# Table of Contents



## References

1. CROP.10004 Transmission Remedial Action
2. CROP.24002 Error or Failure of EMS or an EMS Application
3. CROP.27002 Telemetry and Topology Problems
4. CROP.27004 Interruption of RTU, CFE or ICCP Data
5. CROP.32002 Generation Outages
6. RTMKTS.0010.0030 – Monitor Real Time Prices – Attachment F

## Procedure Background

The objective of this procedure is to provide guidance to the ISO NE Control Room Operators in responding to Energy Management System (EMS) alarms, automated alerts and other conditions associated with the power system.

There are many different alarms in the Control Room requiring a response from one of the Control Room Operator positions. This procedure describes each alarm type, expected response and Control Room Operator position responsible for responding to the applicable Control Room alarm.

The EMS provides the following system log and alarm displays:

- System Activity Log
- SCADA Events
- Acknowledgment Log
- Log #2
- Log #3
- Alarm Summaries:
  - Real Time/Actuals (RT)
  - Circuit Breakers (BKR)
  - Voltage (KV)
  - Load (LDR)
  - EMS Health (EMS)
  - Generation (GEN)
  - Communications (COM)
  - External (EXT)
- Alarm Viewer

The Alarm Summaries are subsets of the System Activity Log that filter alarms to the appropriate summary. The Alarm Viewer provides another option to monitor all alarms with query capability.

An Audible Alarm is generated when any the following events occur:

- System detects change to EMS Server availability or status.
  - Network connection to System emsprd-ID has been lost (*ID = identifying EMS server*)
  - System has transitioned to MASTER/MEMBER IDLE role from old role MASTER/MEMBER/IDLE
  - System XXXX is now Available/Unavailable
- SCADA detects any of the following breakers change from their normally open or closed state:
  - 450 kV
  - 345 kV
  - 275 kV
  - 230 kV
  - 138 kV
  - 115 kV
- ILC detects any Interface limit exceedance
- SCADA detects any of the following limits exceeded on any 115 kV or higher line or transformer.
  - NORM (Normal)
  - LTE (Long Time Emergency)
  - STE (Short Time Emergency)
- RTNET solves in any condition other than a normal execution.
  - Any of the following Real-Time Network Quadrant (QUAD) MW/MVAR mismatch occurs:
    - Solution Mismatch
    - Bus Flow Mismatch
    - Bus Measurement Mismatch
    - SCADA/RTNET MW Analog Deltas
- RTNET Applications
  - ISO RRM
  - OP12B
  - MLCC15H
  - MLCC8
- TOG device (AVR, breaker, line or transformer) status changes
- RTCA branch overload for either exceeding:
  - 90% of LTE
  - 100% of STE
- RTCA solves in any condition other than a normal execution.
- RTCA Nuclear voltage monitoring tool detects a condition that could result in a nuclear plant voltage limit exceedance.
- ICM indicates an exceedance of a Single-Source Contingency Monitor (SSCM) limit.
- ICM indicates an exceedance of a New Brunswick – New England Minimum Flow limit.
- ICM indicates an exceedance of Dogtown SVC MVAr Output
- ICM indicates insufficient DPL Armed MW
- Tie line deviations
- Double C exceedances
- ICCP link failures
- Network Sequence alarms
- Northfield or Bear Swamp Available Gen MWh drops below alarm threshold
- Wind/Solar RAA Deviation
- Station Element Frequency High or Low
- UDS Case Approval > ":MM"
- IFS schedules not sent
- Station Frequency exceeds High or Low limit
- GIC amp level exceedance
- Generation Mw Alarm

Alarms generated populate to the applicable Alarm Summary:

- Alarm Summary RT:
  - ILC
  - RTNET (except OP12B and MLCC15H)
  - RTCA
  - DoubleC
  - ICM
  - SCADA Norm/LTE/STE exceedances
  - GIC
  - Station Element Frequency High or Low
- Alarm Summary BKR open/close:
  - 345, 230, 138, 115 kV devices
  - 69 kV tie line devices
  - Generator breakers
  - Reactive devices
- Alarm Summary KV:
  - 345, 230, 138, 115 kV voltages
  - 69 kV tie line voltage
  - OP12B
  - MLCC15H
  - Transformer AVR status
  - MLCC8
- Alarm Summary LDR:
  - All RTGEN alarms
  - AGC
  - ADI
  - Reserve
  - Generator AVR status
  - Generator PSS status
  - Tie line deviations
  - Low Available Gen MWh at Northfield or Bear Swamp
  - Wind RAA Deviation
  - UDS Case Approval > ":XX" minutes
  - IFS schedules not sent
- Alarm Summary EMS:
  - Server issues
  - Market Database issues
  - PMU alarms generated from OSL (Oscillation Source Location) application
- Alarm Summary GEN:
  - No operational alarms
- Alarm Summary COM:
  - RTU status
  - ICCP status
- Alarm Summary EXT:
  - External area alarms (except tie lines or devices with TOGs)

ISO-NE has a standalone alarm monitoring application running outside normal EMS processing to monitor the health of the ALARM application. It is executed by the standard UNIX scheduling function, CRON, to run every 2 minutes. The monitoring is based on timestamp updates and can detect not only application failures, but also stalling.

The ALARM process is considered failed/stalled if the timestamp has not updated for >180 seconds.
In the case of failure/stalling of the alarm application, the monitor issues a text message to all Control Room cell phones and an email to the Control Room Shift Supervisor, EMS on-call, and the 24X7 on-site IT Technicians. If the ALARM health timestamp remains stalled email/pages are reissued every 10 minutes.

Attachment 1 – Non-EMS automated alerts and alarms identifies the conditions that would cause an alert to be generated and sent to the Operations Shift Supervisor and provides the expected actions to be taken. Day Ahead Market Support receives these alarms and takes action to either fix the condition or contacts the Shift Supervisor to get clarification on the cause of the alarm.

## Common Procedure Information

A. Any ISO-NE qualified Control Room Operator has the authority to take actions required to comply with NERC Reliability Standards. A qualified ISO-NE Control Room Operator has met the following requirements:
   1. Have and maintain a NERC certification at the RC level (per R.1 of PER-003-2)
   2. Applicable Requirements of PER-005-2
   3. Approved to cover a Control Room Operator shift position by the Manager, Control Room Operations
   4. Is proficient at the current qualified level.

B. Real time operation is defined as the current hour and the current hour plus one.

C. Future hours are those beyond real time operation.

D. All verbal communications with Local Control Centers (LCC), neighboring Reliability Coordinators/Balancing Authorities (RC/BA), Designated Entities (DE), Demand Designated Entities (DDE) and/or SCADA centers shall be made on recorded phone lines unless otherwise noted.

E. For all communications:
   1. Use the Basic Protocol for All Operational Communications as prescribed in M/LCC 13
   2. Use 'ISO New England' or 'New England'. Refrain from using 'ISO'.
   3. Use Asset ID's when communicating with DE/DDEs.
   4. Use three-part communication in all situations where its use will enhance communications.

F. Primary responsibilities are stated for each step within the procedure, but any ISO Control Room Operator qualified at that position or higher can perform the step. The Primary Responsibility may be delegated to an Operator in a lower qualified position, but the responsibility for its completion remains with the identified individual.

G. The use of "ensure" within this document means that a verification has been performed and if the item is not correct, corrective actions will be performed.

# Procedure

**Condition(s) to perform this section:**

- **An alarm is received from EMS.**

## Section 1 : EMS Alarm Response

### Step 1.1
### System Activity Monitoring.

**Instructions**

The Control Room Operators monitor the System Activity Log/Alarm Viewer and respond as appropriate to any of the following alarm conditions stated.

#### Step 1.1.1 Primary Responsibility: Any Control Room Operator
#### RTCA branch overload alarms > 90% of LTE.

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Review ODMS for any applicable TOGs;
- ❑ Determine if actions are needed for the contingency.

#### Step 1.1.2 Primary Responsibility: Any Control Room Operator
#### RTCA branch overload alarms > 100% of STE.

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Action.

#### Step 1.1.3 Primary Responsibility: Any Control Room Operator
#### CB status change (if unexpected, e.g., does NOT have an approved outage application).

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Action.

#### Step 1.1.4 Primary Responsibility: Any Control Room Operator
#### AVR or PSS status change (if unexpected, e.g., does NOT have an approved outage application).

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Actions.

**Step 1.1.5** Primary Responsibility: Any Control Room Operator

**Line limit exceedance.**

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Action.

**Step 1.1.6** Primary Responsibility: Any Control Room Operator

**ILC limit exceedance.**

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Action.

**Notes**

ILC makes the following automated notifications:

- IROL interfaces, System Activity Log entry if exceedance exceeds 20 minutes, and management notification at 30 minutes
- SOL interfaces, System Activity Log entry if exceedance exceeds 110 minutes, and management notification at 120 minutes

**Step 1.1.7** Primary Responsibility: Any Control Room Operator

**ICM alarm.**

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Navigate to the appropriate ICM page;
- ❑ Perform the necessary actions to clear the exceedance.

**Step 1.1.8** Primary Responsibility: Any Control Room Operator

**High or low voltage.**

**Instructions**

Perform the following:

- ❑ Inform the Control Room Staff;
- ❑ Refer to CROP.10004 Implement Transmission Remedial Action.

**Step 1.1.9** Primary Responsibility: Any Control Room Operator

**RTNET alarms.**

**Instructions**

As applicable, refer to:

- ❑ CROP.24002 Error or Failure of EMS or an EMS Application;
- ❑ CROP.27002 Telemetry and Topology Failures.

**Step 1.1.10** Primary Responsibility: Any Control Room Operator

**RTU DATA and Telemetry alarms.**

**Instructions**

Refer to:

- ❑ CROP.27002 Telemetry and Topology; Or
- ❑ CROP.27004 Interruption of RTU, CFE or ICCP Data.

**Step 1.1.11** Primary Responsibility: Any Control Room Operator

**PMU alarms from OSL .**

**Instructions:**

Refer to CROP.10004 Implement Transmission Remedial Actions.

**Notes:**

PMU oscillations exceeding predetermined thresholds will be generated from the OSL and sent via email to the Shift Supervisor Shared mailbox. A script every minute also creates an EMS alarm for operator awareness.

**Step 1.2**

**Alarm Summaries.**

**Notes**

In addition to the System Activity Log, the System Log includes additional logs for SCADA Events, Acknowledgement Log, Log #2, and Log#3.

- SCADA events tab logs all SCADA manual entries
- Acknowledgement Log captures alarm acknowledgment by operator and position.
- Log #2 tab is for RTCA alarms.
- Log #3 tab is for EMS application alarms.

**Step 1.2.1** Primary Responsibility: Security Operator

**Condition(s) to perform this step:**

- **Upon receipt of an alarm applicable to Alarm Summary RT, BKR, or KV.**

**Alarm Summary RT, BKR, or KV.**

Standard(s) for completion:

- The Control Room Operators monitor Alarm Summaries RT, BKR, and KV and respond as appropriate to alarm conditions stated.
- Management expectation is to acknowledge all audible alarms associated with Alarm Summaries RT, BKR, or KV within 1 minute.

**Instructions**

Acknowledge the alarm(s):

- ❑ Left click on the bell immediately to the left of the alarm; Or
- ❑ Click the bell on the top of the Alarm Summary page;
- ❑ For unexpected alarms, inform Control Room staff.

**Notes**

If the Security Operator is **NOT** available to acknowledge Alarm Summary RT, BKR, or KV alarms, any Control Room Operator can acknowledge the alarms.

**Step 1.2.2** Primary Responsibility: Loader Operator

**Condition(s) to perform this step:**

- **Upon receipt of an alarm applicable to Alarm Summary LDR or COM.**

## Alarm Summary LDR or COM.

Standard(s) for completion:

- The Control Room Operators monitor Alarm Summaries LDR and COM and respond as appropriate to alarm conditions stated.
- Management expectation is to acknowledge all audible alarms associated with Alarm Summary LDR or COM within 1 minute.

**Instructions**

Acknowledge the alarm(s):

- ❑ Left click on the bell immediately to the left of the alarm; Or
- ❑ Click the bell on the top of the Alarm Summary page;
- ❑ For unexpected alarms, inform Control Room staff.

**Notes**

If the Loader Operator is **NOT** available to acknowledge Alarm Summary LDR or COM alarms, any Control Room Operator can acknowledge the alarms.

**Step 1.2.3** Primary Responsibility: Generation Operator

**Condition(s) to perform this step:**

- **Upon receipt of an alarm applicable to Alarm Summary GEN.**

## Alarm Summary GEN.

Standard(s) for completion:

- The Control Room Operators monitor Alarm Summary GEN and respond as appropriate to alarm conditions stated.
- Management expectation is to acknowledge all audible alarms associated with Alarm Summary GEN within 1 minute.

**Instructions**

Acknowledge the alarm(s):

- ❑ Left click on the bell immediately to the left of the alarm; Or
- ❑ Click the bell on the top of the Alarm Summary page;
- ❑ For unexpected alarms, inform Control Room staff.

**Notes**

If the Generation Operator is **NOT** available to acknowledge Alarm Summary GEN alarms, any Control Room Operator can acknowledge the alarms.

**Step 1.2.4** Primary Responsibility: Any Control Room Operator

**Condition(s) to perform this step:**

- **Upon receipt of an alarm applicable to Alarm Summary EMS or EXT.**

## Alarm Summary EMS or EXT.

**Instructions**

Acknowledge the alarm(s):

- ❑ Left click on the bell immediately to the left of the alarm; Or
- ❑ Click the bell on the top of the Alarm Summary page.

**Notes**

These Alarm Summaries are **NOT** monitored by a specific position.

**Step 1.2.5** Primary Responsibility: Operations Shift Supervisor

**Ensure all Alarm Summary alarms are acknowledged and cleared at the end of shift.**

**Step 1.3**

**Alarm Viewer.**

**Notes**

- The Alarm viewer is an alarm search tool as well as a monitoring tool.
- The viewer can be filtered down to find alarms that occurred on a specific date, search a specific log or display alarm by alarm priority, location, (substation) or alarm category.

**Condition(s) to perform this section:**

- **A frequency alarm is received.**

## Section 2 : Frequency Alarm

**Notes**

- An alarm is generated when the frequency monitor senses frequency less than 59.950 Hz, greater than 60.050 Hz, or changes at least 25 mHz within 10 seconds.
- In the ISO-NE Reliability Coordinator Area/Balancing Authority Area a frequency change of +/- 50 mHz would equate to approximately 300 MW of Generator or Demand loss.

### Step 2.1 Primary Responsibility: Loader Operator

**Silence the alarm.**

**Notes**

- At the MCC the silence button is located at the Loader, Senior, and Operations Shift Supervisor consoles.
- At the BCC the silence button is only located at the Operations Shift Supervisor console.

### Step 2.2 Primary Responsibility: Loader Operator

**Determine cause for frequency alarm.**

### Step 2.3 Primary Responsibility: Loader Operator

**Perform appropriate actions to restore frequency to schedule.**

**Conditions(s) to perform this section:**

- **Periodic Control Verification of ILC warnings and alarms are scheduled.**

## Section 3 : Perform Control Verification for ILC Alarming and Messages

### Step 3.1

Primary Responsibility: Lead Operations Shift Supervisor

**Condition(s) to perform this step:**

- **At least 24hrs prior to scheduled test.**

### Send a pre-test notification email.

**Instructions**

Copy and paste the statements below to an email and send it to the following distribution lists:

- ❑ IRL Notification List;
- ❑ M S Head Only.

**ILC ALARMING AND NOTIFICATION TEST ------- THIS IS ONLY A TEST**

On "weekday" "date", at approximately 1200, ISO-NE will perform a functional test of the alarming and messaging functions of the Interface Limit Calculator(ILC) EMS software. The software is coded to provide an alarm indication at the 20min point of an exceedance of an operating limit on an IROL interface and 110min for an SOL interface. Likewise, the ISO EMS will generate an automated message at the 30min point of an exceedance of an operating limit of an IROL interface and 120min for an SOL interface, reporting a potential violation of those limits to a preselected group of recipients. In order to test this functionality, the ISO System Operators will apply a limit to an IROL Interface and an SOL interface in Real-Time. This limit will remain in place through the four time thresholds and the expected events will be validated.

You are being notified as you are either a recipient of this notification, or you are responsible for a Control Center who may receive the erroneous limit through ICCP. ISO-NE System Operators will be closely monitoring the two interfaces throughout the tests comparing transfers to the correct known limits.

A notification will be made via email approximately 1hr prior to the test, as a reminder and a notification of the chosen interfaces. This will be followed up with a verbal call from the ISO Control Room to each LCC. Another call will be made following the IROL portion and at test completion. A final email will also be sent when the test is complete.

### Step 3.2

Primary Responsibility: Operations Shift Supervisor

### Identify an IROL and an SOL interface for use in the test.

**Notes**

- Interfaces should be internal, not an interface with a neighboring RC.
- Selected interface should be generating a "99999" limit.

### Step 3.3

Primary Responsibility: Operations Shift Supervisor

**Condition(s) to perform this step:**

- **Approximately 1hr prior to scheduled test.**

### Perform initial notifications.

**Step 3.3.1** Primary Responsibility: Operations Shift Supervisor

**Send initiation email.**

**Instructions**

- ❑ Include the identified IROL and SOL interfaces
- ❑ Copy and paste the statements below to an email and send it to the following distribution lists:
  - ❑ IRL Notification List;
  - ❑ M S Head Only.

**ILC ALARMING AND NOTIFICATION TEST ------- THIS IS ONLY A TEST**

Today, at approximately 1200, ISO-NE will perform a functional test of the alarming and messaging functions of the Interface Limit Calculator (ILC) EMS software. ISO-NE System Operators will be applying test limits to the "X" IROL Interface and the "X" SOL Interface to facilitate this test.

This test is expected to run through 1400 today, you will receive an additional email following test completion.

**Step 3.3.2** Primary Responsibility: Any Control Room Operator

**Notify all LCCs.**

**Instructions**

Include the following in the verbal notification:

- ❑ Identified IROL and SOL interfaces to be tested;
- ❑ Expected test Start and End times.

**Step 3.3.3** Primary Responsibility: Any Control Room Operator

**Create Log entry for ILC Message/Alarm Test.**

**Instructions**

Use log entry: TESTS AND AUDITS > CONTROL VERIFICATION > ILC ALARMING > Start

**Step 3.4** Primary Responsibility: Any Control Room Operator

**Condition(s) to perform this step:**

- **Scheduled test time.**

**Enter Manual Override Limit in ILC for the selected IROL and SOL Interfaces.**

**Instructions**

Enter an Override limit that will ensure that the interface stays exceeded for the necessary duration

- ❑ 30min IROL;
- ❑ 120min SOL.

**Step 3.5** Primary Responsibility: Any Control Room Operator

**Update the Log Entry.**

**Instructions**

Update the following fields:

- ❑ IROL and SOL Interfaces Tested;
- ❑ Start Time.

**Step 3.6** Primary Responsibility: Operations Shift Supervisor

**Condition(s) to perform this step:**

- **IROL Interface has generated Alarm and Message; Or**
- **IROL timer is >40 minutes.**

## Terminate IROL Test.

**Notes**

- The IROL exceedance in ILC will generate the following.
  - 0min – Alarm in Sysact Log
  - 20min - Alarm in the Sysact Log
  - 30min – Alarm in the Sysact Log
  - 30min – Automated Email to IRL Notification List

**Step 3.6.1** Primary Responsibility: Any Control Room Operator

**Remove Manual Override value in ILC.**

**Step 3.6.2** Primary Responsibility: Any Control Room Operator

**Notify all LCCs of the IROL test completion.**

**Step 3.6.3** Primary Responsibility: Any Control Room Operator

**Log ILC Message/Alarm Test completion.**

**Instructions**

Use log entry: TESTS AND AUDITS > CONTROL VERIFICATION > ILC ALARMING > End

**Step 3.7** Primary Responsibility: Operations Shift Supervisor

**Condition(s) to perform this step:**

- **SOL Interface has generated Alarm and Message. OR;**
- **SOL timer is >130 minutes.**

## Terminate SOL Test.

**Notes**

- The SOL exceedance in ILC will generate the following.
  - 0min – Alarm in the Sysact Log
  - 110min - Alarm in the Sysact Log
  - 120min - Alarm in the Sysact Log
  - 120min – Automated Email to IRL Notification List

**Step 3.7.1** Primary Responsibility: Any Control Room Operator

**Remove Manual Override value in ILC.**

**Step 3.7.2** Primary Responsibility: Any Control Room Operator

**Notify all LCCs of the SOL test completion.**

**Step 3.7.3** Primary Responsibility: Any Control Room Operator

**Update Log entry for ILC Message/Alarm Test completion.**

**Instructions**

- ❑ Use log entry: TESTS AND AUDITS > CONTROL VERIFICATION > ILC ALARMING > End
- ❑ Update the following:
  - ❑ Alarm and Message Received
  - ❑ Test End Time
  - ❑ LCCs Notified of Completion

**Step 3.8** Primary Responsibility: Operations Shift Supervisor

**Send Test Completion email.**

**Instructions**

Copy and paste the statements below to an email and send it to the following distribution lists:

- ❑ IRL Notification List;
- ❑ M S Head Only.

**ILC ALARMING AND NOTIFICATION TEST ------- THIS IS ONLY A TEST**

ISO-NE has completed the functional test of the alarming and messaging functions of the Interface Limit Calculator (ILC) EMS software. Any future messages should be considered as potential violations.

**Step 3.9** Primary Responsibility: Operations Shift Supervisor

**Condition(s) to perform this step:**

- **IROL/SOL Alarms or Messages did not function as expected.**

**Notify the IT On-Call Technician and Manager, Control Room Operations of the test failure.**

# Revision History

| Rev. No. | Date (MM/DD/YY) | Reason | Contact |
|---|---|---|---|
| -- | 05/24/17 | For previous revision history, refer to Rev 4 available through Ask ISO | Steven Gould |
| 5 | 06/14/17 | Administrative change for modification to procedure format | Steven Gould |
| 6 | 03/20/18 | Updated for the alarm project implementation into production | Steven Gould |
| 7 | 05/16/18 | Modified background for the Alarm Monitor;<br>Corrected step 1.2.3 | Steven Gould |
| 8 | 04/29/19 | Added Attachment 1; moved attachment from CROP.35005 Dispatch using RTUC and UDS | Steven Gould |
| 9 | 05/23/19 | Updated audible alarms – EMS 2.6.21 Network Model Release | Steven Gould |
| 10 | 05/18/21 | Updated references; Updated Steps 1.1.2 through 1.1.8 | Steven Gould |
| 11 | 05/12/23 | Updated Procedure Background & Common Procedure Information; Modified Instructions in Step 1.1.4; Added Section 3; Updated Attachment 1; | Jonathan Gravelin |
| 12 | 07/27/23 | Updated Procedure Background with EMS 2023-06 release | Jonathan Gravelin |
| 13 | 01/09/24 | Updated reference and document for the retirement of CROP.24001 Respond to an RTNET Quadrant Alarm | Jonathan Gravelin |
| 14 | 09/17/24 | Updated Procedure Background, Added 275kV voltage class. Added 1.1.11 for PMU alarms | Jonathan Gravelin |
| | | | |
| | | | |

## Attachment 1 – Non-EMS Automated Alerts and Alarms [1]

| LMP Alert | Parameter | Expected Actions |
|---|---|---|
| LMP Deadbus Failed | Any Dead bus Failure in an interval | Check topology, close in dead bus if required |
| LMP Price Jump Violation | A single nodal LMP moves up or down by more than $300.00 within 2 intervals | Verify no unacceptable UDS solutions have been approved |
| LMPCalc CAP Violation | More than 2 nodal LMPs are greater than or equal to $500 for 2 intervals. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| LMP no solution in 15 minutes | LMP calculator fails to solve for 3 consecutive intervals or data population problems with the LMP Monitor software. | Ensure appropriate UDS cases approved. Provide any pertinent information to the On-call Market Analyst if requested. |
| LMPCalc approved failed | 6 out of 10 LMP cases are not approved. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| LMPCalc Consecutive Execution Failed | 1 LMPCalc failure | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| LMP Suspect SCADA MW for load – Modeled Generator | A load-modeled generator has a negative congestion LMP component in its nodal price (greater than 300% output over Eco Max AND >30 MWs) | Verify modeled generator load and correct if necessary to prevent out of market dispatch in an export constrained zone. |
| Case Price Bound Violation | 2 consecutive price bound failures or 6 in a clock hour. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Max LOC violation | One or more units or ARDs have the LOC greater than threshold. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Stale Reserve designations | The LOC calculation in the LMPC case used EMS reserve designations which were calculated more than a tolerable time ago. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Capacity Scarcity Condition determined | At least one CSC has been determined in the solution | Ensure approved UDS cases are accurate. On-call Market Analyst will contact the Supervisor to confirm legitimate CSC. |

[1] Source: RTMKTS.0010.0030 – Monitor Real Time Prices – Attachment F

| LMP Alert | Parameter | Expected Actions |
|---|---|---|
| 5 Consecutive RT_SPD cases – None Approved | If 1 case is not approved for every 5 SPD cases executed. | Verify Loader Operator is approving an acceptable solution. |
| UDS SPD Consecutive Failures | 1 UDS SPD failure | Contact IT. |
| SPD: case Execution failed | UDS SPD fails to solve | Contact IT |
| UDS SPD Execution Failure | **No** UDS SPD Execution in last 15 minutes | Verify Loader Operator is executing a UDS SPD case every 15 minutes |
| Analogs Exceeded Threshold | More than 36,000 bad analogs or 8100 bad points. | Contact IT to resolve |
| RTNET Hourly Failure | 5 RTNET failures in an hour | Review RTNET alarms, contact PSM as necessary |
| RTNET Consecutive Failures | 3 consecutive RTNET failures | Review RTNET alarms, contact PSM as necessary |
| RTNET No Solution | Fails to solve within 15 minutes | Contact PSM |
| RTCA Hourly Failures | 5 RTCA failures in an hour | Review RTCA alarms, contact PSM as necessary |
| RTCA Consecutive Failures | 3 consecutive RTCA failures | Review RTCA alarms, contact PSM as necessary |
| RTCA Fails to Solve | RTCA fails to solve in 20 minutes | Contact PSM |
| Loss Factor: Larger than the Tolerance | The loss factor is greater than *n* tolerance (currently 0.5) (Alarm will be sent 3 times consecutively then stop and will reset when there is a good case) | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |

| RCP Alerts | Parameter | Expected Actions |
|---|---|---|
| RCP Consecutive Failures | 1 consecutive failures | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Min REG Resources | < 1 Regulating Resources in an RCP case | Check number of Resources on Regulation. Verify at least 1 on Regulation or document reason < 1 resource is supplying Regulation. |
| RCPc Price Max Jump | RCPc jumps up or down more than the default value within 2 intervals | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| RCPs Price Max Jump | RCPs jumps up or down by more than the default value within 2 intervals | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| RCPs/RCPc is not equal to highest offer in the stack of offers | RCPs and or RCPc is not the highest offer for all eligible UCM6 resources | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Lost Opportunity Cost is Null for UCM 6 units | One or more units in UCM 6 do not have an LOC value | The On-call Market Analyst may request to re-run the Regulation Selector to get a more optimal solution. |
| RCP Solutions Interval | > 5 minutes between intervals | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| Regulation Unit in UCM 6 and eligible to set price with an output value less than 80% of its Regulation Low Limit | Regulation Unit in UCM 6 and eligible to set price with an output value less than 80% of its Regulation Low Limit | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. Ensure loader did not put resource on regulation while outside the regulation band. |
| RCP: The associated ESD_GEN's UCM is not 4 | A TRR on regulation and the associated ESD-GEN in a UCM other than 4. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. Contact IT as needed. |
| RCP: The associated ESD-GEN is postured | A TRR on regulation and the associated ESD_GEN in UCM5. | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. Contact IT as needed. |
| RCP: The associated ESD_GEN's UCM has a Manual DDP | A TRR on regulation and the associated ESD_GEN has a Manual DDP | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. Contact IT as needed. |
| RCP: The sum of ESD_GEN Self Dispatch MW and RHL is greater than RTHOL | A TRR on regulation and the associated ESD_GEN has a Self Dispatch MW | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |

| RCP Alerts | Parameter | Expected Actions |
|---|---|---|
| RCP: The sum of ESD_DARD Self Dispatch MW and RLL is greater than Max Consumption | A TRR on regulation and the associated ESD_DARD has a Self-Dispatch MW | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |
| RCP: The Regulation midpoint is not 0 | Regulation set-point is not symmetrical (RHL + RLL)/2>0 | Investigated by the On-call Market Analyst who will contact the Supervisor if further clarification is required. |

| RMCP Alerts | Parameter | Expected Actions |
|---|---|---|
| LMP: NEPEX TMSR price bound violation | > $3,300 | Inform IT and Market Admin |
| LMP: NEPEX TMNSR price bound violation | > $3,250 | Inform IT and Market Admin |
| LMP: NEPEX TMOR price bound violation | > $1,750 | Inform IT and Market Admin |
| LMP: ZONE TMSR price bound violation | > $3,300 | Inform IT and Market Admin |
| LMP: ZONE TMNSR price bound violation | > $3,250 | Inform IT and Market Admin |
| LMP: ZONE TMOR price bound violation | > $1,750 | 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:

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

$RZ\_ MCP_{TMSR} \geq MCP_{TMSR}$

$RZ\_ MCP_{TMNSR} \geq MCP_{TMNSR}$

$RZ\_ MCP_{TMOR} \geq MCP_{TMOR}$