time Unit Dispatch System (UDS). The ED will deliver the Desired Dispatch Points (DDPs) developed by the UDS to Generators and DARDs.

The UDS utilizes the manual response rates submitted but does not recognize any Generator/DARD hold points. UDS can be executed at any time specified by the System Operator. Upon execution, the UDS calculates DDPs for each dispatchable Generator/DARD. Under certain conditions System Operators may dispatch a Generator/DARD by entering a manual DDP.

The ED system utilizes RTUs in the Designated Entity (DE) and Demand Designated Entity (DDE) facilities to communicate dispatch instructions and information (response rates and limits) from ISO. DDPs and Fast Start Generator startup and shutdown commands are communicated to the RTUs for utilization by the DE.

North American Electric Reliability Corporation (NERC) and Northeast Power Coordinating Council Inc. (NPCC) address Operating Reserve requirements. NERC and NPCC require Ten Minute Operating Reserve to cover the most severe single contingency. NPCC Directory # 5 addresses Thirty Minute Reserve requirements. The amount of Thirty Minute Reserve required is equal to one-half of the second largest contingency. Therefore, ISO must be able to identify the two largest single contingencies within New England for any given point in time. In real-time operations, the Energy Management System (EMS) automatically determines the largest and second largest single contingency. For future hours, the process of identifying the first and second largest single contingency is performed by ISO staff.

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3. Responsibilities


NOTE

Any NERC Certified System Operator, certified at the Reliability Coordinator (RC) level, has the authority to take action(s) required to comply with NERC Reliability Standards.

In order to comply with NERC Reliability Standard IRO-005, Reliability Coordination Current Day Operations, ISO Control Room System Operators shall monitor the New England Reliability Coordinator Area/Balancing Authority Area (RCA/BAA) parameters, including but not limited to:

- Current status of Bulk Electric System (BES) elements (transmission or generation including critical auxiliaries such as Automatic Voltage Regulators (AVRs) and Special Protection Systems (SPSs) and system loading.
- Current pre-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate System Operating Limit (SOL) or Interconnection Reliability Operating Limit (IROL) violations, including the plan viability and scope.
- Current post-contingency element conditions (voltage, thermal, or stability), including any applicable mitigation plans to alleviate System Operating Limit (SOL) or Interconnection Reliability Operating Limit (IROL) violations, including the plan viability and scope.
- System real and reactive reserves (actual versus required)
- Capacity and energy adequacy conditions
- Current Area Control Error (ACE)
- Current local or Transmission Loading Relief procedures in effect
- Planned generation dispatches
- Planned transmission or generation outages
- Contingency events


1. The Operations Shift Supervisor is responsible for the overall implementation of this procedure.

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2. The Loader Operator is responsible for:
 - Dispatching Generators/DARDs
 - Maintaining Reserve Requirements
 - Entering the deviations from the UDS generated results and selecting and approving the UDS solution
 - Placing Generators on Regulation and removing Generators from Regulation.
 - Running CD SPD at least once a shift
3. The Generation Operator is responsible for assisting the Loader Operator in placing Generators on Regulation and removing Generators from Regulation.

4. Controls

1. Implementation of the dispatch instructions may be modified at the discretion of a NERC Certified Control Room System Operator certified at the RC level in order to maintain system reliability.
2. All Control Room telephone conversations are recorded.
3. ISO shall comply with requirements detailed in ISO New England Operating Procedure No. 8 - Operating Reserve and Regulation (OP-8).

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5. Instructions

5.1 Electronic Dispatch


5.1.1 Normal Dispatch

NOTE

Attachment A - UDS Solution Messages contains a summary of the messages that UDS could write at the end of the solution file.

The Reliability Coordinator/Balancing Authority (RC/BA) shall operate AGC continuously unless such operation adversely impacts the reliability of the interconnection. If AGC becomes inoperative, the RC/BA shall use manual control to adjust generation to maintain the Net Scheduled Interchange.

1. The Loader Operator shall manually execute and approve the UDS case to affect dispatch.
2. The Loader Operator shall monitor the:
 - ACE
 - Locational Marginal Prices (LMP)
 - Real-Time Reserve Prices
 - Unit Dispatch System (UDS)
 - The De-selected units list to ensure that Generators/DARDs do not need to be re-selected
 - UDS Solution Messages Display as indicators of UDS performance
 - Planned generation dispatch (e.g. startups, shutdowns, self-schedules)
3. The Loader Operator shall monitor system frequency:
 - A. If frequency is not consistent with known system conditions review the frequency points (listed in Attachment B - Frequency Telemetered Data).

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NOTE

Frequency sources will automatically switch to the next perceived good quality frequency source on the Generation Telemetered Data EMS page if the current source fails. Manual intervention may be required if the bad source values do not meet the tolerance level to switch, or the automatic function fails.

The newly selected frequency source will be used in the ACE calculation. All other frequency sources may be used as reference points to aid in determining separation points on the system.

B.If the frequency source needs to be changed, follow the instructions in Attachment B - Frequency Telemetered Data to select the desired frequency data source.


C.If the frequency data source is changed, enter the information in the Control Room Event Logserver (Logserver) per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

NOTE

ADI will trip off when New York or New Brunswick tie line telemetry fails or pauses.

- The NYISO notification and log entry is not required when ADI trips off and is placed back in service within a short duration of time.

4. The Loader Operator shall monitor ACE Diversity Interchange (ADI):
 - A. Ensure ADI is on by monitoring NEPEX SYSTEM Summary display under ACE information.
 - B. If ADI trips off due to tie line telemetry failure:
 - (1) Resolve the discrepancy per SOP-RTMKTS.0060.0010 - Update EMS Network Transmission Topology.
 - (2) Place ADI back in service.
 - C. When ADI is manually turned off/on or trips off for a long duration:
 - (1) Notify NYISO.
 - (2) Make a log entry per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
5. Unless such operation is adverse to system or Interconnection Reliability, the Loader shall ensure AGC is on "TLBC" (Tie Line Bias Control).


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6. For UDS execution the Loader Operator shall ensure the parameters on the UDS “Generation” display are set to the following unless any deviations have been approved by the Operations Shift Supervisor:
 - A. Look Ahead 15 minutes
 - B. Minimum Run Time 60 minutes
 - C. Startup Time 30 minutes
 - D. Auto Execute OFF
7. The Loader Operator/Generation Operator shall enter any deviation from the above in the Logserver per SOP- RTMKTS.0125.0040 - Update Control Room Logs.
8. For Manual execution the Loader Operator shall:
 - A. Enter Load Adjustment Factors (LAF), which allows solutions to various loads.
 - B. Check the “Deselected Units List” to determine if any Generators/DARDs should be taken off the “Deselected Units List” prior to executing the UDS software.
 - C. Manually execute the UDS software.
9. Review the three UDS solutions to determine if the results are feasible and meet reliability criteria.
 - A. Review the solutions for adequate Generator targets to meet load (including expected load change).
 - B. Review the “Exceptions List” and perform the following:
 - (1) Use 5.1.2 to evaluate for Generator startups or shutdowns,
 - (2) Use 5.3 to evaluate for DARD startups or shutdowns,.
 - C. Review the solutions LMPs for all Dispatch Zones.

NOTE

If CT, SWCT or Boston LMPs are all greater than the remaining dispatch zone LMPs without a binding constraint it may be due to the LRR in the DOUBLC software.

- D. If Area Reserve is binding, review the solutions for feasible reserve price and/or check for reserve violation.

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E. Notify the Security Operator to determine if interface constraints need to be activated in CLOGGER.

- (1) If constraints are activated, re-run UDS and review the solutions.

NOTE

UDS solutions will appear “Red” if the solution has other than “Successful” message, but may only be due to a Reserve violation.

10. The Loader Operator shall check the UDS solution and determine if any of the following conditions exist:

- Is not appropriate as determined from the review

NOTE

If a Reserve violation exists, Operations Shift Supervisor approval is required prior to case approval.


- Has a Reserve violation with the associated transmission interface also violated
- Has a message that is anything other than “Successful” and an acceptable solution cannot be obtained

NOTE

A shortage event is violation of System Total 10 minute reserve resulting in a system wide Reserve Constraint Penalty Factor (\$850 RCPF) lasting greater than 30 minutes as determined by the LMP Monitor.

11. If one or more of the conditions in step 5.1.1.10. exist, the Loader Operator shall consider adjusting one or more of the following parameters and re-running the case to provide an acceptable solution:

- Enter new Load Adjustment Factors (LAFs)
- Change Look Ahead Parameters
- Change Minimum Run Time Parameters
- Change Startup Time Parameter
- Adjust bias on the CLOGGER “Reserve Zone Requirements” or “Transmission Constraints”
- With approval by the Operations Shift Supervisor, adjust bias on CLOGGER “System-wide Reserve Requirement”
- Remove violating regulation Generator from Regulation or

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redeclare Regulation Parameters per SOP-RTMKTS.0110.0010
- Maintain Real-Time Operational Data after agreement with the Designated Entity


12. Approve the appropriate solution based upon review.
13. Attempt to approve an appropriate UDS solution at least once every 10 minutes.
14. If unable to derive an acceptable UDS solution, or if the UDS solutions are suspect, notify the Senior System Operator and Operations Shift Supervisor.
15. If unable to obtain an acceptable UDS solution or if time does not allow, the Loader Operator shall manually dispatch Generators/DARDs and make log entries per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
16. If the Operations Shift Supervisor determines the UDS is malfunctioning, go to Section 5.1.9.

NOTE

The UDS solution must be “Approved” to send out new DDPs to Generators/DARDs unless a manual DDP is used or the Unit Parameter Testing or Demand Parameter Testing software is used. The DDPs will refresh every 5 minutes with the last case approved.

Fast Start Generators shall be dispatched in accordance with the recommendations of the UDS solutions and reliability concerns, regardless of any Day-Ahead economic schedules except as noted below in Step 5.1.2.

Generators which have elected to be run as a LEG and have a LEG value of zero in Real-Time will not get Fast-Start start-up recommendations.

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5.1.2 Dispatch
Fast Start
Generators

1. The Loader Operator shall monitor for Fast Start Generators on the UDS “Exceptions List” display of each UDS solution prior to approval and verify the start-up or shut-down is warranted.

NOTE

When a Fast Start Generator returns to service, it will not be considered as available by UDS if the most recent SCRA case has the Generator out of service. To overcome this, the “Bid Eco” must be set manually set as a redeclaration in order for UDS to recognize the Generator as available.

2. Normally if the case is valid, the Loader Operator shall follow the UDS recommended startup and shutdown orders.


NOTE

When a Fast Start Generator is sent a start-up order, a message will automatically be sent to the Market Monitoring group so that an evaluation can be performed for price mitigation.

NOTE

Once a Generator has been “De-Selected”, it will not show up again on the “Fast Start Exceptions List” and will not be considered in any UDS solution. The “De-Select” button must be unchecked in the UDS display “Exceptions List” (blue highlight bar below the UDS Parameters) to allow UDS to consider the Generator for start-up. The Loader Operator, prior to each approval of a UDS solution, will check the “De-Selected” list for accuracy.

3. If the UDS solution includes a Fast Start Generator startup and the Loader Operator suspects that startup may result in a reliability risk CLOGGER **cannot** mitigate:
 - A. The Loader Operator shall notify the Security Operator of the recommended start-up.
 - B. The Security Operator shall perform a security assessment and inform the Loader Operator if starting a Fast Start Generator creates a reliability problem.
 - C. If starting a Fast Start Generator creates a reliability problem, the Loader Operator shall notify the Senior System Operator and Operations Shift Supervisor that the Generator is being placed OOS due to transmission.
 - D. The Loader Operator shall perform the following:


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- (1) Notify the applicable DE that the Generator is OOS due to transmission.
 - (2) Place the applicable Generator “OOS” (ISO imposed).
 - (3) Notify the applicable Generator Operator to send an email to Market Admin and include the following information in the email :
 - a. Asset ID,
 - b. Generator name
 - c. Reason the Generator was taken out of service
 - (4) Make a log entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
- E. Go to step 5.1.1.8 and re-execute the case
4. If the Loader Operator calls a Fast Start Generator to delay start-up after sending a UDS fast start signal, to ensure the Generator does not incur any penalties, the Loader Operator shall enter an explanation of the delay in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
 5. If a Fast Start Generator is sent a startup order and subsequently verbally cancelled prior to the Generator starting up within the allotted start-up time, the Generation Operator shall inform the Forecaster to fill out Attachment C - Unit Start-Up Compensation form of SOP-RTMKTS.0050.0010 - Perform Reserve Adequacy Assessment.

NOTE

The “Fast Start Unit” display will highlight Generators in red which have one or fewer starts remaining for the day in accordance with their NX-12 data. NX-12 data for the number of starts per day is not reflected in ISO market rules.

6. Prior to approving a UDS case with a shut-down directive for a Fast-Start Generator, the Loader Operator shall verify one or more unit starts are available for the remainder of the day.
 - A. If there isn’t at least one Generator start remaining, notify the Operations Shift Supervisor prior to approving the UDS case with the shut-down directive.

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NOTE


It is an Operations Management expectation that Reserve bias has been optimized (when applicable) prior to de-selecting a Fast-Start Generator from the UDS solution or setting the Fast Start Reliability (FSR) flag to prevent a shut-down

7. If after reviewing the solution, the Loader Operator determines the shutdown of a Fast-Start Generator would create a Reserve problem that cannot be mitigated by the applicable Reserve bias or a reliability risk that cannot be mitigated through CLOGGER, the Loader Operator shall:
 - A. Notify the Senior System Operator and Operations Shift Supervisor and the Operations Shift Supervisor shall determine whether to set the Fast Start Reliability (FSR) flag or de-select the Generator from the UDS solution.
 - (1) For use of the FSR flag, the Loader Operator shall:
 - a. Set the FSR flag
 - b. Make a entry that includes the following in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs
 - i. Reason for the FSR flag.
 - ii. If only for a few Generators, list with each Generator name
 - iii. If more than a few Generators, do not list any Generator names
 - c. Go to step 5.1.1.8 and re-execute the case.
 - d. After resolving the condition requiring the FSR flag, remove the FSR flag from each applicable Generator.

NOTE

Once a Generator is deselected or a Fast Start Generator recommendation is not followed, the Loader Operator should re-execute UDS to create a balanced solution for approval. Approval of a solution with a Fast Start Generator recommendation that has been removed will be deficient by whatever amount of MW had cleared on the Generator for that case.

- (2) For use of de-selecting in UDS, Loader Operator shall:
 - a. Set the de-select flag for each required Generator.
 - b. Make a entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
 - c. Go to step 5.1.1.8 and re-execute the case.
 - d. After resolving the condition requiring the de-select


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flag, remove the de-select flag from each applicable Generator.

NOTE

If a Generator or its associated DARD (pump) is operating, the non-operating portion (pump or Generator) will not receive a start-up DDP. However at a multi-DARD (pump) facility, another Generator or pump may receive a start-up DDP resulting in start-up DDPs for both Generators and pumps.

8. If a DARD (pump) and related Generator both receive start-up signals within a UDS case, the Loader Operator shall not approve the case.
 - A. The Loader Operator shall use Load Adjustment Factor (LAF) to mitigate the simultaneous start-ups.
 - (1) If LAF use is not appropriate due to circumstance and system reliability is maintained regardless of whether a DARD or Generator starts, the Loader Operator shall contact the DE to determine if a DARD or Generator will be started and perform the following applicable action.
 - a. If the DARD will be started, apply an ISO imposed zero redec to the corresponding generator.
 - b. If the Generator will be started, apply an ISO imposed zero redec to the corresponding DARD.

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5.1.3
Fast Start Manual Dispatch

NOTE

The normal method for starting Fast Start Generators for recovery from system disturbances whether Reportable or Non-Reportable is by use of the CD SPD tool.

There are four times the “Fast Start Manual Dispatch” display should be used as a backup tool.


- To recover from Reportable Events
- To recover from Non-Reportable Events
- To increase reserves
- To supply energy to a specific area

If the “Fast Start Manual Dispatch” display is used to recover from Reportable Events, it should be noted that the startup time frame for some of the units that would be called is 30 minutes and should be accounted for when determining the desired MW amount.

NOTE

The support from Simultaneous Activation of 10 Minute Reserves (SAR) and the dispatch of internal resources shall equal at least 140% of the disturbance loss. When the support from SAR is less than 40% of the disturbance loss, additional Fast Start Generators will be used to ensure at least 140% of the disturbance loss is dispatched with the use of internal and/SAR resources.

1. The Loader Operator shall include sufficient resources to ensure at least 140% of the loss of Generator and or supply will be dispatched, including internal and external resources.
2. As a backup to the Electronic Dispatch system, the Loader Operator shall use the “Fast Start Manual Dispatch” display as follows:
 - A. Using the “Fast Start Manual Dispatch” display, the Loader Operator shall select the “Candidate Units” tab and perform the following:
 - (1) Select “Desired Dispatch Zones”
 - (2) To select the Generators to be given startup instructions, click the “Include” button.
 - (3) To see the MW value selected to start, under the “preview candidates” tab, view the “Total of All Included Units”.

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NOTE


To the DE, the Fast Start Manual Dispatch startup signal will be indistinguishable from a CD SPD startup signal.

- (4) If the desired Generators and MW value is acceptable, click the “Issue Startup” button.

NOTE

After the “Issue Startup” is performed, the selected fast start Generators will no longer be displayed on the “Preview Candidates” tab..

- (5) To view the status of the Generators being started up, return to the “candidate units” tab and sort by “Last Called for Startup”.
- (6) Verify RTU acknowledgement from each Generator receiving dispatch instructions by performing the following:
- a. Filter on the “Unit Status” display acknowledgement required column “A”
 - b. Sort the “SPD Dev” column to obtain the largest positive “SPD Dev” value on the top of the list.
 - c. Starting with the largest “SPD Dev”, contact the Generators that have not acknowledged their dispatch instructions and direct each to comply with the RTU acknowledgement requirement.
- (7) After the Generators are on-line and in their proper UCM, verify dispatch software is dispatching the Generators.

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5.1.4
Dispatching
Regulation
Generators

NOTE

Under normal conditions, a Generator operating as a LEG may not be placed on Regulation unless the Generator has Self-Scheduled Regulation

- The Generator will be viewed as Self-Scheduled on the “Regulation” tab.

A postured Generator will not be used to provide regulation unless approved by the Manager, Control Room Operations.


Under normal conditions, the Loader Operator/Generation Operator shall ensure the Regulation Requirements are met.

- The total Regulation Requirement may be lowered at the discretion of the Operations Shift Supervisor (capacity deficiencies, reliability concerns or Minimum Generation Emergency conditions).
- The Regulation Requirement can be found in the EMS on the regulation page within EMU as well as on the external website.

1. Each hour, after the Regulation Selector automatically or manually runs, the Loader Operator/Generation Operator shall review the following information on the ”Regulation Status” display:
 - Ineligible Generators are viewed on the “Ineligible for Regulation” display. See Attachment C - Ineligible for Regulation Reasons
 - Generators in a UCM 6 but are ineligible for current hour are shown in **violet**
 - Generators in a UCM 6 but are not suggested for the current hour are shown in **orange**
 - Generators with a LEG, but not a Self Schedule (S/S), are shown in **teal**
2. If a non-S/S Fast Start Generator is on regulation and the Regulation Selector recommends it stay on regulation, place the Generator in a UCM 4 and run UDS to determine if UDS recommends the Generator for shutdown.

NOTE

Fast Start Generators shall not be de-selected for shutdown or have their Fast Start Reliability (FSR) flag set for the purpose of providing regulation unless other on-line Generators cannot meet regulation requirements.

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3. The Regulation Selector should be manually rerun when:
 - A Generator on Regulation is redeclared during the hour, within the first 30 minutes of an hour, or if the redeclaration has caused a Generator to become ineligible the Loader Operator/Generation Operator should reassign Regulation
 - Generator requests S/S within first 30 minutes of the hour
 - Generator on Regulation has tripped off line or otherwise becomes unavailable for Regulation and the Loader Operator/Generation Operator needs to assign Generators to Regulation to meet Regulation Requirements
 - After running Contingency SPD prior to placing Generators back on Regulation
 - Regulation Selector fails to run automatically
 - Loader Operator/Generation Operator needs to update Generators Eligible/Ineligible status
 - Generator S/S for Regulation de-commits S/S

NOTE


The Regulation Selector does not assess the ineligible reasons until the Regulation Selector is run (See Attachment C - Ineligible for Regulation Reasons), i.e., the Generators will not appear on the “Regulation Status” display as ineligible (purple background) until the Regulation Selector is run.

4. The Loader Operator shall place Generators on Regulation starting at the beginning of the list until the regulation requirement is met (+/-25 MW) for the hour:
 - A. The Loader Operator/Generation Operator shall normally place Generators on Regulation and remove Generators from Regulation using the “Regulation Status” display.

NOTE


Ineligible Generators may be inadvertently placed on Regulation if placed on Regulation using the “Unit Details” display.

- B. If a Generator is a LEG, the Loader Operator/Generator Operator shall not place the Generator on Regulation unless the Generator is Self-Scheduled for Regulation.
 - C. If a Generator is not currently in the Regulation setpoint range but still eligible, the Loader Operator/Generation Operator shall send a manual DDP, on the “Unit Details” display, to move the Generator into Regulation range before placing the Generator on Regulation.
5. The Loader Operator/Generation Operator may skip placing

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Generators on Regulation if:

- A. Reliability concerns exist (e.g. the next in-merit Generator is located within a constrained area of the system and would not be able to provide what is needed).
 - B. Optimization of available Generators is not being considered in the software (e.g., 20 MW are needed and the next Generator only has 5 MW, but the one after that has 25 MW, it is more cost effective to skip the 5 MW and assign the 25 MW).
 - Make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs
 - C. A Fast Start Generator is recommended for shutdown.
6. The Loader Operator/Generation Operator may select Generators specifically to be put on Regulation out of merit for reliability reasons (OP-4 Conditions, system restoration, etc.).
 7. If a Generator is selected or skipped out of merit for Regulation, the Loader Operator/Generation Operator shall make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs and select an out of merit reason code from the popup well (See Attachment D - Regulation Out of Merit Reason Codes).
 8. If the sum of the S/S for Regulation exceeds the requirements, the Loader Operator/Generation Operator shall assign Generators, beginning with the largest REG MW and working down in amount available, until requirements are met.
 9. Unless Regulation has been optimized, the Loader Operator/Generation Operator shall remove any Generators on Regulation that are not selected for the current hour (These Generators will be highlighted in **Orange**).
 10. Once selected for Regulation, a Generator shall not be taken off of Regulation during the hour unless there is a:
 - Reliability issue specific to the Generator
 - Mechanical problem with the Generator
 - Mode change to off-line status
 - Change in S/S available
 - Reassignment of Generators after manually running the Regulation Selector
 11. If a Generator is designated “For Transmission” by the UDS, the Loader Operator/Generation Operator shall take that Generator off

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of Regulation and select the next Generator (s) on the Regulation Selector to meet the Regulation Requirements.

5.1.5 Self Scheduling Regulation

NOTE


If a Generator is accidentally removed from S/S for Regulation, the 60 minute timer is still in effect and the Generator will not be able to S/S for Regulation for 60 minutes

1. When a Generator requests to be S/S for Regulation or requests a change in S/S status, the Loader Operator/Generation Operator shall perform an assessment to either approve or deny the request.
2. The Loader Operator/Generation Operator shall normally approve the S/S for Regulation request unless:
 - The request would cause a reliability problem.
 - The request would cause excessive Regulation Capability or require removing other S/S for Regulation Generators from Regulation
 - Less than 60 minutes has elapsed since the last time the Generator S/S for and provided Regulation
 - The Generator is ineligible for Regulation for any of the reasons listed in Attachment C - Ineligible for Regulation Reasons

NOTE

There is a timer that will not allow a Generator to be taken off of S/S for Regulation until the Generator has been on for 60 minutes. Also, the timer will not allow a Generator to be placed on S/S for Regulation if less than 60 minutes has elapsed since the last time the Generator S/S for and provided Regulation.

3. If the assessment is completed within the first 30 minutes of the hour, the Loader Operator/Generation Operator shall rerun the Regulation Selector, place the Generator on Regulation and reassign Generators as necessary to meet Regulation Requirements.
4. If the assessment cannot be complete in the first 30 minutes of the hour then the Loader Operator/Generation Operator shall perform the assessment at the beginning of the next hour when selecting Generators for Regulation.
5. If a request for Self-Schedule for Regulation is denied, the Loader Operator/Generation Operator shall make an entry in the Logserver

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per SOP-RTMKTS.0125.0040 - Update Control Room Logs.


6. The Loader Operator/Generation Operator shall remove the Generator from S/S for Regulation upon the DE request after the Generator has been on S/S for Regulation for greater than 60 minutes and rerun the Regulation Selector.
7. If a Generator needs to be removed from S/S for Regulation prior to reaching the 60-minute limit (e.g., due to mechanical problems, constraints), the Loader Operator/Generation Operator shall take the Generator to UCM 3 prior to placing the Generator into UCM 4 in order to defeat the 60-minute timer.

5.1.6 Regulation Problems or Failure

NOTE

Normally Tie Line Bias Control (TLBC) is the recommended mode of operation for regulation. However, based on system conditions, either Flat Tie Line Control (CNIC) or Flat Frequency Control (CFC) may be the mode of operation for regulation used in an islanding condition.

1. If a Generator on regulation is not responding to AGC targets, the Loader Operator shall perform the following:
 - A. Contact the DE to determine the cause.
 - B. If the Generator is no longer able to provide regulation, make the Generator unavailable for regulation.
 - C. As appropriate, re-run the Regulation Selector and select another Generator for regulation.
 - D. Make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
2. If a Generator on regulation is “Paused” due to a Generator telemetry failure, perform the following:
 - A. Contact the DE and determine the cause of the telemetry failure.
 - B. Using SOP-RTMKTS.0060.0010 - Update EMS Network Transmission Topology, determine if a SCADA Secondary Site is available for the Generator:
 - (1) If there is a SCADA Secondary Site, switch to the SCADA Secondary Site.
 - (2) If there is no SCADA Secondary Site, make the Generator unavailable for regulation.

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C. Notify IT on call of the telemetry failure.

D. Make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

3. If AGC is “Paused” due to a tie line telemetry failure, perform the following:

A. Using SOP-RTMKTS.0060.0010 - Update EMS Network Transmission Topology, switch to the ICCP value.


5.1.7 Dispatch During Contingency Conditions

1. If the system experiences a contingency or there is a need to supply SAR the Control Room System Operators shall respond per SOP-RTMKTS.0120.0040 - Implement Disturbance Remedial Action.

NOTE

When Contingency SPD is activated, the Generators on Regulation will be removed from UCM 6. Generators that are automatically removed from S/S for Regulation cannot be S/S for Regulation until 60 minutes has elapsed.

2. If Contingency SPD is activated and after approving a normal UDS case, rerun the Regulation Selector as directed in Step 5.1.3.

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5.1.8 Out-of-Merit for Reliability


1. If Generators/DARDs need to be dispatched out of merit for reliability the Loader Operator shall;
 - A. Dispatch the Generator(s)/DARD(s) per SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties
 - B. Insert a manual DDP into the EMS for the applicable Generator/DARD, and make an entry into the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

5.1.9 Generator/DARD RTU Failure

NOTE

DDPs are normally sent to the RTU every five minutes, whether they change or not. When verbally dispatching Generators/DARDs due to a failed RTU, the Loader Operator need only send a verbal dispatch to the DE when the DDP changes.

1. The Loader Operator/Generation Operator shall monitor the unit RTU state indicator as follows:
 - A. Click on the RTG “Related Displays”
 - B. Click on the “ED Communication Status” display.
2. If an RTU failure is detected, the Loader Operator/Generation Operator shall promptly contact and direct the IT On Call Staff, to initiate repairs to the failed equipment.
3. When an RTU failure occurs, the Loader Operator/Generation Operator shall provide verbal Manual Dispatch instructions per SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties.
4. When an RTU failure requires Manual Dispatch, the Loader Operator/Generation Operator shall make an entry listing the affected units and, if known, the cause of the RTU failure in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs

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5.1.10 DR RTU Failure

NOTE

DR RTU failures are reported in the System Activity Log and DR RTU status can be viewed by selecting the following icon located on the DR custom menu bar:




1. The Loader Operator/Generation Operator shall monitor the DR RTU state indicator on the System Activity Log and on the DR custom menu bar.
2. When a DR RTU failure is indicated, the Loader Operator/Generator Operator shall:
 - A. Notify both of the following:
 - (1) IT On Call
 - (2) Affected DDE
 - B. Make an entry in the Logeserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
3. When it becomes necessary to dispatch DR with an RTU out of service, the Loader Operator/Generation Operator shall provide verbal dispatch instructions to each affected DDE to dispatch their entire Net CSO.

NOTE

DDE Net CSO values can be found by selecting the following icon located on the DR custom Menu bar:




4. When a failed DR RTU is returned to service, the Loader Operator/Generation Operator shall:
 - A. When normal dispatch communication has been restored, notify the affected DDE.
 - B. Make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

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5.1.11 UDS/
Electronic
Dispatch System
Failure

1. When the Operations Shift Supervisor determines the UDS is malfunctioning:
 - A. Loader Operator shall manually dispatch the system in merit order based on the OIS Energy Bid Stacker program and/or the RSC commitment and SCRA-COP.
 - B. System Operators shall notify the IT On Call staff the UDS/Electronic Dispatch System software has failed/malfunctioned.
 - C. If there are any active constraints, the Loader Operator shall dispatch generation to levels determined manually by the Security Operator.
2. If the Electronic Dispatch System is available, the Loader Operator shall insert manual DDPs into the;
 - A. "Unit Details" display for all dispatchable Generators
 - B. "Demand Details" display for all DARDs.
3. If the Electronic Dispatch System has failed and is not able to send out DDPs or is sending erroneous DDPs, the Loader Operator shall suspend the sending of DDPs to the RTU and provide verbal Manual Dispatch instructions to the Generators/DARDs per SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties.
4. The Senior System Operator may choose to notify all DEs by using the Emergency Notification System (ENS) software per SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties.
5. When the Electronic Dispatch System is operational again, the Loader Operator shall notify the affected units or the Senior System Operator shall notify the DEs per SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties.
6. When conditions allow, the Loader Operator shall make an entry for failures/restorations of the Electronic Dispatch System into the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs

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5.2 Dispatch of LEGs

NOTE

Upon completion of the DA market, the LEG flag is set to False for all Generators. The flag is automatically set to True upon input of a schedule in the Leg Limit column on the “Leg Limits” display.

If a Generator has not offered into the DA Market with a LEG daily total (Daily Offer), then it will not be considered as a LEG at anytime during the Real-Time dispatch and will be run in economics.


5.2.1 Normal Dispatch of LEGs

1. The Loader Operator/Generation Operator shall monitor and review the DMT “Leg Limits” display to ensure proper LEG dispatch as follows:
 - A. The UDS is honoring the lower of Economic Maximum (Eco Max) or LEG Maximum when the LEG flag is set, unless the Generator is responding to a manual DDP from the Loader Operator/Generation Operator or a DDP from Contingency SPD.
 - B. If a Generator LEG flag is set, the Generator does not operate above the LEG Maximum limit.

NOTE

UDS will not dispatch a Generator down to the hourly schedule limit if the Generator is operating above the LEG Maximum Limit. (E.g., If a LEG is operating at 100 MW with a LEG Maximum Limit of 120 MW and the Generator redeclares the hourly schedule to 80MW, the UDS will not dispatch the Generator down to 80 MW. It will still see 100 MW as the limit until the Generator dispatches to 80MW.)

2. If during the Operating Day, the DE requests to follow a LEG schedule:
 - A. The DE shall inform ISO of the LEG Hourly LEG limit they wish to follow:
 - DA Market LEG schedule
 - Security Constrained Reserve Adequacy (SCRA) LEG schedule
 - Generator determined LEG limit

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- B. The Loader Operator/Generation Operator shall input the selected schedule in the Leg Limit column on the “Leg Limits” display, which automatically sets the LEG flag. If the schedule already exists, the Forecaster shall set the LEG flag.
 - C. If the new LEG Limit requires the Generator to be dispatched down to the new value, the Generator should remain in UCM 4 and be issued a Manual DDP below the new LEG limit.
 - D. If the new LEG Limit requires a Combined Cycle Generator be shutdown to honor the new value, the Generator shall be placed in UCM 3 until the DE releases the Generator for dispatch.
3. If during the Operating Day, the DE requests NOT to be run as a LEG or requests to be placed into UCM 3 to start an off-line Generator with an active LEG Flag, the Loader Operator/Generation Operator shall remove the flag in the “Leg Limits” display.


NOTE

If the LEG flag is removed with an hourly schedule entered, the “Unit Status” display will still display the flag as set and is highlighted “orange”.

4. If a Generator requests to have their Max Daily Energy redeclared, the Loader Operator/Generation Operator shall redeclare the Generator Max Daily Energy per SOP-RTMKTS.0110.0010 - Maintain Real-Time Operational Data.

NOTE

A redeclared Generator Max Daily Energy does not change the hourly LEG schedule. When the Forecaster runs a new SCRA the new Max Daily Energy MW value shall be used. The SCRA schedule automatically over-writes the DA LEG hourly schedule in the Planned Leg MW column on the “Leg Limits” display.

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5.3 Dispatch a DARD (pump)

1. The Loader Operator shall not use manual DDPs for dispatching a DARD.
2. When a DARD has a S/S, the Loader Operator shall contact the DE and verbally direct the DE to start the DARD.
3. The Loader Operator shall normally dispatch a DARD based on UDS solutions except when self-scheduled.
4. When the UDS solution dispatches a DARD on/off, the Loader Operator should, based on review performed in Section 5.1.1 execute and approve the solution even if the target DDP is less than the entire DARD MW amount.

NOTE

The following step refers to the dispatch of a DARD using a purely economic dispatch. The System Operators should use judgment in these instances to ensure there are no S/Ss pending or possible changes to bid pricing from H/E24 to H/E01 that could render this economic order undesirable.

5. For simultaneous UDS DARD start ups, the Loader Operator shall perform the following:
 - A. Place the DARD with the lowest price in UCM 1
 - B. Re-execute a UDS case and verify the first DARD the UDS will dispatch on-line is the higher priced DARD in UCM 2
 - C. When the system conditions allow, place the DARD back into UCM 2 for UDS consideration
6. The Loader Operator shall contact the DE when a Start up or Shut down signal is sent to the DARD.

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NOTE

If a DDP is sent out less than the entire DARD MW amount, the DE shall decide if they want to dispatch the DARD on/off at the current price signal.

If the DARD is receiving multiple start up signals and the DE does not want their DARD pumping, (e.g. has later S/S hours) the DE may contact ISO and claim their DARD OOS until the time of S/S. The DARD will be treated similar to a LEG.

A DARD with the lowest pricing should be the one redeclared to 0 Max Cons.

7. If a Market Participant contacts ISO to claim their DARD will not be pumping, the Loader Operator/Generation Operator shall redeclare the Max Cons to the appropriate value to indicate the DARD will not be pumping.
8. After a DARD is online the Loader Operator/Generation Operator shall place the DARD in UCM 4, regardless of whether the DARD has a S/S or not.


NOTE

TMSR on a DARD is calculated by the actual MW consumption value minus the Min Cons value. Since a S/S DARD cannot provide TMSR, the Max Cons and Min Cons values will be maintained about 5 MW above the expected MW consumption value.

Placing a Generator on the deselected list prevents UDS from starting the Generator if it is associated with a S/S DARD.

All Generators on the deselect list will be removed at 00:01 independent of operator action.

9. After the S/S DARD is on-line, the Loader Operator shall:
 - A. Ensure the S/S DARD Min Cons and Max Cons are equal and both are greater than the actual MW consumption value.
 - B. Place a Reserve down flag on each Generator originating from a S/S DARD upper pond.
 - C. In UDS, deselect each Generator originating from a S/S DARD upper pond.
 - D. Ensure that the hour following a S/S has a Max Cons greater than or equal to 1 MW with a Min Cons equal to 0 MW to allow UDS the ability to shut down the DARD.

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NOTE


In accordance with the Market Rules and Manuals, there are no provisions for a DARD that is on-line out of merit to be compensated for that out of merit operation, except when a DARD is being postured for reliability.

10. After a DARD S/S has ended and the DARD remains on-line in economics the Loader Operator shall:
 - A. Ensure the Min Cons is set to zero.
 - B. If no other online S/S DARD originates from the same upper pond:
 - (1) Remove the Generator associated with the DARD from the deselect list.
 - (2) Remove the Reserve Monitor Down flag on each Generator associated with the DARD upper pond.

NOTE

The following step refers to the dispatch of a DARD using a purely economic dispatch. The System Operators should use judgment in these instances to ensure there are no S/Ss pending or possible changes to bid pricing from H/E24 to H/E01 that could render this economic order undesirable.


11. For simultaneous UDS DARD shut downs, the Loader Operator may perform the following:
 - A. Place the DARD with the higher price in UCM 3.
 - B. Re-execute a UDS case and verify the first DARD UDS will dispatch off-line is the lower priced DARD in UCM 4
 - C. When system conditions allow, place the DARD back into UCM 4 for UDS consideration.

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NOTE

The UDS will not shut down an on-line DARD that does not have a dispatchable range (i.e., Max Cons = 0 and Min Cons = 0).

12. After a S/S DARD has been dispatched off line, the Loader Operator shall:
 - A. Place the DARD in UCM 2
 - B. Ensure the Min Cons is set to zero.
 - C. If Max Cons were adjusted to allow UDS to shut down the DARD, return the Max Cons to zero.
 - D. If no other online S/S DARD originates from the same upper pond:
 - (1) Remove the Generators associated with the DARD from the deselect list.
 - (2) Remove the Reserve Monitor Down flag on each Generator associated with the DARD upper pond.

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5.4 Monitoring Reserves

NOTE


Per Market Rule 1 Reserve Constraint Penalty Factors (reserve price violations) occur as follows:

- System TMSR = \$50
- System TMNSR = \$850
- System TMOR = \$100
- Local Zone TMOR = \$250

Reserve Monitor/Capacity Analysis up and down flags will affect reserve amounts calculated.

When reserve capacity is insufficient for a Reserve Zone or a reserve price violation for a Reserve Zone occurs then UDS will no longer continue to co optimize dispatch for energy and reserves, but will only dispatch for energy. Manual action such as, manually starting additional Generators, may be required.

1. The Loader Operator shall monitor Operating Reserve Requirements, the Reserve Monitor and review UDS Solution Data for violations of:
 - System 10 Min spinning
 - System 10 Min total
 - System 30 Min total
 - NEMABSTN 30 Min Total
 - CT 30 Min Total
 - SWCT 30 Min total
2. The Loader Operator shall maintain sufficient Operating Reserve per ISO New England Operating Procedure No. 8 - Operating Reserve and Regulation (OP-8).
3. In order to maintain an accurate Reserve calculation, if a specific Generator must be constrained down due to abnormal conditions, the Generator shall be redeclared per SOP-RTMKTS.0110.0010 - Maintain Real-Time Operational Data.
4. The Operations Shift Supervisor shall determine when system reliability allows the reduction of the Spinning Reserve requirement (normally 50% to 25%).
 - A. For this reduction to take place, the criteria in Attachment E - Spinning Reserve Requirement Lowering Criteria (Confidential) must be met.

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5. Spinning Reserve requirement must not be lowered below the NPCC imposed limit.
6. If the above criteria has been met, the Operations Shift Supervisor (or designee) shall implement the change and make the following notifications:
 - A. Report the decision promptly to the remainder of the Control Room Staff.
 - B. Enter the Spinning Reserve changes in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
 - C. E-mail appropriate personnel using “TMSR Change Notification List” e-mail group listing.
7. When the Operations Shift Supervisor determines an increase in Spinning Reserve is warranted for system reliability (normally 25% to 50%), the Operations Shift Supervisor (or designee) shall implement the change and make the following notifications:
 - A. Report the decision promptly to the remainder of the Control Room Staff.
 - B. Enter the Spinning Reserve changes in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
 - C. E-mail appropriate personnel using “TMSR Change Notification” e-mail group listing.


NOTE

During periods when system conditions threaten to reduce actual quantity of Ten-Minute Reserve, TMSR, or TMOR below the currently prescribed levels, the applicable reserve requirement may be increased to a value greater than 100% of the current requirement in order to maintain system security.

A reserve Bias value greater than 120% requires approval from the Manager, Control Room Operations (or designee).

Do not approve a UDS case with a reserve violation and a reserve Bias greater than 100%.

8. If deficiencies in TMSR, TMNSR, or TMOR are anticipated (or occur) and ECO surplus reserve is available to reallocate 10/30 minute reserve, the Loader Operator perform the following:
 - A. Obtain Operations Shift Supervisor permission to adjust the Bias.
 - B. From the CLOGGER display “UDS Constraints” ACTIVE page, select and highlight the Bias % rating for the applicable


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System-wide Reserve Requirement (i.e., TMSR, TMNSR or TMOR).

- C. Only enter the Bias % value necessary to achieve the desired response (default is 100%). The value entered shall be >100% to get the applicable reserve to bind in UDS.
 - D. If the Bias % rating change results in the applicable reserve constraint penalty factor violation, it is acceptable to adjust the UDS Look-Ahead parameter to aid the UDS solution.
 - E. As soon as conditions allow, the applicable System-wide Reserve Requirement Bias shall be returned to 100%.
9. If a UDS case has been approved with a System-wide Reserve Requirement Bias adjusted, make the following notifications:
- A. The Operations Shift Supervisor shall email appropriate personnel using “TMSR Change Notification List” email group listing.
 - B. The Loader Operator shall enter the change made to the Reserve Bias for the applicable System-wide Reserve Requirement (i.e., TMSR, TMNSR, or TMOR) in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
10. If deficiencies in 10 Minute or 30 minute Operating Reserves is imminent or occurring the Control Room staff shall take appropriate actions per SOP-RTMKTS.0120.0020 - Implement Capacity Remedial Actions.

NOTE

If a Generator is constrained for transmission and has the Reserve Down flag set, the EMS and UDS software will NOT count that Generator in the RT reserve calculations.


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5.5 Perform Time Error Correction


NOTE

Time Error Correction messages received on the Reliability Coordinator Information System (RCIS) are followed up by a NERC phone call to ensure proper communications. To access the NERC phone call, dial 4299# to be placed into the conference call.

1. When reliability concern conditions exists, the Senior System Operator shall request either of the following, as applicable:
 - Cancellation of the initiation of the Time Error Correction
 - Termination of the Time Error Correction.
2. When a Time Error Correction message is received on the RCIS, the Senior System Operator shall review the message for:
 - Start Time
 - Time Correction Letter
 - Frequency Offset
 - Estimated Stop time
3. On the EMS System Summary page or Interchange Scheduling page under the Frequency Correction Button, the Senior System Operator shall input the following information:
 - Start Time
 - Frequency Offset (normally +/- .02 Hz)
 - Time Correction Letter
 - Estimated Stop Time + 72 hours (This can be done by changing the date ahead 3 calendar days. The intent is to avoid premature stopping of the Time Error Correction.)
4. The Senior System Operator shall inform the Local Control Centers (LCC) of the Time Error Correction.
5. The Senior System Operator shall instruct the Loader Operator to update the Pool Control Error Computer (PCEC) Frequency Schedule.
6. The Senior System Operator shall enter the Time Error Correction in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.
7. When the Time Error Correction is scheduled to start the Senior System Operator shall check the Scheduled Frequency on the System Summary page to ensure it is correct.


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8. When a Time Error Correction stop message is received on the RCIS, the Senior System Operator shall input the stop time on the EMS System Summary page or Interchange Scheduling page under the Frequency Correction Button.
9. The Senior System Operator shall inform the LCCs of the stop time.
10. The Senior System Operator shall inform the Loader Operator to update the PCEC.
11. When the Time Error Correction is scheduled to stop the Senior System Operator shall check the Scheduled Frequency on the System Summary page to ensure it is correct.
12. When the Time Error Correction is complete the Senior System Operator shall enter the completion in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

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5.6 Adjust the Short-Term Load Forecast (STLF)


1. The Loader Operator shall continuously monitor the “STLF” for load growth/decay and for inaccuracies.
2. When inaccurate information is verified, the Loader Operator shall perform the following:
 - A. Inform the Senior Operator and Operations Shift Supervisor.
 - B. Make manual entries in either the “Forecast” column or “Actual Load” column for any 5 minute blocks containing inaccurate information.
 - C. When the manual entries have been made, click on the “Rerun STLF” button.
 - D. Continue to monitor “STLF” for inaccuracies and update as necessary.
3. If the STLF information continues to be inaccurate, the Loader Operator shall:
 - A. Inform the Senior Operator and Operations Shift Supervisor.
 - B. Evaluate the accuracy of the “Alternate Load Forecast”
 - C. If the “Alternate Load Forecast” is more accurate than the “Neural Net Forecast”, enter a value of 1 in the “Alternate Forecast” field and verify the STLF was forced to recognize and use the “Alternate Load Forecast”.
 - D. If a combination of “Neural Net Forecast” and “Alternate Load Forecast” is desired, use a value between 0 and 1 to properly weight and combine both forecasts as desired.
4. Whenever changes are made to the STLF or Alternate Load Forecast, make an entry in the Logserver per SOP-RTMKTS.0125.0040 - Update Control Room Logs.

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6. Performance Measures

This procedure is properly followed as evidenced by the following:

- A. The ISO achieves 100% compliance with the NERC Disturbance Control Standard
- B. The ISO achieves 100% compliance with NERC Control Performance Standard 1
- C. The ISO achieves 100% compliance with NERC Control Performance Standard 2
- D. The ISO achieves 100% compliance with ISO New England Operating Procedure No. 19 - Transmission Operations (OP-19)

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7. References

NERC Performance Standards Reference Document (located @ Resources Subcommittee)

NERC Reliability Standard BAL-001 - Real Power Balancing Control Performance

NERC Reliability Standard BAL-002 - Disturbance Control Performance

NERC Reliability Standard BAL-004 - Time Error Correction,

NERC Reliability Standard IRO-005 – Reliability Coordination Current Day Operations

Northeast Power Coordinating Council Inc. Regional Reliability Reference Directory # 5 Reserve (NPCC Directory # 5)

ISO New England - ISO New England Inc. Transmission, Markets and Services Tariff Section III, ISO New England Market Rule 1 - Standard Market Design (Market Rule 1)

ISO New England Manual for Market Operations Manual M-11

ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP-4)

ISO New England Operating Procedure No. 8 - Operating Reserve and Regulation (OP-8)

ISO New England Operating Procedure No. 19 - Transmission Operations (OP-19)

SOP-RTMKTS.0050.0010 - Perform Reserve Adequacy Assessment

SOP-RTMKTS.0060.0010 - Update EMS Network Transmission Topology

SOP-RTMKTS.0060.0020 - Monitor System Security

SOP-RTMKTS.0110.0010 - Maintain Real-Time Operational Data.


SOP-RTMKTS.0120.0020 - Implement Capacity Remedial Actions

SOP-RTMKTS.0120.0030 - Implement Transmission Remedial Action

SOP-RTMKTS.0120.0040 - Implement Disturbance Remedial Action


SOP-RTMKTS.0125.0020 - Communicate with Internal and External Parties

SOP-RTMKTS.0125.0040 - Update Control Room Logs.


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8. Revision History


Rev. No.	Date	Reason	Contact
0	3/1/03	Original	Don Gates
1	4/11/03	Revised to change approval of UDS cases to 10 minutes	Don Gates
2	6/27/03	Revised to include changes since SMD implementation including redeclared regulation dispatch.	Don Gates
3	7/28/03	Revised to include Reserve Scarcity Condition	Don Gates
4	01/07/04	Changes to Controls and Performance Measures sections. Changes in the Fast Start approval steps.	Don Gates
5	02/25/04	Revised to reflect changes in Manual 11 for S/S of Regulation and Regulation of LEGs	Don Gates
6	04/24/04	Revised to add Note for LEG units and Regulation and added trainees to Controls	Don Gates
7	06/02/04	Added steps for removing fast start units before running Reg LOC	Don Gates
8	09/29/04	Added changes to use of manual DDP	Don Gates
9	10/20/04	Revised for changes to LEG software, changes in use of manual DDP	Don Gates
10	01/18/05	Revised for changes to deselecting unit for shutdown, actions for SE problem. Changed procedure owner	Steve Weaver
11	02/01/05	Updated SOP for RTO terminology	Steve Weaver
12	03/29/05	Revised to include Time Error Correction, frequency monitoring including Att D (for NERC Version 0),	Steve Weaver
13	06/03/05	Revised to reflect the changes in the cancelled start process and changes in the Flagging process	Steve Weaver
14	09/30/05	Revised to reflect changes in Regulation Market for ASM Phase I (including adding ATTs D and E)	Steve Weaver
15	01/16/06	Revised to remove min number of Reg units, and note on lowering Reg reqs. Changes to remove posturing of deselected F/S units	Steve Weaver
16	07/31/06	Revised SOP title referenced in this SOP	Steve Weaver
17	10/01/06	Revised for ASM Phase II	Steve Weaver
18	12/22/06	Remove step for not using LAFs in Base case.	Steve Weaver
19	02/08/07	Revised for clarity and current practices, added additional guidance on RCPF \$ amounts	Steve Weaver
20	05/25/07	Clarified DARD dispatch criteria	Steve Weaver
21	07/19/07	Revised Time Error Correction activities	Steve Weaver
22	09/05/07	Revised for software changes implemented recently	Steve Weaver
23	09/17/07	Revised duties for regulation and added guidance on redeclarations for DARDs	Steve Weaver

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24	01/03/08	Change distribution list from "Notification List" to "TMSR Change Notification"	Steve Weaver
25	02/01/08	Revised several steps in Section 5.1.1 deleting references to Auto Execute. Revised several steps in 5.1.2 to Re-execute case. In Section 5.3 Added a step (5.3.8) to deselect the generator associated with a S/S DARD (pump) after it comes on line to prevent the generator from receiving a startup in a UDS case. Modified step 5.3.9 to remove DARD related generators from the deselect list when the SS DARD (pump) is dispatched off-line. Added "TMSR Change..." to Step 5.4.7.C	Steve Weaver
26	07/25/08	Minor editorial changes. Step 5.2.1.4-6 change Forecaster to Loader Operator/Generation Operator Step 5.2.1.7 remove part B Note following step 5.3.3 modified to include use of UCM-1 in 1 st paragraph and add statement "DARDs with the lowest pricing should be the ones redeclared to 0 Max Cons To end of step 5.3.5 added "regardless of whether the DARD has a Self Schedule or not" Replaced step 5.3.7 Modified step 5.3.9 and added "or the DARD S/S has ended and remains on-line in economics."	Steve Weaver
27	08/11/08	Reworded step 5.1.2.5; modified step 5.3.9; added step 5.3.10	Steve Weaver
28	10/16/08	Annual Review by Procedure Owner Changed "Review Due Date" to "Valid Through: mm/dd/yyyy (24 months from effective date) Added new step 5.1.2.3; Added new step 5.3.1; Deleted 1 st paragraph in NOTE after step 5.3.4	Steve Weaver
29	01/16/09	Deleted no longer applicable info from Background; Added additional items to Section 3 NOTE; Reworded step 5.1.1.7 and made part a new step 5.1.1.8; Modified NOTE following step 5.1.1.11; Switched Steps 5.1.2.3 & 5.1.2.4; Added new sub-Step 5.1.2.5.A.(2).a; Moved Step 5.1.2.8 to become new step 5.1.2.5; Modified Steps 5.1.9.3 and 5.1.9.4	Steve Weaver

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Rev. No.	Date	Reason	Contact
30	03/30/09	Header: changed VP, Operations to Director, Operations and copyright date to 2009; Step 3.5 added: /Generator Operator/Loader Operator; Step 5.1.1.6.B changed MW is to MWs are; Step 5.1.1.8 5 th bullet Deleted "...Area..." and added "...Zone Requirements or Transmission Constraints" Step 5.1.2.1 added: or shut-down; NOTE following step 5.1.2.2 deleted: Forecaster and; Moved NOTE prior to step 5.1.2.8 to be prior to step 5.1.2.7; Step 5.1.4.2. 3 rd bullet Deleted "...and there is no physical problem with the generator" replaced with "...since the last time the Generator S/S for and provided Regulation" NOTE following new step 5.3.5 Change LER to LEG and deleted: Pumps cannot be deselected; Step 5.4.5 changed: "following..." to "...the criteria in Attachment E..." and deleted the 2 bullets; Corrected Section 6 item C document title; Made Attachment B Confidential & replaced display screen-shot; Added new confidential Attachment E	Steve Weaver
31	05/06/09	Added new 6 th bullet to Step 5.1.1.8; Added new Step 5.4.3 and sub-steps; Added new Step 5.4.4 and sub-steps	Steve Weaver
32	07/27/09	Modified 3.0 Responsibilities, 5.1.1.3.C., 5.1.1.5., 5.1.2.4., 5.1.2.5., 5.1.2.6.A.(1) a., 5.1.3. NOTE, 5.1.3.3. 1 st bullet & 2 nd bullet, NOTE prior to 5.1.3.5. & 5.1.3.5.A., NOTE prior to 5.1.3.5.B & 5.1.3.5.C., 5.1.3.8., 5.1.3.9., 5.1.4.5., NOTE prior to 5.1.5.3. & 5.1.5.3., 5.1.8.1., 5.1.9.2.A. & B., 5.1.9.3. 1 st bullet, 5.1.9.5., NOTE prior to 5.2.11., 5.2.1.3.1. & 5.2.1.3.2., 5.2.1.2.A. & 5.2.1.2.B., NOTE prior to 5.2.1.3., 5.2.1.3., 5.2.1.3.A & 3 rd bullet, 5.2.1.3.B., 5.2.1.4., NOTE prior to 5.2.1.5., 5.2.1.5 and following NOTE, new step 5.3.5., new step 5.3.9., 5.3.10, new step 5.3.12., New NOTE prior to 5.3.13., and new step 5.1.13., 5.4.4 & 5.4.9.B., Attachment C	Steve Weaver
33	08/31/09	Added new NOTE prior to new Step 5.1.1.4.; Added new Step 5.1.1.4.; Added new NOTES prior to Steps 5.3.5. & 5.3.12.; Added last 2 paragraphs to NOTE prior to Step 5.4.3. Added NPCC C-37 to References section	Steve Weaver
34	11/25/09	Modified Section 2 3 rd and 4 th paragraphs; Globally added "or RTU" or "/RTU" as applicable; Moved Step 5.1.1.3 NOTE to before Step 5.1.1.3.B; Changed step number referred to in Step 5.1.1.9; Modified step 5.1.2.3 sub-steps; Changed step number referred to in Step 5.1.2.6.A.(2).d; Added new NOTE after Step 5.1.2.6.A.(1).c; Moved NOTE formerly after Step 5.1.4.7 to before Step 5.1.4.1; Modified step 5.1.4.5; Added the title name to the SOP referred to in Step 5.4.7	Steve Weaver

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Rev. No.	Date	Reason	Contact
35	01/18/10	Header changed copyright date to 2010; Section 3 Responsibilities NOTE replaced test to conform to new standard statement with NERC RC certification requirement; Section 4 modified to be consistent with above requirement; Modified step 5.1.1.9 ; Deleted step 5.1.3.1 and replaced with former step 5.1.3.3; Moved NOTE formerly before step 5.1.3.2 to be after 5.1.3.2; Replaced 5.1.3.2.;added new 1 st bullet to step 5.1.3.3, new bullet to step 5.1.3.6.B; added new Step 5.1.3.9; deleted former Section 5.1.5;added new step 5.1.8.4; modified step 5.3.13, 5.1.14, added new sub-steps (1) & (2) to 5.3.14 & (1) & (2) to 5.3.15; Changed System TMOR in Section 5.4 NOTE; Modified steps 5.5.3., 5.5.4.A, & 5.5.4.B	Steve Weaver
36	08/09/10	Globally deleted all references to RIGs; Globally deleted “EMS→RTGEN→”; Changed title of Section 5.1.7; Added new Section 5.1.8 for DR RTU failure; Section 5.4 NOTE replaced: System TMOR Reserve Constraint Penalty Factor from \$250 to \$100, and Local Zone TMOR Reserve Constraint Penalty Factor from \$50 to \$250	Steve Weaver
37	12/22/10	Global replaced page numbers with Page X of Y format; Global replaced RT-UDS with UDS; Section 2, 1 st paragraph provided the correct title for Market Rule 1; Section 2 4 th paragraph modified; Section 3 NOTE corrected acronym RC, clarified 2 nd paragraph ISO and RCA/BAA; Section 3.2: converted part to be 4 th bullet; Globally minor grammar changes; Modified: Step 5.1.1 and NOTE, Step 5.1.1.3, Step 5.1.1.5, step 5.1.1.6, Step 5.1.1.8.E(4), Step 5.1.1.10 5 th bullet, NOTE following Step 5.1.1.13, Step 5.1.2.1, NOTE prior to 5.1.2.3, NOTE prior to Step 5.1.2.6, Step 5.1.2.6 and sub-step A, NOTE prior to step 5.1.2.7, Step 5.1.2.7 & sub-steps A, A.(1), Step 5.1.2.8 & substeps;; Section 5.1.3 NOTE added new last bullet and modified Step 5.1.3.1 bullet, NOTE following Step 5.1.3.2; Added new last bullet to Step5.1.3.3; Modified: Step 5.1.4.6; Provided correct definition for SAR in Step 5.1.5.1; Modified Step 5.1.7.1, Steps 5.1.7.2, 3, & 4; Grammar changes for Step 5.1.8 NOTE, Step 5.1.8.4 and preceding NOTE, Step 5.1.9.1 and substep B, Step 5.1.9.3; Added new Step 5.5.1 and bullets; Deleted Note following Step 5.5.12; Added new Section 5.6; In Section 7 added BAL-001, BAL-002, NPCC Directory #5, deleted NPCC A-06 & C-37, provided correct Market Rule 1 title; Replaced screen shot of display in Att B	Steve Weaver

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Rev. No.	Date	Reason	Contact
38	08/11/11	<p>Headers updated: Procedure Owner & copyright date</p> <p>Section 2, 3rd paragraph, 2nd sentence, Deleted: “manually” and replaced “the” with “any”;</p> <p>Section 3, 2nd paragraph, Added “...IRO-005, Reliability Coordination Current Day Operations...”;</p> <p>Section 3.2, new last bullet, Added bullet;</p> <p>Section 3.4, Deleted;</p> <p>Section 5.1.1.2, modified 3rd, 4th & 7th (old) bullets & deleted 5th bullet;</p> <p>NOTE prior to Section 5.1.1.4, Made 2nd paragraph a bullet for the 1st paragraph;</p> <p>Step 5.1.1.4, Modified;</p> <p>Step 5.1.1.5, Modified grammar and deleted “...on the “NEPEX System Summary” pages...”;</p> <p>Step 5.1.1.8, Deleted former sub-step 5.1.1.8.A and re-numbered remain sub-steps, Deleted former sub-step 5.1.1.8.B.(1);</p> <p>Former Step 5.1.1.8.E, Converted to new Step 5.1.1.9;</p> <p>modified new sub-steps 5.1.1.9.B (including (1) & (2), 5.1.1.9.C and 5.1.1.9.D; added new NOTE prior to sub-step 5.1.1.9.D; modified new sub-step 5.1.1.9.E;</p> <p>New step 5.1.1.1, Replaced with former step 5.1.1.9, added new NOTE prior to 2nd bullet; modified 2nd and 3rd bullets;</p> <p>New step 5.1.1.11, Replaced with former step 5.1.1.10;</p> <p>Added new NOTE prior to step 5.1.1.11; modified 4th bullet;</p> <p>New step 5.1.1.12, Was former sub-step 5.1.1.8.E;</p> <p>New step 5.1.1.13, Was former sub-step 5.1.1.8.F;</p> <p>New step 5.1.1.14, Was former step 5.1.1.12</p> <p>New Step 5.1.1.15, Was former step 5.1.1.11 (also deleted former sub-steps 5.1.1.11.A & B);</p> <p>New Step 5.1.1.16, Was former step 5.1.1.13;</p> <p>Step 5.1.2.3, Complete re-write of step and sub-steps;</p> <p>Step 5.1.2.5, Added “...verbally...”;</p> <p>Step 5.1.2.7, Complete re-write of step and sub-steps and relocation of former following NOTE to be prior to 5.1.2.7.A.(2);</p> <p>New sub -Section 5.1.3, Added new sub-section consisting of NOTE and steps 5.1.3.1 & 5.1.3.2 (formerly found in RTMKTS.0120.0040 Section 5.6, sub-section 5.6.1, NOTE, steps, sub-steps, sub-section 5.6.2, NOTES, steps, sub-steps);</p> <p>sub-Section 5.1.4, Renumbered (former sub=section 5.1.3);</p> <p>step 5.1.3.4 deleted “.../Generation Operator...”;</p> <p>Added new sub-section 5.1.6, Added new sub-section title, NOTE, steps & sub-steps;</p> <p>Sub-section 5.1.7, Modified step 5.1.7.2 added “...,after approving a normal UDS case,...”;</p> <p>moved NOTE formerly following this sub-step to prior to this sub-step;</p> <p>Sub-section 5.1.8, Modified step 5.1.8.1.A; & sub-step 5.1.8.1.B;</p> <p>Sub-Step 5.1.10.2.A. (1), Added “...On Call...”;</p> <p>New Step 5.1.11.1.C,;</p> <p>Continued on next page</p>	Steve Gould

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Rev. No.	Date	Reason	Contact
38 con't	8/11/11	<p>Continued from previous page</p> <p>Step 5.2.1.1, deleted step and re-numbered remaining steps.; NOTE prior to step 5.2.1.2, Deleted last 2 sentences; Step 5.2.1.2 Modified step, sub-steps 5.2.1.2.A, 5.2.1.2.B, added new sub-steps 5.2.1.2.3.C & 5.2.1.2.3.D (to replace form); New step 5.2.1.3, Modified former step 5.2.1.4 and re-numbered to be new step 5.2.1.3; New step 5.2.1.4 and NOTE, Was former step 5.2.1.5 and NOTE; Former Step 5.2.1.6, Deleted step and sub-steps.; Globally in Section 5.3, Deleted "... (pumps)..." following DARDs in every instance after the first use in the Section Title.; New step 5.3.2, Was the former step 5.3.8; New step 5.3.3, Was former step 5.3.2; New step 5.3.4, Was former step 5.3.3; New step 5.3.6, Was former step 5.3.4; New step 5.3.7, Was former step 5.3.6; New step 5.3.8, Was former step 5.3.7; New step 5.3.9, Was former steps 5.3.9, 5.3.10, 5.3.11 & 5.3.13; New step 5.3.10, Was former step 5.3.15; New step 5.3.11, Was former step 5.3.12 (modified) New step 5.3.12, Was former step 5.3.14; New step 5.4.3, Was former step 5.4.6; New step 5.4.4, Was former step 5.4.7; New step 5.4.5, Was former step 5.4.8; New step 5.4.6, Was former step 5.4.9; New step 5.4.7., Was former step 5.4.10; New step 5.4.8 Was former step 5.4.3; New step 5.4.9, Was former step 5.4.4; New step 5.4.10, Was former step 5.4.5; Step 5.6.3.E, Modified; Attachment B, Deleted the screen shots of the displays; Attachment E Modified both requirements</p>	Steve Gould
Rev 39	01/17/12	<p>Biennial review by procedure owner; Modified SOP to use the acronym DARD in place of Dispatchable Asset Related Demand; Updated Header copyright date; Deleted 2nd paragraph of disclaimer in 1st page Footer</p>	Steve Gould

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9. Attachments


Attachment A - UDS Solution Messages

Attachment B - Frequency Telemetered Data

Attachment C - Ineligible for Regulation Reasons


Attachment D - Regulation Out of Merit Reason Codes

Attachment E - Spinning Reserve Requirements Lowering Criteria
(Confidential)

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Attachment A - UDS Solution Messages

<u>Message</u>	<u>Definition</u>
Deficit Gen	UDS solves with deficit generation. The MW is the total bus deficit generation MW
Excess Gen	Excess generation case. It shows the total bus excess generation MW
Generic Constraint Violated	UDS solves with a possible generic constraint violation
Branch Limit Violated	UDS solves with branch limit violation.
Ramp Rate Violation	Generation unit ramp rate violation. The MW value is the sum of the unit ramp rate violation (MW per period).
Capacity Violation	Generation unit capacity violation. It includes energy capacity violation (upper/lower bound) or reserve capacity violation. The MW value is the sum of the unit level capacity violation.
Unit Regulation Capacity Violation	It shows that unit regulation assignment cannot be fulfilled. The MW value shows the sum of the unit regulation capacity deficit.
Reserve Zone TMOR Reserve Deficit	Not able to meet Reserve Zone TMOR Reserve (followed by the MW amount of deficit
Area TMOR Reserve Deficit	Not able to meet Area TMOR Reserve (followed by the MW amount of deficit
Area TMSR Deficit	Not able to meet Area TMSR (followed by the MW amount of deficit
Area TMNSR Deficit	Not able to meet Area TMNSR (followed by the MW amount of deficit
Successful	Solution solves without any deficits or excesses or violations as described above.

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Attachment B - Frequency Telemetered Data

The Frequency Telemetered Data can be obtained in the EMS under:

RTGEN → TELEMTRD → Directory → AREA INPUT

These are the points throughout New England that ISO has access for frequency monitoring.


Check the PRIME button to select the desired frequency data source, check SKIP button to remove a frequency data source.

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Attachment C - Ineligible for Regulation Reasons


Units will appear on the “Ineligible for Regulation” display for any of the following:

Now Unavail	If unit has been selected as Unavailable
Wrong UCM	If not in UCM 4 or 6
Paused/Suspended	If unit has a telemetry failure
Too Far from Low	If a unit actual generation is below the regulation low setpoint limit and would take greater than 12 minutes at MRR to reach the setpoint
Too Far from High	If a unit actual generation is above the regulation high setpoint limit and would take greater than 12 minutes at MRR to reach the setpoint
Range < 2*SP Deadband	If Regulation Range is less than (2 * AGC setpoint deadband +1)
Range < Minimum	If Regulation Range is less than 10 MW
ARR < Minimum	If Automatic Response Rate (ARR) is less than 1 MW/min
Missing Input Data	If any data inputs are missing

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Attachment D - Regulation Out of Merit Reason Codes

DataQuality	Data Quality Problem
EquipProblem	Equipment Problem
High Load	High Load
MinGen	Minimum Generation
Other	Other
POS_Abnormal	Postured for Abnormal Conditions
S/S_DenyDataQual	Self Schedule Denied Data Quality Problem
S/S_DenyEquipProb	Self Schedule Denied Equipment Problem
S/S_DenyHighLoad	Self Schedule Denied High Load
S/S_DenyMinGen	Self Schedule Denied Minimum Generation
S/S_DenyOther	Self Schedule Denied Other
S/S_DenyPosture	Self Schedule Denied Postured for Abnormal Conditions
S/S_DenyTransmission	Self Schedule Denied Transmission
S/S_Reg Deny	Self Schedule Regulation Denied
S/S_RegRemoved	Self Schedule Regulation Removed
S/S_RemoveDataQual	Self Schedule Removed Data Quality
S/S_RemoveEquipProb	Self Schedule Removed Equipment Problem
S/S_RemoveHighLoad	Self Schedule Removed High Load
S/S_RemoveMinGen	Self Schedule Removed Minimum Generation
S/S_RemoveOther	Self Schedule Removed Other
S/S_RemovePosture	Self Schedule Removed Postured for Abnormal Conditions
S/S_RemoveTransmission	Self Schedule Removed Transmission
Trans	Transmission

	© ISO New England Inc. 2012	Procedure: Monitor Generators and DARDs
	Process Name: Dispatch Generation Resources	
	Procedure Number: RTMKTS.0070.0010	Revision Number: 39
	Procedure Owner: Steve Gould	Effective Date: January, 17, 2012
	Approved By: Director, Operations	Valid Through: January, 17, 2014

**Attachment E - Spinning Reserve Requirement Lowering Criteria
(Confidential)**