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

## Contents

## 1. Objective

The intent of this procedure is to develop and record accurate Real-Time operational data to support ISO New England (ISO) business processes.

## 2. Background

All Generators and Dispatchable Asset Related Demands (DARDs) subject to ISO control are assigned a Unit Control Mode (UCM) to provide the System Operators with information on the current status of the Generator/DARD. UCMs are defined in Attachment A – Generator/DARD Control Modes.

ISO New England Manual for Market Operations, Manual M-11 (Manual 11) directs that Redeclarations be made by the Designated Entity (DE) or the Lead Market Participant, when physical non-price Bid parameters change.

Market flags exist for settlement and market power and mitigation purposes, also for informational purposes for the Control Room System Operators. They allow for recognizing Generators/DARDs that are dispatched (up or down) or committed out of economic dispatch order. Each flag has a specific function that has a resulting effect in the settlement process. Flags for settlements purposes may be set or reset depending on the particular situation.

## 3. Responsibilities

**NOTE**

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

**NOTE**

For the purpose of redeclarations:

- Real-Time operation is defined as the current hour plus one.
- Future hours are those beyond Real-Time operation.

1. The Loader Operator/Generation Operator is responsible for changing the UCM of a Generator/DARD in real time.

2. Based on commitment or future hour information, the Forecaster is responsible for selecting the following flags:
   - Self-Schedule (SS)
   - Limited Energy Resource (LEG)
3. Based on Real-Time information, the Generation Operator/Loader Operator is responsible for selecting the following flags:
   - Self-Schedule (SS)
   - Limited Energy Resource (LEG)
   - Posture
   - Reserve Down (RD)
4. System Operators are responsible for making redeclarations that effect Real-Time operation.
5. Forecaster can only perform redeclarations for future hours.
6. The Forecaster, Senior and Security Operator in concurrence with the Operations Shift Supervisor is responsible for determining approval or denial of a Generator/DARD Commitment/De-commitment request.
7. The Operations Shift Supervisor is responsible for monitoring the following:
   - Real-Time Locational Marginal Prices (LMPs)
   - Real Time Reserve Clearing Prices (RMCPs)
   - Regulation Clearing Prices (RCPs).
8. The Generation Operator is responsible for performing the following:
   - Hour Ending 24 (HE24) Generator/DARD Redeclarations.
   - 12 hour tie line checkout with New Brunswick System Operator (NBSO) and Hydro-Quebec TransEnergie (HQT)
   - Hour 24 tie line checkout

## 4. Controls

- Changes to system data shall be recorded/documented with dates times and details through appropriate logging system

# 5. Instructions

## 5.1 Maintaining Flag Status

*5.1.1 Flagging Rules*

1. When a Generator/DARD requests to come on line for any reason the Generation Operator/Loader Operator shall designate the Generator/DARD as a Self-Schedule (SS) for its startup and entire minimum run time and perform the following applicable action(s):

   A. If either of the following conditions exists accept the Generator/DARD as a SS for less than the minimum run time:

      (1) To accommodate owner testing

      (2) When granting the request poses no reliability risk

   B. If the Generator/DARD is needed for reliability, inform the Designated Entity (DE) that, the SS may be extended for the entire minimum run time.

*5.1.2 Flagging Generators/ DARDs*

1. The Generation Operator/Loader Operator shall set flags per the rules in Step 5.1.1 and the information provided in Table 1 - Types of Flags.

2. The Forecaster shall set the required future hour flags per the information provided in Table 1 - Types of Flags.

**NOTE**

A Posture flag is considered set for the entire hour if it is set for any 5-minute interval.

3. When a Generator/DARD needs to be postured for either OP-4 or VAR support, the Loader Operator/Generation Operator shall posture the Generator/DARD per SOP - RTMKTS.0120.0020 - Implement Capacity Remedial Actions.

4. If a Generator/DARD flagging discrepancy occurs, the Forecaster shall correct the discrepancy and make a log entry in the Control Room Event Logserver.

**NOTE**

All flags are automatically logged in the dispatch software Event Log.

**Table 1- Types of Flags**

| Name of Flag | Set Flag When: | Effect of Flag Setting |
|---|---|---|
| Posture | A Generator/DARD is Postured for actual or anticipated ISO New England Operating Procedure No. 4 - Action During a Capacity Deficiency (OP-4) conditions.<br>An economic Fast Start Generator is held offline under certain conditions. | The Generator/DARD costs will be made whole as described in Section 5 of the ISO New England Manual for Market Rule 1 Accounting, Manual M-28 (Manual 28) or Schedule 2. |
| Posture | A Generator is backed down to provide voltage support or control.<br><br>A DARD is started to provide voltage support or control. | The Generator is eligible to be paid a Lost Opportunity Cost (LOC) as described in Schedule 2 for the amount the Generator is reduced.<br><br>The DARD is compensated as described in Market Rule 1, Appendix F. |
| Self Schedule (SS) | A Generator/DARD commits itself during the Operating Day.<br>**NOTE**<br>This flag is set for a Generator/DARD that is a SS. This flag does not apply to or reflect Generators/DARDs that are committed (i.e., must run) for reliability reasons. | The Generator/DARD will be a price taker unless economically dispatched above its SS. |
| Reserve Down (RD) | A Generator/DARD is designated by the Constraint Logger (CLOGGER) as a Generator/Asset that will help relieve the constraint by lowering its output. | This Generator/DARD will not be used in the reserve calculation. |
| Limited Energy Generator (LEG) | A Generator requests to be run as a LEG.<br>**NOTE**<br>Flag automatically set by inputting a schedule in "Leg Limit" column of the "Leg Limits" display for the unit.<br>Generator must have a "Max Daily Energy" offer on the "Leg Limits" display in order to be run as a LEG. | When flag is set, Generator will be run economically up to the hourly LEG schedule and the Generator remains fully dispatchable by CD SPD. |

| Name of Flag | Set Flag When: | Effect of Flag Setting |
|---|---|---|
| Regulation Self Schedule (REG SS) | A Generator requests to provide SS Regulation and meets the requirements to do so.<br>**NOTE**<br>Flag set on the Regulation Status (REG) page | When flag is set, a Generator will be price taker for Regulation and not receive Lost Opportunity Costs for Regulation. |
| Special Constraint Resource<br>(SCR) | A Generator/DARD is committed or an on-line Generator/DARD has been incrementally loaded out of merit, at the request of the local transmission/distribution Market Participant, in order to provide relief for constraints (thermal, voltage or stability) not reflected by the ISO systems or Operating Procedures.<br>**NOTE**<br>Flag set by the Forecaster in the Gateway Data Modification Application (GDMA) | The Transmission Owner or distribution company is charged an amount equal to the Operating Reserve Credits as calculated pursuant to ISO New England - ISO New England Inc. Transmission, Markets and Services Tariff Section II Market Rule 1 Standard Market Design (Market Rule 1) related to the Real-Time operation of the Special Constraint Resource. |

## 5.2 Maintaining Generator Control Status

1. The Loader Operator/Generation Operator shall change the Unit Control Mode (UCM) in real-time for a Generator based on Real-Time information received or through analysis of Energy Management System (EMS).

2. The Loader Operator/Generation Operator shall select the appropriate UCM per Attachment A - Generator/DARD Control Modes.

**NOTE**

Changing a Generator operating mode to a dispatch mode prior to Economic Miniumum (Eco Min) adversely affects the Unit Dispatch System (UDS) software.

If a Fast Start Generator is not in a dispatch mode (normally UCM-4) it will not receive a Shut Down order.

Typical UCM changes and communication responsibilities are shown in Table 2. Generator Control Mode Changes.

3. With the exception of Fast Start Generators, the Loader Operator/ Generation Operator shall not change a Generator operating mode to a dispatchable mode (either UCM-4 or UCM-6) until the Generator has attained its Eco Min.

4. The Loader Operator/Generation Operator shall change a Fast Start Generator operating mode to a dispatchable mode (usually UCM-4) as soon as it is on line.

**NOTE**

The RSD feature changes the Generator operating mode to UCM-3 and starts the Min Down Time timer.

5. When a non-fast start Generator is to be shutdown, the Loader Operator/ Generation Operator shall perform the following:

   A. Notify the Security Operator who will perform a security assessment to ensure reliability will be maintained

   B. Use the “release for shutdown” (RSD) feature in the EMS

   C. Call the Generator (DE) and release the non-fast start Generator for shutdown.

6. If a Generator trips or becomes out of service (OOS), the Loader Operator/Generator Operator shall:

   A. Change the Generator operating mode to UCM 1 and check "OOS/Unavail" checkmarks for the applicable hours in the "ISO Unit Limits" display for the remainder of the operating period.

   B. Access the ISO Outage Scheduling software and determine if the Generator was a Must Run for reliability.

   C. If the Generator was a Must Run for reliability:

**NOTE**

If a Generator is a Must Run for reliability, the Security Operator is expected to perform the additional actions contained in SOP-RTMKTS.0060.0020 – Monitor System Security.

   (1) Notify the Operations Shift Supervisor and Senior System Operator

   (2) Contact the applicable Generator DE and determine if or when the Generator will be restored.

**NOTE**

Emailing Market Admin about each Generator that is OOS due to transmission facilities allows Market Admin to change Generator information for proper settlement.

Transmission facilities include equipment located on the high voltage side of the electric network beyond the step-up transformer, and including the step-up transformer.

   D. If the Generator becomes OOS due to transmission facilities, use the "Market Admin Grp" listing to email the Market Administrator group (Market Admin) stating the identity of the Generator and the reason the Generator is OOS.

   E. Evaluate each Generator that trips and subsequently become available within the Operating Day and, as applicable based on reliability requirements, perform one of the following actions:

   - For each Generator determined to be required for reliability:

      (1) Order the Generator to re-start.

      (2) Enter the reason for the re-start order in the Control Room Event Logserver.

- For a Generator determined **not** to be required for reliability that is requesting to re-start following a trip:
  (1) If prior to the trip the Generator was 75% or greater than the bid in Eco Min, enter a SS for the hours it is requesting to be online. (This includes a Generator that cleared in the Day Ahead Market.)

  (2) Enter the re-start reason in the Control Room Event Logserver.

**Table 2 - Generator Control Modes Changes**

| UCM Change | | Reason |
|---|---|---|
| From | To | |
| UCM-1 | UCM-2 | Generator returned to operational status from scheduled or forced outage. |
| UCM-1 | UCM-3 or 4 | Generator has been started from an offline unavailable status and is now at its fixed output level (UCM-3) or is available for economic dispatch (UCM-4).<br>Generators that have the Economic Maximum (Eco Max) = Eco Min but are dispatchable fast start units, shall be set to UCM-4. |
| UCM-2 | UCM-1 | Generator is no longer available due to scheduled or forced outage. |
| UCM-2 | UCM-3 or 4 | Generator has been brought on-line from an offline available status and is now ramping to Eco Min limit (Non-Fast Start Generator) (UCM-3) or is available for economic dispatch (UCM-4).<br>Fast Start Generators operating mode is changed to UCM-4.<br>Generators that have the Eco Max = Eco Min but are dispatchable fast start units shall be set to UCM-4. |
| UCM-3 | UCM-2 | Generator has gone offline but remains available within the Generator minimum start time and minimum downtime. |
| UCM-3 | UCM-4 | Generator is at its Eco Min limit and the DE has made the unit available for economic dispatch. |
| UCM-4 | UCM-2 | Generator is dispatched off from economic operation. |

**NOTE**

Due to time constraints the Generator may go off line prior to the Loader Operator/ Generation Operator using the RSD feature, which may necessitate the Generator operating mode being changed from UCM-4 to UCM-2.

| UCM Change | | Reason |
|---|---|---|
| From | To | |
| UCM-4 or 6 | UCM-3 | Generator is unavailable for economic dispatch or must remain at a fixed level, or Generator has been released for shutdown by ISO. |
| UCM-4 | UCM-6 | Generator to provide Regulation. |
| UCM-6 | UCM-4 | Generator is no longer providing Regulation, following economic dispatch instructions. |
| UCM-3, 4, or 6 | UCM-1 | Forced outage of Generator occurs without warning. |
| UCM-3, 4 | UCM-5 | Posture Generator to maintain reliability or to provide VAR support. |
| UCM-6 | UCM-5 | Posture Generator to maintain reliability or to provide VAR support |

## 5.3 Maintaining Dispatchable Asset Related Demand (DARD) Control Status

1. The Loader Operator/Generation Operator shall select the appropriate UCM per Attachment A - Generator/DARD Control Modes.

**NOTE**

Normally the Control Room System Operators will only use UCM-2 or UCM-4 for DARDs.

When a DARD is OOS due to the pond elevation, the Maximum Consumption (Max Cons) will be Redeclared to zero, but the DARD operating mode will be set to UCM-2.

UCM-1 can be used for a DARD trip or as described in Table 3.

2. If a DARD trips or goes out of service (OOS), the Loader Operator/Generator Operator shall:

   A. Change the DARD operating mode to UCM-1 and set the "OOS/Unavail" checkmarks for the applicable hours in the "Demand Limits" display.

**NOTE**

Typical UCM changes and communication responsibilities are shown in Table 3 - DARD Control Mode Changes.

**Table 3 - DARD Control Modes Changes**

| UCM Change | | Reason |
|---|---|---|
| From | To | |
| UCM-1 | UCM-2 | DARD returned to operational status from scheduled or forced outage. |
| UCM-2 | UCM-4 | DARD has been brought on-line from an offline available status and is either now at a fixed output (SS) or available for economic dispatch. |
| | UCM-3 | Posture DARD to maintain reliability or to provide VAR support. (The EMS and UDS will not calculate any reserve when the DARD is in UCM-3.) |
| UCM-4 | UCM-2 | DARD is dispatched off from economic operation. |
| UCM-4 | UCM-1 | DARD tripped off-line. |
| UCM-2 | UCM-1 | UCM-1 is used to prevent simultaneous start-up of DARDs or for scheduled or forced outages of DARDs. |
| UCM-3 | UCM-4 | Return DARD to dispatchable status when preventing multiple DARD shut-downs in a UDS case. |
| UCM-4 | UCM-3 | Used to prevent multiple DARD shut-downs in a UDS case. |

## 5.4 Performing Generator/DARD Redeclarations

*5.4.1 Appropriate Redeclarations*

1. Redeclarations from the Lead Market Participant or DE shall be accepted for the following conditions:

   A. System Operators shall only accept Redeclarations from the DE.

   B. The Forecaster shall accept Redeclarations from the DE or the Lead Market Participant for future hours only.

   C. Control Room Staff accepting Redeclarations shall request and verify the Asset ID to ensure the Redeclarations are made for the correct Generator/DARD.

**NOTE**

The Senior Analyst, System Operations Support has the ability to cap Generator/DARD Manual Response Rate (MRR) Claim 10 and Claim 30 values. The values (Bid, Cap, and Redec) are listed in either the "ISO Unit Limits" page or the "Demand Limits" page. The hierarchy for these values is as follows:

- The lower of the Bid value or the Cap value will be used by UDS. If a Redec value is entered it will be used by UDS over both Bid and Cap.
- If the Senior Analyst, System Operations Support requests a Redeclaration to a Generator/ DARD Claim 10/30 or the Power System Modeling Support Group requests a change to UCM, the request is to be submitted in writing to the Operations Shift Supervisor and logged in the Control Room Event Logserver with the requestors name included.

2. If a DE requests a Redeclaration over a capped MRR, Claim 10 or Claim 30 value, Control Room Staff shall contact the Senior Analyst, System Operations Support and determine if a Redeclaration can be made.

3. When a Generator actual/expected quantity/status for any of the following parameters differs from the Offer Data or daily Supply Offer, the Generation Operator/Loader Operator shall input a Redeclaration:
   - Economic Maximum (Eco Max)
   - Economic Minimum (Eco Min)

**NOTE**

Emergency Minimum (Emer Min) is based on the physical capability and design of the Generator. It is only redeclared higher when system reliability needs dictate.

   - Emer Min

**NOTE**

Real-Time High Operating Limit (RTHOL) is the maximum MW output that could be achieved based on real-time conditions.

   - RTHOL
   - Self-Schedule (SS)
   - Manual Response Rate (MRR)
   - Claim 10 Minute Response (Claim 10)
   - Claim 30 Minute Response (Claim 30)

   A. The Generation Operator/Loader Operator shall complete the following applicable actions on the "ISO Unit Limits" display to make Generator Redeclarations.

      (1) If the Redeclaration is at the request of the DE, enter it into normal Redec columns.

      (2) If the Redeclaration is an ISO imposed limit, enter it into the ISO Imposed columns.

      *Examples of ISO Imposed Redeclarations: Redeclaration for SCR, when limiting Eco Max for reliability, Redeclaration for Min Gen Emergency (combined cycle removing GT from service to obtain emergency minimum)*

   B. For Redeclarations raising the Eco Min (for any reason except the scenario stated in the following NOTE), the Generation Operator/Loader Operator shall input the Redeclaration with a corresponding SS and make an entry in the Control Room Event Logserver.

**NOTE**

Refer to Attachment F for directions if a combined cycle Generator modeled as a single Generator, which has brought more than one of the Generators online at ISO request for reliability, requests a Redeclaration of its Eco Min up without applying a SS.

4. When a DARD actual/expected quantity/status for any of the following parameters differs from the Offer Data or daily Supply Offer, the Generation Operator/Loader Operator shall input a Redeclaration:
   - Maximum Consumption (Max Cons)
   - Minimum Consumption (Min Cons)
   - Self-Schedule (SS)
   - Manual Response Rate (MRR)
   - Claim 10 Minute Response (Claim 10)
   - Claim 30 Minute Response (Claim 30)

**NOTE**

DARDs operating with a SS flag set do not get Reserve credit.

DARDs operating without a SS flag set may get Reserve credit.

   A. The Generation Operator/Loader Operator shall complete the following applicable actions on the "Demand Limits" display to make DARD Redeclarations:

      (1) If the Redeclaration is at the request of the DE, enter it into normal Redec columns.

      (2) If the Redeclaration is an ISO imposed limit, enter it into the ISO Imposed columns.

   B. For a Redeclaration involving raising the Min Cons for any reason, the Generation Operator/Loader Operator shall input the Redeclaration with a corresponding SS and make an entry in the Control Room Event Logserver.

5. For Generators/DARDs requesting a SS, the Security Operator shall perform a security assessment and either approve or deny the SS request based on the security assessment.

**NOTE**

Manual 11 states Generators are to specify a minimum run time not to exceed 24 hours. They may SS if required to remain on-line greater than 24 hours for their minimum run-time limitations.

6. For Generators having a minimum run-time of greater than 24 hours, the Loader Operator/Generation Operator shall redeclare the Generator as a SS Generator for the remaining run-time after the initial 24 hours.

7. For Generators providing Regulation, a Redeclaration shall be made when a Generator actual/expected quantity/status for any of the following parameters differs from daily Supply Offer:

   - Automatic Response Rate (ARR)
   - Regulating High Limit (Reg High)
   - Regulating Low Limit (Reg Low)
   - Availability status (Unavail for Reg) - based on physical status of Generator

   A. Generator Redeclarations for Regulation are made using the "Regulation Limits" display.

   B. If a Generator requests to make a redeclaration to any of its Regulation parameters while supplying Regulation, the Loader Operator shall refer to SOP-RTMKTS.0070.0010 - Monitor Generators and Dispatchable Asset Related Demands for instructions on dispatch.

8. When either the Max Daily Energy or LEG Limit value differs from the daily Supply Offer for a LEG, the Generation Operator/Loader Operator shall input a Redeclaration:

   A. Redeclarations for a LEG are made on the "Leg Limits" display.

**NOTE**

At least 1 MW of separation between the LEG Limit (Schedule) and the Eco Min must exist to ensure that the LEG is not recognized as "non-dispatchable" by UDS.

UDS will produce DDPs for a "non-dispatchable" LEG equal to the LEG actual output. If the LEG actual output is above the LEG Limit, UDS will not produce an economic DDP equal to or below the LEG Limit.

B. When making a redeclaration to a Generator LEG Limit hourly schedule, the Forecaster/Generation Operator/Loader Operator shall verify the LEG Limit is at least 1 MW greater than the Eco Min in each hour. (Unless the Redeclaration is for 0 MW).

**NOTE**

LEG Redeclaration implementation time may take up to 15 minutes. During this time the Generator is expected to follow their DDPs.

C. LEG Redeclarations shall be evaluated by Control Room Staff to determine the time of implementation and the DE shall be informed of the evaluation results.

9. A Redeclaration shall stay in effect until the DE submits a subsequent Redeclaration restoring the previous Supply Offer parameter or modifying the Redeclared parameter value.

*5.4.2 Redeclarations for Combined Cycles*

**NOTE**

This section is to be used anytime:
A combined cycle Generator is modeled as a single Generator Asset and one of its generation components is off-line available.
A combined cycle Generator cannot reach it Eco Max due to minimum down time or notification time constraints on its generation component which is off-line available.

1. When a combined cycle Generator has a generation component taken off-line, the Generation Operator/Loader Operator shall Redeclare the Eco Max down to a level agreed upon with the DE. The Redeclaration shall be an ISO imposed Redeclaration.
2. When a combined cycle Generator is released for dispatch with a generation component off-line, the Generation Operator/Loader Operator shall Redeclare the Eco Max and Eco Min (if applicable) down to a level agreed upon with the DE. The Redeclaration shall be ISO imposed.

**NOTE**

A combined cycle Generator modeled as a single Generating Asset which has brought more than one of the Generators online at ISO request for reliability, can Redeclare its Eco Min up without applying a SS.

3. The ISO Imposed Redeclaration for a combined cycle Generator shall remain in effect until one of the following conditions is met:

   A. The off-line generation component phases on and is released:

   - The Generation Operator/Loader Operator shall Redeclare the Eco Max and Eco Min (if applicable) to the original value(s)

   B. The DE provides a startup time in advance for the off-line generation component:

   - The Generation Operator/Loader Operator shall Redeclare the Eco Max and Eco Min (if applicable) to the original value(s) in accordance with the startup time to reflect the capacity in the Reserve Adequacy Assessment (RAA) and/or the Security Constrained Reserve Adequacy (SCRA).

C. The Forecaster, Senior System Operator, Generation Operator or Loader Operator orders on the off-line generation component for reliability purposes:

- The Generation Operator/Loader Operator shall Redeclare the Eco Max and Eco Min (if applicable) to the original value(s) in accordance with the startup time to reflect the capacity in the RAA or the SCRA

4. If needed for system reliability, Control Room staff shall provide a startup time for off-line generation components.

**NOTE**

The combined cycle Generator DE maintains responsibility for determining any non-reliability related startups for their off-line generation components.

The combined cycle Generator DE shall request a SS for any non-economic Generator operation.

*5.4.3 DE Request for Commitment / De-commitment of Non Reliability Generators*

**NOTE**

Real-Time Redeclarations will normally be called into the Generation Operator. Next day Redeclarations for Commitment/De-Commitment or LEG schedules and Max Daily Energy offers shall normally be called into the Forecaster.

1. When a Generator/DARD DE requests either a Commitment or De-commitment, the Generation Operator/Loader Operator/Forecaster shall inform the Security Operator, Senior System Operator and Forecaster so assessments can be made.

**NOTE**

The DE should provide the ISO with at least 30 minutes notice to request a Commitment or De-Commitment.

The ISO should reply to the Commitment/De-commitment request within 20 minutes and allow the Generator/DARD to commit or de-commit as soon as it is reliable to do so.

2. The Security Operator shall perform a security assessment of the Commitment/De-commitment as follows:

   A. Determine if the Generator/DARD is needed for 1st or 2nd contingency coverage.

   B. Determine if the Generator/DARD will cause any adverse security problems to the system.

   C. Identify if the Commitment/De-commitment based on the security assessment can be allowed.

   D. If security assessment results allow unit Commitment/De-Commitment, obtain LCC concurrence.

   E. Notify the Forecaster, Senior Operator and Operations Shift Supervisor of the results of the security assessment.

3. The Forecaster shall perform a capacity analysis of the Commitment/De-commitment as follows:

   A. Use the Capacity Analysis application to determine if the Commitment/De-commitment shall cause either a Capacity Deficiency or a Minimum Generation Emergency condition.

   B. Notify the Senior System Operator and Operations Shift Supervisor of the capacity analysis results.

4. Based on the Security Operator's recommendation, LCC's concurrence, and the Forecaster's Capacity Analysis results, the Senior System Operator/Operations Shift Supervisor shall inform the Generation Operator/Loader Operator of the approval or denial of the Commitment/De-commitment request.
5. The Generation Operator/Loader Operator shall inform the DE of the approval or denial of the Commitment/De-commitment and Redeclare the Generator/DARD parameters if necessary.

**NOTE**

Generators that request to come on line are required to SS for their entire minimum run, except as specified in Section 5.1.1.

6. The Generation Operator/Loader Operator shall:

   A. Set the SS flag for Commitments

   B. Remove the SS flag for De-commitments

   C. When a Commitment/De-commitment request is approved or denied, the Generation Operator/Loader Operator shall make a log entry in the Control Room Event Logserver stating the reason.

*5.4.4 Commitments/ De-Commitments of Reliability Generators*

**NOTE**

A DE decommitment request can be accepted when the unit is no longer needed for reliability.

1. A Generator may be de-committed by ISO if the Generator is on-line for a reliability reason (TCU, VAR, RMR or SCR) and meets **ALL** the following:
   - Is no longer needed
   - Has met minimum run time
   - Has met the DA schedule
2. The Forecaster shall enter the flagging information for Generators de-committed per SOP-RTMKTS.0050.0005 - Determine Reliability Commitment for Real-Time and SOP-RTMKTS.0110.0015 - Flagging for RT Market Settlements in the Control Room Event Logserver.
3. When a Generator is brought on in an emergency for reliability reasons (TCU, VAR or RMR), the Control Room System Operators shall:
   A. Make an entry that identifies the Generator and includes the reason in the Control Room Event Logserver.
   B. Inform the Forecaster to set the flagging information per SOP-RTMKTS.0050.0005 - Determine Reliability Commitment for Real-Time and SOP-RTMKTS.0110.0015 - Flagging for RT Market Settlements.
4. When a request for a Generator to be brought on for SCR is received, the Control Room System Operators shall:
   A. Make an entry that identifies the Generator and includes the reason in the Control Room Event Logserver.
   B. Inform the Forecaster to set the flagging information per SOP-RTMKTS.0050.0005 - Determine Reliability Commitment for Real-Time and SOP-RTMKTS.0110.0015 - Flagging for RT Market Settlements.

*5.4.5 Deviation from Supply Offer Parameters*

1. If a dispatchable Generator/DARD is observed not operating within its Supply Offer parameters, the Generation Operator/Loader Operator shall:

   A. Contact the DE to compare operating data and confirm deviation.

      (1) If the DE operating data ***agrees*** with the ISO operating data, enter a Redeclared value and inform the DE of the Redeclared parameters.

      (2) If the DE operating data ***does not*** agree with the ISO operating data, continue to use the Supply Offer parameters provided by the DE and perform the following, if applicable:

         a. To ensure reliability obtain Operations Shift Supervisor permission and unilaterally Redeclare the Generator/DARD Supply Offer parameters if needed.

         b. If a Generator/DARD Supply Offer parameters are unilaterally Redeclared, inform the DE and make an entry into the Control Room Event Logserver.

### *5.4.6 Fast Start Unable To Perform*

**NOTE**

A fast start Generator is no longer fast start capable if any of the following conditions exist:

- The Generator minimum run time is greater than one hour
- The Generator minimum down time is greater than one hour
- The Generator time to start is greater than 30 minutes
- The Generator is **not** available for dispatch (i.e., is **not** manned or does **not** have automatic remote dispatch capability).

1. If a Generator is no longer fast start capable, the Loader Operator/Generator Operator shall:

   A. Place the Generator on the deselect list

   B. Place the "Reserve Down" flag on the Generator

   C. Redeclare any claimed 10/30 minute response to zero

   D. Inform the Generator DE of the following:

      (1) The Generator will not be dispatched economically as a fast start Generator.

      (2) To operate the Generator in real-time without a supplemental commitment from ISO, the DE must request the Generator be SS.

      (3) The Generator claimed 10 and/or 30 minute response has been redeclared to zero.

   E. Make an entry in the Control Room Event Logserver describing the actions taken and the reasons the unit is unable to perform as a Fast Start Generator

2. If the Generator Self Schedules to operate in real-time, remove the Generator from the "De-select List" and remove the "Reserve Down" flag for the duration of that SS.

3. When the Generator returns to normal fast start capability:

   A. Remove the Generator from the "De-select List"

   B. Remove the "Reserve Down" flag

   C. Restore the claimed 10 and/or 30 minute responses

   D. Make an entry in the Control Room Event Logserver describing the actions taken and the return of the Generator to normal fast start dispatch.

*5.4.7 Redeclaration Documentation*

1. Generation Operator/Loader Operator shall notify the appropriate LCC of any Redeclarations that may affect system security.

2. The Generation Operator/Loader Operator shall notify the Forecaster and Senior System Operator of any significant Redeclarations.

**NOTE**

Example of "significant" Redeclarations for this procedure:

- Redeclarations > 50 MW
- Redeclaring a Generator/DARD OOS
- Redeclarations affecting system security (including local areas)
- Redeclarations of 5-10 MW during OP 4 conditions
- Any Redeclaration the Generation Operator/Loader Operator determines is "significant" based on experience and system conditions

3. For "significant" Redeclarations, the Generation Operator/Loader Operator shall make a log entry in the Control Room Event Logserver.

4. The Generation Operator/Loader Operator shall inform the Security Operator of significant Redeclarations that may require an evaluation of the Redeclarations effect on the system.

### *5.4.8 Hour Ending 24 (HE24) Generator/ DARD Redeclarations*

1. Early each night shift, the Generation Operator will perform HE24 Redeclarations for each Generator/DARD using information from the following as appropriate:

   A. CROW "Unit Reductions Report"

   B. OIS "Unit Redeclaration for Hour Ending 24" report

   C. EMS "Unit Status" and "Demand Status"

2. The Generation Operator shall compare each current Generator/DARD Redeclaration in the "Unit Status", "Demand Status" or "Unit Redeclaration for Hour Ending 24" report to the actual limits of these Generators/DARDs displayed by the "ISO Unit Limits" or "Demand Limits" display for the following day.
3. If there are any differences between the Generator/DARD Supply Offer parameters (such as Eco Max or Max Cons), the Generation Operator shall contact the DE and resolve the conflict.
4. If changes need to be made to the Supply Offer parameters, the Generation Operator shall make the changes in the "ISO Unit Limits" or "Demand Limits" display in accordance with the information obtained from the DE.

**NOTE**

A redeclaration performed at a time between 2355 and 0000 could be applied to the incorrect day. If a redeclaration is not completed by 2355, making the redeclaration should be delayed until 0005 to make sure the redeclaration is applied to the correct day.

5. To make sure the correct parameters are available for the following day, the HE24 Redeclarations shall be completed by 2355.

### *5.4.9 Corrections to Generator/ DARD Redeclarations*

1. If a Generator/DARD parameter needs to be changed and the hour for the change has past, the Generation Operator/Loader Operator shall fill out Attachment E - Corrections to Generator/DARD Redeclarations.

2. Include the following data:
   - Generator/DARD Short Name
   - Asset ID #
   - Parameter to be changed
   - Original Parameter value
   - New Parameter value
   - Date
   - Start Time
   - End Time
   - Reason for change

3. The Generation Operator/Loader Operator shall ensure Attachment E - Corrections to Generator/DARD Redeclarations is saved for the Market Admin group on a daily basis.

## 5.5 Tie Line Checkouts

*5.5.1 Shift Checkout*

1. The Generation Operator/Loader Operator shall compare the scheduled and actual interchange with New Brunswick System Operator (NBSO) once a shift at approximately1130 and Hydro Quebec TransEnergie (HQT) once a shift approximately 1230 and ensure both of the following conditions are met :

   A. The scheduled interchange corresponds to the each neighboring RC/BA.

   B. The actual interchange is consistent with known system conditions for both HQT and NBSO.

*5.5.2 Hour 24 Checkout*

**NOTE**

The NBSO checkout can be performed at approximately 2330 and HQT checkout can be performed at approximately 0030. The NYISO checkout is done by the TSO.

1. The Generation Operator shall compare the scheduled and actual interchange with each neighboring RC/BA for the entire day as follows:

   A. Ensure the scheduled and actual numbers corresponding to the neighboring RCs/BAs and the actual numbers are consistent with known system conditions for the entire day

   B. Ensure the totals for each tie line are totaled correctly for the day.

*5.5.3 Tie Line Mismatch*

1. If the scheduled or actual numbers do not match, confer with the Operations Shift Supervisor, Senior System Operator and the neighboring RC/BA until an agreement is reached.

2. If the actual numbers are inconsistent with known system conditions, determine the cause of the inconsistency [Supervisory Control And Data Acquisition (SCADA), readings, etc.] and attempt to correct the inconsistency.

3. If the schedule or actual numbers need to be amended, the Generation Operator shall enter the agreed upon number in the appropriate log.

4. For discrepancies, the Generation Operator shall inform the Operations Shift Supervisor and make a log entry in the Control Room Event Logserver.

## 5.6 Monitoring R/T LMPs and RMCPs

**NOTE**

During Real-Time operations, events may occur and can impact the calculation of ex-ante and ex-post LMPs and RMCP. These occurrences will require communications between the Market Administrator and the Operations Shift Supervisor.

### *5.6.1 Monitoring*

1. The Operations Shift Supervisor shall monitor the R/T LMP and RMCP values for any suspect prices. Suspect prices can result from:
   - Inaccurate SCADA data
   - State Estimator failure
   - LMP and RMCP values inconsistent with known system conditions (location of constraints, constraints with no price separation, price separation without constraints, etc.)
   - UDS not solving
   - UDS solving with inappropriate/abnormal Desired Dispatch Points (DDPs)
   - Generators/DARDs flagged for transmission with no sensitivities
   - Constraint Logger (CLOGGER) input errors
2. When a potential LMP and/or RMCP price discrepancy is identified the Operations Shift Supervisor (or designee) shall notify the on-call IT and the on-call Market Administrator.

**NOTE**

Both the Market Administrators and Operations Shift Supervisors carry pagers, which alert them to anomalies with LMP and RMCP pricing and/or network topology issues. The alarms, set points and expected Operator actions are detailed in Attachment B - LMP Automated Alerts and in Attachment D - RMCP Automated Alerts.

The Market Administrator will call the Operations Shift Supervisor to obtain information when evaluating the problem as necessary.

### *5.6.2 Communications*

1. Upon receipt of a page, the Operations Shift Supervisor shall identify and/or attempt to solve the problem immediately as outlined in Attachment B- LMP Automated Alerts.

## 5.7 Monitoring Generator/DARD Outages and Reductions

1. The Generation Operator shall monitor the outage information in the ISO Outage Scheduling software and shall perform the following:

   A. Prior to beginning an outage, perform an assessment to ensure the outage can be implemented reliably.

   B. Update the ISO Outage Scheduling software with start and end times.

   C. Ensure all unit parameters correctly reflect Generator/DARD outages and Redeclarations.

   D. Inform the Forecaster of any changes to the planned outages (e.g., early/late commencement/return from an outage, any new outage requests, cancellations, etc.).

   E. For any new Generator/DARD outage:

      (1) Inform the Operations Shift Supervisor, Senior Operator and Forecaster.

      (2) Make an entry of the unit, time, reason, and estimated length of outage in the Control Room Event logserver .

2. Using the information contained in the above log entry, the Forecaster will create a new outage in the ISO Outage Scheduling software.

## 5.8 Maintaining AVR and PSS Status

1. When an AVR is removed from automatic voltage control mode or a PSS is removed from service, the Loader Operator/Generation Operator shall enter the following in the Control Room Event Logserver:
   A. Asset and time AVR removed from automatic voltage control mode or PSS removed from service
   B. Any applicable operating constraints for the asset
   C. Estimated time for return to service
   D. Time the applicable LCC was notified
   E. Time the Operations Support Services group was notified
2. To enter AVR or PSS outages into the ISO Outage Scheduling software the Loader Operator/Generation Operator shall perform the following actions:
   A. Select “File”→ “New”→ “Outage Request”
   B. Select “Generation”
   C. Select “Informational” as the Outage Priority
   D. Select the affected Asset
   E. In the “Constraint/Commitment” dropdown, select “AVR”
   F. In the “ISO Comments” box, enter: e
      (1) The equipment not operating normally (i.e., AVR or PSS)
      (2) The reason for the malfunction
      (3) Any operating restrictions caused by the outag
3. When either the AVR is returned to automatic voltage control mode or the PSS is returned to service, the Loader Operator/Generation Operator shall enter the following in the Logserver:
   A. Asset and time the AVR returned to automatic voltage control or the PSS returned to service
   B. Time the applicable LCC was notified
   C. Time the Operations Support Services group was notified

4. To close out the AVR or PSS outage, the Loader Operator/Generation Operator shall enter an end time in the ISO Outage Scheduling software.

## 5.9 Single Source Size Notifications to PJM and NYISO

**NOTE**

When restricting New England resources to the Single Source Contingency Limit (SSCL) the limit communicated to the DE will include an allowance (approximately 10 MW per resource) to prevent any exceedance of the SSCL due to variance in asset output.

The SSCL is defined as the "Lowest Limit" value displayed on the Single Source Contingency page of the ICM..

1. If any resource is capable of or expected to exceed 1200 MW the Security Operator shall:

   A. Inform the NYISO System Operator that a source contingency will exceed 1200 MW.

      (1) If NYISO imposes a limit, enter it as an Override to the NYPP C/E Interface section of the SSCM.

      (2) Notify all Control Room Operators of the NYISO limit.

      (3) Log the limit in the Control Room Event Logserver.

      (4) If necessary, go to section 5.9.3 to impose the restriction.

2. If any resource is capable of or expected to exceed the PJM base limit (Typically 1400 MW) the Security Operator shall:

   A. Contact the PJM System Operator and request an amount of margin that will allow full utilization of the resource.

      (1) If the required margin is authorized:

         a. Update the Single Source Contingency Monitor (SSCM) PJM margin MW value with the specified amount.

         b. Notify all Control Room Operators of the authorized PJM margin MW amount.

         c. Enter the authorized PJM margin MW amount in the Control Room Event Logserver

      (2) If no margin is authorized or the MW amount does not allow full resource utilization, go to section 5.9.3 to impose the restriction.

3. Restrict resources as follows:

   A. For HQT I/II, set the import Total Transfer Capability (TTC) to the SSCL and schedule the interface IAW Schedule Next Hour External Transactions.

   B. For generators, notify the Designated Entity (DE) of the SSCL.

      (1) Implement the restriction as an ISO imposed Eco Max redeclaration.

      (2) For multiple units, susceptible to simultaneous loss and therefore treated as a single contingency, allow the DE to determine how to apply the limit among their generators.

## 5.10 Respond to PJM and/or NYISO Reductions to Single Source Size

1. If PJM reduces margin, or NYISO imposes a SSCL, the System Operator shall:

   A. Notify all Control Room System Operators of the reduction and the new Single Source Contingency Limit (SSCL).

   B. Update the Single Source Contingency Monitor (SSCM)

      (1) With the reduced PJM margin amount.

      (2) Enter the limit as an Override to NYPP C/E Interface.

   C. Restrict resources as follows:

      (1) For HQT I/II:

         a. Set the import Total Transfer Capability (TTC) to the SSCL and reduce the interface IAW Curtail External Transactions, if required.

         b. If next hour schedules have been finalized, the Generation Operator will reevaluate the import TTC limits used for the HQT I/II Interface and re-schedule IAW Schedule Next Hour Transactions, if required.

      (2) For each Generator, notify the DE of the SSCL:

         a. For multiple units, susceptible to simultaneous loss and therefore treated as a single contingency, allow the DE to determine how to apply the limit among their Generators.

         b. Use a manual DDP to dispatch the applicable Generator to below the DE determined maximum.

         c. Implement the restriction as an ISO imposed Eco Max redeclaration.

   D. Log the limit reduction and actions taken in the Control Room Event Logserver.

## 6. Performance Measures

None.

## 7. References

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

Open Access Transmission Tariff (OATT) - Schedule 2

ISO New England Manual for Market Operations Manual M-11 (Manual 11)

ISO New England Manual for Market Rule 1 Accounting, Manual M-28 (Manual 28)

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

SOP-RTMKTS.0050.0005 - Determine Reliability Commitment for Real-Time

SOP-RTMKTS.0050.0010 - Perform Reserve Adequacy Run

SOP-RTMKTS.0060.0010 - Update EMS Network Transmission Topology

SOP-RTMKTS.0070.0010 - Monitor Generators and Dispatchable Asset Related Demands

SOP-RTMKTS.0110.0015 - Flagging for DA and RT Market Settlements

SOP-RTMKTS.0125.0040 - Update Control Room Logs

SOP-RTMKTS.0120.0020 - Implement Capacity Remedial Actions

# 8. Revision History

| Rev. No. | Date | Reason | Contact |
|---|---|---|---|
| 0 | 03/01/03 | Original | Don Gates |
| 1 | 03/01/03 | Revised to reflect changes to LMP alarms | Don Gates |
| 2 | 04/16/03 | Revised to reflect changes to redecing LEG unit and LMP Automated Alerts | Don Gates |
| 3 | 05/15/03 | Revised to reflect changes to redeclarations of EcoMin for physical versus pricing reasons, changes to Unit redecs for hour 24 | Don Gates |
| 4 | 06/27/03 | Revised to reflect changes to Redecs of Regulation parameters, Redecs Hour Ending 24 Report, removal of Mystic 9 for VAR UP flag and time for Commitment/De-Commitment changes. | Don Gates |
| 5 | 07/28/03 | Revised to include Reserve Scarcity Pricing | Don Gates |
| 6 | 12/09/03 | Changes to Controls and Performance Measures sections and added new LMP alarm data. Added in new units for VAR flag. | Don Gates |
| 7 | 2/21/04 | Revised to remove redeclarations of Regulation Self Schedule and LEG units from Regulation market. Revised to clarify RMR flagging | Don Gates |
| 8 | 04/01/04 | Revised to add in Westbrook Energy Center for VAR Up flag. Added section for redeclaring combined cycles. Added step for requesting Asset ID for redec. Redec LEGs to 0 MW. | Don Gates |
| 9 | 04/24/04 | Revised to add Note for LEG units and Regulation | Don Gates |
| 10 | 08/13/04 | Revised placing Fast Start units into UCM 4 when coming on line. | Don Gates |
| 11 | 10/20/04 | Revised for changes to LEG software, removed KEN4 (retired) from VAR UP and added in Pilgrim | Don Gates |
| 12 | 12/03/04 | Added Mystic 9 as a unit that can be flagged VAR up | Don Gates |
| 13 | 02/01/05 | Updated SOP for RTO terminology | Steve Weaver |
| 14 | 03/08/05 | Revised for clarification of flagging for Minimum Run Time, revised to remove Salem 4 from VAR Up flagging, changes to 2 Hour checkout | Steve Weaver |
| 15 | 06/03/05 | Revised to reflect the new flagging process | Steve Weaver |
| 16 | 09/30/05 | Revised to reflect changes in Regulation Market for ASM Phase. New Reg for Rel flag, Addition of Att D. Revised to address Forecast audit. Note for MR flag, added in actions for placing unit in UCM 1 for outage | Steve Weaver |
| 17 | 01/04/06 | Revised to add steps for performing Security assessment for Self-Schedule requests. Changed Reserve Scarcity Condition Pricing Event to Reserve Shortage Condition | Steve Weaver |
| 18 | 02/17/06 | Revised to add steps for redeclaring units with >24 run time as S/S | Steve Weaver |
| 19 | 05/05/06 | Updated for Control Room Forecaster Split | Steve Weaver |

| Rev. No. | Date | Reason | Contact |
|---|---|---|---|
| 20 | 06/05/06 | Addition of Att D – Corrections to unit Redeclarations, add steps for redecs on combined cycles using Att D, add in HQ Highgate to Tie Line checkouts | Steve Weaver |
| 21 | 06/19/06 | Revised to include VU flag for changes to SAM Db | Steve Weaver |
| 22 | 10/01/06 | Revised for ASM Phase II | Steve Weaver |
| 23 | 02/02/07 | Revised to remove Commit for Reg flag and Commit for Spin flag | Steve Weaver |
| 24 | 03/09/07 | Revised language for clarity and substituted reference for RTSC with TRAGO | Steve Weaver |
| 25 | 04/17/07 | Revised logging activities and clarified redec process | Steve Weaver |
| 26 | 04/30/07 | Deleted use of UCM 5 until software enhancements are made and deleted reference to Phase 1 since it is no longer commercial | Steve Weaver |
| 27 | 06/01/07 | Revised for separation of 1385 Cable from the New York Northern AC tie | Steve Weaver |
| 28 | 08/14/07 | Added info on flagging DARDs | Steve Weaver |
| 29 | 10/23/07 | Clarified actions dealing with LER redecs, Claim 10/ 30 changes and UCM changes | Steve Weaver |
| 30 | 02/01/08 | Added step directing obtaining LCC concurrence for Commitment/De-Commitment and clarified Shift Supervisor has authority to approve or deny Commitment/De-Commitment. Added Note prior to step 5.3.3.4 directing flagging of unit if LCC has legitimate reason for not shutting down. | Steve Weaver |
| 31 | 07/01/08 | Annual Review by Procedure Owner<br>Corrected display titles listed in step 5.2.2<br>Added new step 5.2.5C<br>Deleted step 5.4.1.1<br>Corrected various parameter values in Attachments B, C, & D | Steve Weaver |
| 32 | 08/04/08 | Global re-write eliminate use of Resources and to distinguish between Generator (only), DARD (only), and Generator/DARD (both).<br>Rewrite of section 5.2 for Generators only.<br>Change Table 2 name for Generators only<br>New Section 5.3 for DARDs only<br>New Table 3 for DARDS only<br>modified step 5.3.4.B bullet<br>Added new step 5.3.5.A-D<br>Replaced NOTE after 5.3.5 with "DARDs operating with a Self Schedule flag set do not get Reserve credit. DARDs operating without a Self Schedule flag may get Reserve credit."<br>Delete step 5.3.9.2; change 5.3.9.2A&B to steps 5.3.9.2 & 5.3.9.3<br>Modified Attachment A & B to provide specific terminology for Generators and DARDs<br>Attachment E modified to be landscape with cell sizes large enough for data entry<br>New Attachment F for examples on treatment of Combined Cycle Units. | Steve Weaver |

| Rev. No. | Date | Reason | Contact |
|---|---|---|---|
| 33 | 08/11/08 | Modify bullet in step 5.3.4.B | Steve Weaver |
| 34 | 03/16/09 | Modified Step 5.2.5.C 2nd bullet 1);<br>Delete Steps 5.4.1.4.B.(1)&(2) | Steve Weaver |
| 35 | 07/27/09 | Deleted NOTE prior to step 5.1.1.2.5.;<br>Modified step 5.1.1.2.5.;<br>Step 5.1.1.2.6. deleted "DMT and replace with EMS→RTGEN→;<br>In Table 1 modified 2nd row and 6th row, deleted the Must Regulate for Reliability row, deleted the last 2 paragraphs;<br>Step 5.2.2. deleted 1st bullet, modified 2nd bullet and 3rd bullet;<br>New NOTE prior to step 5.2.3.;<br>Modified step 5.2.5.A.;<br>New NOTE prior to step 5.2.5.B.;<br>Table 2 modified 4th row Reason Column, 6th Reason column, 12th row Reason column and Communications Responsibility column, 13th row Reason column and Communications Responsibility column;<br>Modified step 5.3.2. 1st and 2nd bullets;<br>Modified Step 5.3.3.A.<br>Deleted Step 5.3.4 and all sub-steps;<br>Deleted NOTE prior to Table 3;<br>Table 3 1st row modified Reason column, 3rd row modified Reason column and added item to communication column, added new 6th, 7th, and 8th rows;<br>Modified NOTE prior to Steps 5.4.1.2., modified Steps 5.4.1.3.A., t.4.1.4.A.,modified NOTE prior to Step 5.4.1.8.;<br>Modified Step 5.4.1.9. 2nd and 3rd bullets;<br>Modified Steps 5.4.1.9.A and 5.4.1.9.B.;<br>NOTE prior to Step 5.4.3.1., replaced last paragraph<br>Deleted Steps 5.4.4.3. and 5.4.5.;<br>Modified Stps 5.4.8.3. & 5.4.8.4.;<br>Attachment A modified 3rd row, UCM column, 5th row Definition column Eligibility column and Special Functions column | Steve Weaver |

| Rev. No. | Date | Reason | Contact |
|---|---|---|---|
| 36 | 02/02/10 | Biennial review by procedure owner;<br>Changed Header copyright date to 2010;<br>Section 3, Responsibilities Re-worded NOTE & change checkout time with NBSO to 12 hours;<br>Section 4 Controls deleted 2nd bullet;<br>Modified sub-section 5.1.1;<br>Modified sub-section 5.1.2;<br>Modified various parts of Table 1;<br>Section 5.2 steps, sub-steps, and NOTES modified;<br>Deleted communication examples from & reformatted Table 2;<br>Table 3 removed references and reformatted;<br>Modified Step 5.4.1.3.A.(2), 5.4.1.8.B, 5.4.1.9.B, 5.4.1.9.C. & sub-section 5.4.2;<br>New NOTE after 5.4.2.4;<br>Modified Sub-section 5.4.3., 5.4.3.2.C. & E., 5.4.3.3.C. & D.,, 5.4.3.4., and 5.4.3.6.;<br>Added new NOTE prior to step 5.4.3.6;<br>Modified Step 5.4.3.7, sub-section 5.4.4., step 5.4.4.3.;<br>Reformatted, modified and added to Step 5.4.5.1.B & C and sub-steps;<br>Modified Step 5.5.1 & sub-steps and step 5.5.2 & sub-steps;<br>Added new step 5.5.3 and sub-steps;<br>Modified 5.6 NOTE. And step 5.6.1 16th bullet;<br>Section 7 References correct SOP titles;<br>Section 9 corrected title for Att A;<br>Attachment A modified;<br>Attachment B modified;<br>Attachment D replaced TMOR $ 100 with $ 250 | Steve Weaver |
| 37 | 06/01/10 | Section 3 replaced NOTE;<br>Global editorial changes in grammar, formatting, use of defined acronyms, etc.;<br>Section 5.4 Performing Generator / DARD Re-declarations : Added new 4th bullet to step 5.4.1.3 to include "Real-time High Operating Limit (RTHOL) to list values that can be re-declared. Added new Sub-step 5.4.1.3.A.(3) defining the method of re-declaring the RTHOL value;<br>5.7 Real-Time High Operating Limit: Added new section and steps to define the process to collect and compile the submitted hourly RTHOL data values;<br>Attachment D changed System TMOR to $100 & Zone TMSR to $250 | Steve Weaver |
| 38 | 08/02/10 | Added 3.8 Responsibility for the TSO, defined acronyms TSO and DAM and RTHOL;<br>Step 5.7.1.1 changed Forecaster to TSO;<br>Attachment D changed Zone TMSR to Zone TMOR | Steve Weaver |

| Rev. No. | Date | Reason | Contact |
|---|---|---|---|
| 39 | 12/22/10 | Global replaced page numbers with Page X of Y format,;<br>Section 3 added definition for NERC;<br>Steps 5.1.1.1, 5.1.2.1, & 5.1.2.2 modified;<br>Step 5.1.2.3.B deleted;<br>Step 5.1.2.4, following NOTE modified;<br>Globally deleted "…EMS→RTGEN→…";<br>Table 1 Items 1 & 7 modified;<br>Modified: Steps 5.2.1, 5.2.3, 5.2.5.B, 5.3.6.B and prior NOTE, 5.2.6.C and all sub-steps;<br>Deleted Step 5.3.1;<br>Modified NOTE prior to step 5.3.3 and substep5.3.3.B, Step 5.4.1.1, step 5.4.1.2 and prior NOTE, Step 5.4.1.3 bullets and NOTE following 5.4.1.3.B and step 5.4.1.4, Step 5.4.1.6, Note prior to Step 5.4.1.8.B,<br>Added new NOTE prior to Step 5.4.1.8.C;<br>Modified Step 5.4.4.1 3rd bullet, Step 5.4.4.3, Step 5.4.5.2 and sub-steps, NOTE prior to step 5.4.6.3, Step 5.4.7.1, Step 5.4.7.2 and prior NOTE, Step 5.4.7.3 and 5.4.7.4, Step 5.4.7.5, Step 5.5.1.1.A, Steps 5,5,2,1 and 5.5.2.1.A, Step 5.5.3.1, Step 5.5.3.4, Section 5.6 NOTE, Step 5.6.2.1;<br>Added new Section 5.8;<br>section 7 corrected Market Rule 1 title;<br>Attachment B in data row for LMPCalc Price CAP Violation replaced $250 with $350 | Steve Weaver |
| 40 | 02/04/11 | Updated Header copyright date;<br>Section 3.8 deleted;<br>Modified NOTE prior to step 5.4.1.2 and step 5.4.1.2;<br>Step 5.4.1.3.A(3) deleted;<br>Deleted former Section 5.7;<br>Added new Section 5.8 | Steve Weaver |
| 41 | 01/09/12 | Biennial review by procedure owner;<br>Updated Header Procedure Owner: and copyright date;<br>Deleted 2nd paragraph of disclaimer on 1st page footer;<br>Section 3 Responsibilities3.3, 3rd bullet deleted "Reserve Up (RU)";<br>5.1.`1 modified;<br>5.1.2.4, Replaced "Generation Operator/Loader Operator" with "Forecaster";<br>NOTE following step 5.3.1, Replaced the referenced step in last sentence with a reference to Table 3;<br>New sub-section 5.4.6, Added entire new sub-section, steps and sub-steps for directed actions when a Generator no longer meets requirements for being a fast start Generator. Renumbered remaining sub-sections,;<br>Step 5.4.8.5, Added a new NOTE prior to step and modified the step;<br>Added new Section 5.9;<br>Added new Section 5.10 | Steve Gould |
| | | | |

## 9. Attachments

Attachment A - Generator/DARD Control Modes

Attachment B - LMP Automated Alerts

Attachment C - RCP Automated Alerts

Attachment D - RMCP Automated Alerts

Attachment E - Corrections to Generator/DARD Redeclarations

Attachment F - Combined Cycle Treatment Examples

## Attachment A - Generator/DARD Control Modes

| UCM | Definition | Eligibility | Special Functions |
|---|---|---|---|
| 1 | Generator/DARD is off-line and unavailable for dispatch | Generators/DARD that is tripped off-line<br><br>Off line Generator/DARD that is out-of-service for physical reasons<br><br>Generator/DARD that is off-line and not meeting their scheduled output | Reserve Monitor will not recognize the UCM 1 and will count 0 MW of Operating Reserve capability<br><br>The Capacity analysis application will recognize the UCM 1 and consider the Generator/DARD as Off-line, Unavailable Capacity<br><br>The UDS application will not recognize Fast Start capable Generator/DARD in UCM 1 and should not issue fast Start recommendations |
| 2 | Generator/DARD is off-line and available for dispatch | Generator/DARD that is off-line economically with ISO approval | The Reserve Monitor will recognize the UCM 2 and count Operating Reserve on the Generator as applicable.<br>Capacity Analysis application will recognize the UCM 2 and consider the Generator/DARD.<br>The UDS application will recognize Fast Start Generator in UCM 2 as available for Fast Start recommendation. |

| UCM | Definition | Eligibility | Special Functions |
|---|---|---|---|
| 3 | Generator is on-line, not dispatchable<br><br>UCM-3 is used to:<br>Prevent shutdowns of DARD<br>Posture DARD to maintain reliability or to provide VAR support | Generator that is on-line in the start-up mode<br><br>On-line Generator in the shutdown mode<br>On-line Generator that is testing (with exception of Claim 10 / Claim 30 and MRR demonstrations)<br>On-line Generator that have Eco Max = Eco Min and the SS flag set to true | Sets a flag in the UDS software that makes the Eco Max = Eco Min = State Estimator MW (SEMW). UDS application will derive a DDP equal to the Generator SEMW value<br>Set the Unavailable flag to "0" for the current hour<br><br>The Reserve Monitor application will recognize the UCM 3 and not calculate Operating Reserve for the Generator.<br><br>The Capacity Analysis application will recognize UCM 3 and only calculate capacity to the current MW output of the Generator. Any additional capacity above the current output will be counted as an on-line reduction |
| 4 | Generator/DARD is on-line and available for dispatch | Generator/DARD that is on-line and has released for dispatch<br>On-line Generator that has Eco Max > Eco Min, On-line DARD that has Min Cons ≤ Max Cons. Fast Start Generator can have Eco Max = Eco Min and be in UCM 4. | Sets the Unavailable flag to "0" for the current hour<br>The Reserve Monitor application will recognize the UCM 4 and calculate Operating Reserve for the Generator/DARD as applicable<br>The Capacity Analysis application will not specifically recognize UCM 4. However the application will count the Generator capacity to its Eco Max Limit and the DARD capacity to its Min Cons.<br>The UDS application will derive an economical DDP for the Generator /DARD between its Eco Min / Min Cons and Eco Max / Max Cons. If the Generator is outside of its declared limits, the UDS will develop a "relaxed" limit for the Generator/DARD. The UDS will then calculate a DDP that is economic for the Generator/DARD using the "relaxed" limit value, but will respect the "relaxed" limit such that it will not exceed that value as a new limit. |

| UCM | Definition | Eligibility | Special Functions |
|---|---|---|---|
| 5 | Posture Generator to maintain reliability or provide VAR support. | Generator that is on-line | The Reserve Monitor application will recognize the UCM 5 and calculate Reserve for the Generator as applicable. |
| 6 | Generator is Regulating | Generator is on-line and available for and providing Regulation | The Reserve Monitor application will recognize the UCM 6 and calculate Operating Reserve for the generator as applicable.<br>The Capacity Analysis application will not specifically recognize UCM 6. However the application will count the Generator capacity to its Eco Max Limit.<br>The UDS application will recognize generators in UCM 6 as being on Regulation and will calculate the Regulation base point accordingly. |
| | | | |

## Attachment B - LMP Automated Alerts

| Alarm | Parameter | Expected Actions |
|---|---|---|
| RTNET Hourly Failure | 5 RTNET failures in an hour | Review RTNET alarms, contact IT as necessary |
| RTNET Consecutive Failures | 3 consecutive RTNET failures | Review RTNET alarms, contact IT as necessary |
| RTCA Hourly Failures | 5 RTCA failures in an hour | Review RTCA alarms, contact IT as necessary |
| RTCA Consecutive Failures | 3 consecutive RTCA failures | Review RTCA alarms, contact IT as necessary |
| Maximum bad Points | 6000 or more, bad RTU points | Review SCADA alarms, check ManReps, contact IT as necessary |
| Maximum bad Analogs | 6000 or more, bad SCADA analogs | Review SCADA alarms, check ManReps, contact IT as necessary |
| UDS SPD Execution Failure | No UDS SPD Execution in last 15 minutes (not adjustable) | Ensure Loader Operator is executing a UDS SPD case every 15 minutes |
| UDS SPD Consecutive Failures | 1 UDS SPD failure | Check status of RTNET, RTCA, SCADA, and UDS Solution messages. Contact IT |
| UDS SPD Solutions/Approvals | 1 approval for every 5 solutions (executions) (will alarm for 3 consecutive failures and then stop) | Ensure Loader Operator is approving an acceptable solution at least once every 5 UDS executions. |
| LMPCalc Hourly Failures | 5 LMPCalc failures in an hour | Check status of RTNET, RTCA, SCADA, and UDS Solution messages. Contact IT |
| LMPCalc Consecutive Failures | 1 LMPCalc failure | Check status of RTNET, RTCA, SCADA, and UDS Solution messages. Contact IT |

| Alarm | Parameter | Expected Actions |
|---|---|---|
| LMPCalc Solutions/Approvals | 2 approvals for every 10 solutions | Check status of RTNET, SCADA, UDS solutions. Contact IT |
| LMPCalc Price CAP Violation | 2 or more LMPCalc prices are $350.00 or more in the case | Check LMP prices compared to UDS Dispatch Rates for discrepancies. Check for CTG SPD dispatch, constrained dispatch or ramp constrained Generators/DARDs. Ensure no unacceptable UDS solutions have been approved |
| LMP Price Max Jump | A single LMP price change between 2 cases is $300.00 or more | Check LMP prices compared to UDS Dispatch Rates for discrepancies. Check for CTG SPD dispatch, constrained dispatch or ramp constrained Generators/DARDs. Ensure no unacceptable UDS solutions have been approved |
| Minimum Flex Resources | 10 or less, flexible Resources (Resources considered flexible by LMP calculator - able to set marginal price) | Review Flexible Resource Alarms; ensure that the approved UDS case is not a non-feasible solution. If non-feasible, then approve a feasible, acceptable UDS case. |
| Consecutive Price Bound Failures | 2 consecutive intervals with price bound failures (>$10 difference between ex-ante and ex-post LMP prices) (will reset after a non-price bound solution) | Check LMP prices compared to UDS Dispatch Rates for discrepancies. |
| Hourly Price Bound Failures | 6 or more, price bound failures in an hour | Check LMP prices compared to UDS Dispatch Rates for discrepancies. |

| Alarm | Parameter | Expected Actions |
|---|---|---|
| Failover | Failure of MDB machines | Review failover alarms. Check status of RTNET, SCADA, RTCA, UDS SPD and LMP Calc. Contact IT |
| RTNET/RTCA/LMPC Failure | If RTNET, RTCA and LMPC all fail. | Contact IT. |
| Loss Factor Tolerance | If loss factor in LMP Calculator is > 0.5<br>(Alarm will be sent 3 times consecutively and then stop and will reset when there is a good case) | Review PNODE in case with affected loss factor and check for RTNET mismatches. |
| LMP Monitor Alert Log Message<br>(Marginal Loss Components for PTF and non-PTF pairs) | If any PNODE marginal loss LMP pair is not within the specified delta tolerance (0.01) | Review PNODE pairs and the affected marginal loss component (They should be the same, the mapping may be incorrect). Contact IT |

## Attachment C - RCP Automated Alert

| Alarm | Parameter | Expected Actions |
|---|---|---|
| RCP Consecutive Failures | 1 consecutive failures | Inform IT and Market Admin |
| RCP Price Cap | > $100 for 2 consecutive intervals | Check RCP prices to Generators supplying Regulation to verify continuity |
| Max Bad Points | 99999.0 bad points | Inform IT and Market Admin |
| Min REG Generators | < 1 Regulating Generators in an RCP case | Check number of Generators on Regulation. Verify at least 1 on Regulation or document reason < 1 Generators are supplying Regulation. |
| RCP Price Max Price Jump | RCP jumps ≥ $90 for more than 2 intervals | Check RCP prices to Generators supplying Regulation to verify continuity. |
| RCP Solutions Interval | > 5 minutes between intervals | Inform IT and Market Admin |

## Attachment D - RMCP Automated Alert

| Alarm | Parameter | Expected Actions |
|---|---|---|
| LMP: NEPEX TMSR price bound violation | > $1,150 | Inform IT and Market Admin |
| LMP: NEPEX TMNSR price bound violation | > $1,100 | Inform IT and Market Admin |
| LMP: NEPEX TMOR price bound violation | > $250 | Inform IT and Market Admin |
| LMP: ZONE TMSR price bound violation | > $1,150 | Inform IT and Market Admin |
| LMP: ZONE TMNSR price bound violation | > $1,000 | Inform IT and Market Admin |
| LMP: ZONE TMOR price bound violation | > $250 | Inform IT and Market Admin |
| LMP: Negative Reserve Prices | < 0 | Inform IT and Market Admin |
| LMP: INVALID Reserve Prices | Not following Rule* | Inform IT and Market Admin |

* Rule:

$MCP_{TMSR} \geq MCP_{TMNSR} \geq MCP_{TMOR}$

RZ_ $MCP_{TMSR} \geq MCP_{TMSR}$

RZ_ $MCP_{TMNSR} \geq MCP_{TMNSR}$

RZ_ $MCP_{TMOR} \geq MCP_{TMOR}$

Reserve Constraint Penalty Factors

| | |
|---|---|
| System TMSR | $50 |
| System TMNSR | $850 |
| System TMOR | $100 |
| Zone TMOR | $250 |

## Attachment E - Corrections to Generator/DARD Redeclarations

| Generator / DARD | Asset ID | Redec'd Limit | Changed From | Changed To | Date | Start Time | End Time | Reason for Change |
|---|---|---|---|---|---|---|---|---|
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## Attachment F - Combined Cycle Treatment Examples

Examples that show Treatment of a Combined Cycle Unit that bids in an Eco Max Based on two or more CTs on-line and an Eco Min based on one CT on-line.

Eco Max = 520MW, based on a 2 CT, 1 steamer configuration (2X1)

Eco Min = 180MW, based on a 1 CT, 1 steamer configuration (1X1)

**Case 1:**

**2X1 configuration with station receiving DDPs below 2X1 configuration EcoMin**.

The station must either follow DDPs and take the 2nd CT offline or request a Self Schedule at the 2X1 Eco Min.

**Case 2:**

**2X1 configuration & station requests permission to shut down a CT in order to follow their DDP.**

Change the station operating mode to UCM-3 while the station shuts down one CT.
When notified they are dispatchable in the new configuration, enter an ISO imposed redec equal to the 1X1 Eco Max value.
The redec remains in place until **one** of the following conditions exist:

- the DE elects to restart a 2nd CT
- the ISO orders it back on for reliability.

**Case 3:**

**1X1 configuration and a CT is coming on line (to a 2X1 configuration) at the DE request.**

If the DE wants to bring the 2nd CT on-line, they must first get ISO approval
When the CT phases on, change the operating mode to UCM-3.
When the unit is dispatchable, change the operating mode to UCM-4 and return the unit to bid.
As long as station is getting DDPs to remain in the 2X1 dispatchable range, nothing changes.
If the station gets DDPs to go below the 2X1 range, they must do **one** of the following:

- follow DDPs and take the 2nd CT back offline
- request a self schedule at the 2X1 Eco Min.

**Case 4:**

**1X1 configuration and a CT is coming on line (to a 2X1 configuration) at ISO request.**

When the second CT is called on by ISO and has phased on, change the operating mode to UCM-3.
When the unit is dispatchable, enter an ISO imposed Eco Min redeclaration at the 2X1 Eco Min, with no self schedule, for the greater of the two following timeframes:

- the minimum run time of the unit, or
- the duration of the reliability requirement

***This information is in accordance with Section 5.4.2 of SOP-RTMKTS.0110.0010 - Maintain Real-Time Operational Data, and is provided only for clarification.***